

*Flora and Vegetation Survey and
Black Cockatoo Habitat Tree Assessment
Coppin Road Structure Plan Area
Mundaring*



Prepared for: Statewest Planning

Prepared by: **Del Botanics**
PO Box 119
Mt Helena WA 6082
Mobile 0427700496
Email delbotanics@bigpond.com

November 2022

EXECUTIVE SUMMARY

This report has been prepared by Del Botanicus on behalf of Statewest Planning to present the results of a spring Detailed Flora and Vegetation survey and Black Cockatoo Habitat Tree Assessment within the proposed Coppin Rd Structure Plan Area, Mundaring. The location of the site is shown on **Figures 1 & 2**.

The recent Flora and Vegetation Assessment undertaken in the area described above identified 89 flora species. The vegetation condition varies across the site ranging from “Completely Degraded” to “Very Good”. No areas of vegetation were recorded as being in “Excellent or Pristine” vegetation condition.

One vegetation community was recorded at a local level during the survey. No species of Threatened (T), or Priority Flora pursuant to the *Biodiversity Conservation Act 2016* were located during the time of the survey. No Threatened Ecological Communities (TEC’s) were recorded during the survey.

The properties within the proposed development area are included in the *limited protection/ already committed by zoning* LNA zone. Where residential subdivision takes place, most LNAs in these zones will be lost, however some vegetation retention may be possible by conserving bushland in Public Open Space or by retaining small parcels of bushland.

Seventy-one potential Black Cockatoo Habitat Trees were recorded on site. Thirty-two of these trees have hollows, with fifteen trees recorded with hollows suitable for Black Cockatoo breeding.

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.

The report has been prepared for the benefit of the Client and for no other party. Del Botanics assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report. Other parties should not rely upon the report or the accuracy or completeness of any conclusions, and should make their own enquiries and obtain independent advice in relation to such matters.

Photographs © Del Botanics.

TABLE OF CONTENTS

	PAGE
EXECUTIVE SUMMARY	II
1. INTRODUCTION.....	1
1.1 BACKGROUND.....	1
1.2 PURPOSE OF THIS REPORT	2
2. EXISTING ENVIRONMENT	3
2.1 LANDFORM, TOPOGRAPHY AND SOILS.....	3
2.2 VEGETATION	3
2.2.1 <i>Regional vegetation</i>	3
2.2.2 <i>Vegetation Complex</i>	3
2.3 CLIMATE.....	4
3. FLORA AND VEGETATION ASSESSMENT	5
3.1 VEGETATION METHODS.....	5
3.2 DECLARED RARE AND PRIORITY FLORA.....	6
3.2.1 <i>Environment Protection and Biodiversity Conservation Act (1999) – Species level significance</i>	8
3.2.2 <i>Department of Biodiversity, Conservation and Attractions (DBCA) Database Search....</i>	10
3.3 THREATENED ECOLOGICAL COMMUNITIES.....	11
3.3.1 <i>Department of Biodiversity, Conservation and Attractions (DBCA) Database Search....</i>	12
3.4 LOCAL NATURAL AREA’S (LNA’S)	13
3.4.1 <i>Levels of protection for natural areas</i>	13
4. FLORA AND VEGETATION ASSESSMENT RESULTS	16
4.1 INTRODUCED SPECIES	16
4.2 THREATENED AND PRIORITY FLORA.....	16
4.3 THREATENED ECOLOGICAL COMMUNITIES.....	16
4.4 LOCAL VEGETATION COMMUNITIES	17
4.5 VEGETATION CONDITION.....	18
5. BLACK COCKATOO HABITAT TREES.....	21
6. CONCLUSIONS AND RECOMMENDATIONS	23
7. REFERENCES	24

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	Protected Matters listed Threatened and Priority species
Table 5	DBCA Threatened and Priority Flora Search Results
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	Local Natural Area's (LNA's)
Figure 5	Vegetation Communities and Quadrat Locations
Figure 6	Vegetation Condition and Quadrat Locations
Figure 7	Potential Black Cockatoo Habitat Trees

PHOTOGRAPHIC PLATES

Plate 1	Degraded - Completely Degraded Vegetation Condition
Plate 2	Good Vegetation Condition
Plate 3	Very Good Vegetation Condition

APPENDICES

Appendix A	Vascular Plant Species Recorded
Appendix B	Quadrat Data
Appendix C	Potential Black Cockatoo Habitat Tree Data
Appendix D	BAM Act Definitions

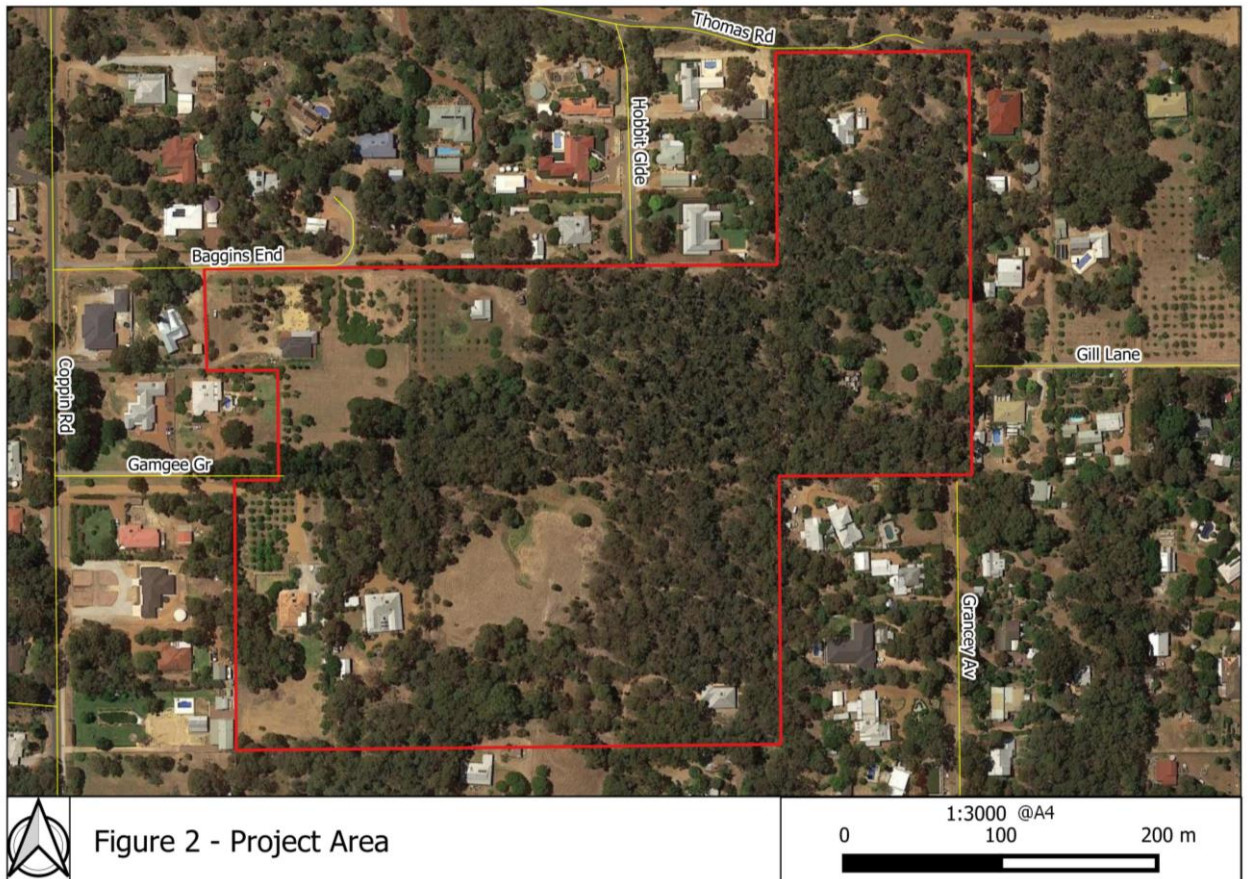
1. INTRODUCTION

1.1 BACKGROUND

This report has been prepared by Del Botantics on behalf of Statewest Planning to present the results of a spring Detailed Flora and Vegetation survey and Black Cockatoo Habitat Tree Assessment within the proposed Coppin Rd Structure Plan Area, Mundaring. The location of the site is shown on **Figures 1 & 2**.

The Black Cockatoo Habitat Tree Assessment was undertaken on 27th August 2021 and the botanical survey of the flora species and vegetation was undertaken on 24th September 2021. An additional survey on 16 Grancey Ave was undertaken on 4th November 2022 as this property was not surveyed in August and September 2021. The site is approximately 25 kilometres north east of the Perth central area. The site location is shown on **Figures 1 & 2**.





1.2 PURPOSE OF THIS REPORT

This report was prepared to present the results of the flora and vegetation survey and the Potential Black Cockatoo Habitat tree assessment within the area described above.

In summary this report provides:

- Threatened Flora (T) and Threatened Ecological Communities (TEC's) Department of Biodiversity, Conservation and Attractions (DBCA) and a Department of Agriculture, Water and the Environment (DAWE) Database search to determine results for the site;
- A spring botanical survey;
- An assessment of vegetation communities and conditions; and
- A Black Cockatoo Habitat Tree 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 Darling Plateau System which is described as a Lateritic plateau. Consisting of duplex sandy gravels, loamy gravels and wet soils (Department of Agriculture and Food WA, 2012).

The Northern Jarrah Forest broadly comprises lateritic capped Archaean granite and metamorphic rocks of the Darling Plateau; with an average elevation of 300m. This lateritic duricrust is often dissected by incised drainage channels and broken by granite hills. Landform and soils of the local area comprise a gently undulating landscape with duricrust on ridges and sandy gravels on slopes (Churchwood and McArthur 1980, Williams and Mitchell 2001).

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 Banksia Low 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 Northern Jarrah Forest (JAF01) subregion, part of the Jarrah Forest bioregion. This bioregion is characterised by Jarrah-Marri forest on laterite gravels in the west with Bullich and Blackbutt in valleys grading to Wandoo – Marri woodlands on clayey soils in the east. Extensive but localised sand sheets with low Banksia woodlands occur throughout, with heath being found on granite outcroppings particularly in northern and eastern extents (Williams and Mitchell 2001).

2.2.2 *Vegetation Complex*

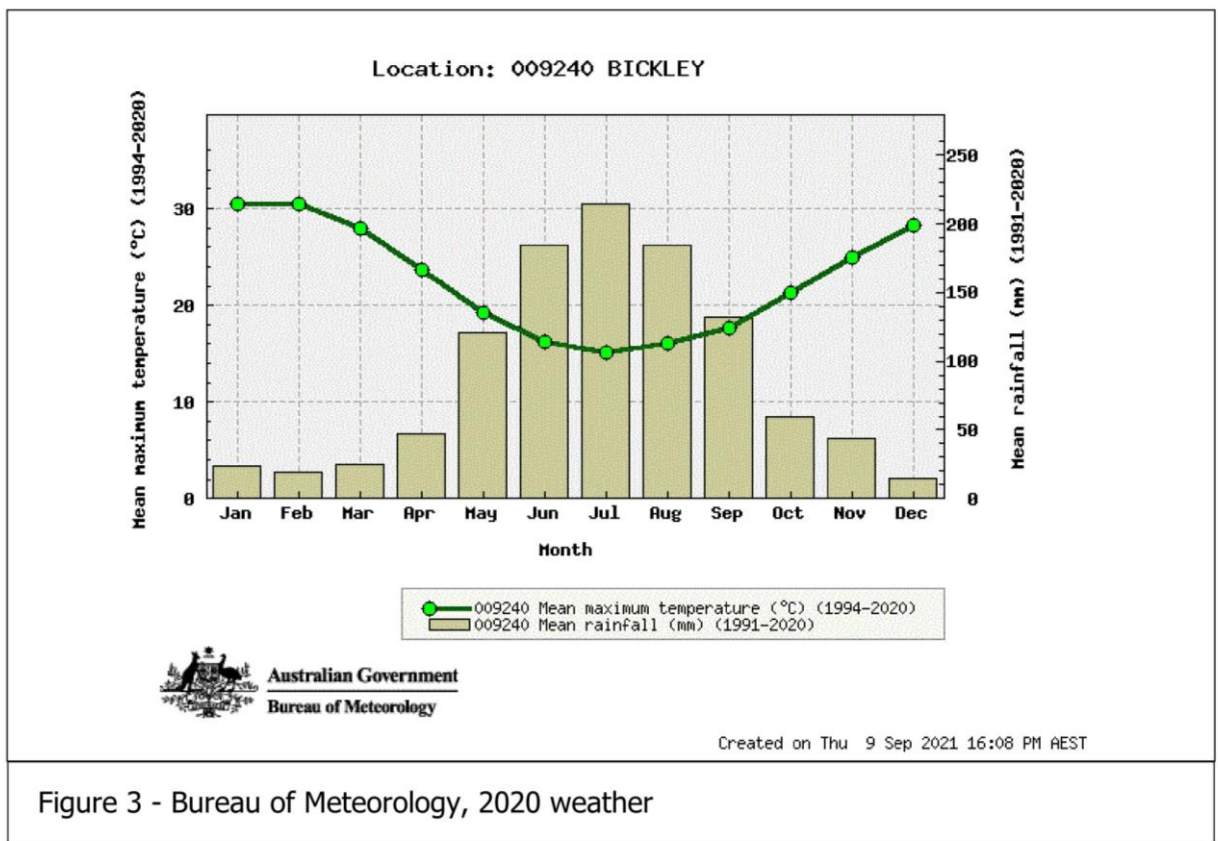
The term vegetation complex, describes the distribution of vegetation complexes of the south west forest region of Western Australia of pre-1750 distribution undertaken by Mattiske and Havel (1998). This was part of the biodiversity assessment for the comprehensive regional assessment for the south west 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. One vegetation complex, occurs within the survey area, namely Dwellingup 2 (D2) - open forest of *Eucalyptus marginata* subsp. *marginata* - *Corymbia calophylla* on lateritic uplands in subhumid and semiarid zones.

2.3 CLIMATE

The closest Bureau of Meteorology (BoM) weather station is approximately 11.3 km south of the survey area in Bickley (Site No.009240). The long-term mean minimum temperature for Bickley ranged from 7.3°C in July to 15.8°C in February between 1991 and 2020. The long-term mean maximum temperature ranged from 15.1°C in July to 30.5°C in January between 1994 to 2020 (Bureau of Meteorology, 2020).

The long-term annual average rainfall is 1101 millimetres (mm) from 1991 to 2020 (Bureau of Meteorology, 2020). Data is show below on **Figure 3**.



3. FLORA AND VEGETATION ASSESSMENT

3.1 VEGETATION METHODS

A Detailed Flora and Vegetation Survey was undertaken on the 24th September and 4th November 2022. The site was surveyed for flora species including, Threatened Flora (T), Priority Flora (PF), potential areas of Threatened Ecological Communities (TEC's) 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 and condition. In total, six quadrats and two releve's 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.

Table 1: Definition of Rare 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 three Threatened (T), one Priority 2 (P2), eight Priority 3 (P3) and five Priority 4 (P4) species, likely to occur within a 5km 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	Yes	Yes
<i>Acacia oncinophylla</i> subsp. <i>oncinophylla</i>	P3	No	Yes
<i>Adenanthos cygnorum</i> subsp. <i>chamaephyton</i>	P3	No	Yes
<i>Anthocercis gracilis</i>	T	No	Yes
<i>Beaufortia purpurea</i>	P3	Yes	No
<i>Cyanothamnus tenuis</i>	P4	Unknown	Unknown
<i>Grevillea flexuosa</i>	T	No	Yes
<i>Grevillea manglesii</i> subsp. <i>dissectifolia</i>	P3	Yes	Yes
<i>Grevillea pimeleoides</i>	P4	Yes	Yes
<i>Halgania corymbosa</i>	P3	Yes	Yes
<i>Lasiopetalum bracteatum</i>	P4	Yes	Yes
<i>Lepyrodia heleocharoides</i>	P3	No	No
<i>Pimelea rara</i>	P4	Yes	No
<i>Senecio leucoglossus</i>	P4	Yes	Yes
<i>Tetradlea pilifera</i>	P3	Yes	Yes
<i>Thelymitra variegata</i>	P2	Yes	Yes
<i>Thysanotus anceps</i>	P3	Yes	No

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 5km radius of the site. The search result noted nine flora species of significance likely to occur in the area. Five flora species have been listed as Endangered; four species are listed as Vulnerable. These species are listed in **Table 4** below.

Table 4: DAWE Protected Matters listed flora species

Species Name	Conservation Code	Likely to occur onsite	Survey undertaken in flowering time
<i>Acacia aphylla</i>	Vulnerable	Yes	Yes
<i>Anthocercis gracilis</i>	Vulnerable	No	Yes
<i>Diplolaena andrewsii</i>	Endangered	Yes	Yes
<i>Diuris micrantha</i>	Vulnerable	No	Yes
<i>Diuris purdiei</i>	Endangered	No	Yes
<i>Grevillea christineae</i>	Endangered	No	Yes
<i>Grevillea flexuosa</i>	Vulnerable	No	Yes
<i>Thelymitra dedmaniarum</i>	Endangered	No	No
<i>Thelymitra stellata</i>	Endangered	No	No

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. The results are provided below in **Table 5**. The search was conducted within a 10km radial area from the central coordinate. No species listed were recorded during the site visit.

Table 5: DBCA Threatened and Priority Flora Search Results

Taxon	Conservation Status		Likely to occur onsite	Survey undertaken in flowering time
	DBCA	EPBC		
<i>Acacia aphylla</i>	T	VU	Yes	Yes
<i>Acacia horridula</i>	3		Yes	No
<i>Acacia oncinophylla</i> subsp. <i>oncinophylla</i>	3		No	Yes
<i>Adenanthos cygnorum</i> subsp. <i>chamaephyton</i>	3		No	Yes
<i>Amanita preissii</i>	3		No	Unknown
<i>Anthocercis gracilis</i>	T	VU	No	Yes
<i>Beaufortia purpurea</i>	3		Yes	No
<i>Cyanothamnus tenuis</i>	4		Unknown	Unknown
<i>Calothamnus accedens</i>	4		No	Unknown
<i>Darwinia apiculata</i>	T	EN	Yes	No
<i>Darwinia pimelioides</i>	4		No	Yes
<i>Diplolaena andrewsii</i>	T	EN	Yes	Yes
<i>Grevillea flexuosa</i>	T		No	Yes
<i>Grevillea manglesii</i> subsp. <i>dissectifolia</i>	3		Yes	Yes
<i>Grevillea manglesii</i> subsp. <i>ornithopoda</i>	2		Yes	Yes
<i>Grevillea pimeleoides</i>	4		Yes	Yes
<i>Halgania corymbosa</i>	3		Yes	Yes
<i>Isopogon autumnalis</i>	3		Yes	No
<i>Lasiopetalum bracteatum</i>	4		No	Yes
<i>Lasiopetalum glutinosum</i> subsp. <i>glutinosum</i>	3		Yes	Unknown
<i>Lepyrodia heleocharoides</i>	3		No	No
<i>Meionectes tenuifolia</i>	3		Yes	Unknown

<i>Persoonia sulcata</i>	4		Yes	Yes
<i>Pimelea rara</i>	4		No	No
<i>Pithocarpa corymbulosa</i>	3		No	No
<i>Senecio leucoglossus</i>	4		Yes	Yes
<i>Sporobolus blakei</i>	3		No	No
<i>Stylidium striatum</i>	4		No	No
<i>Tetralochea pilifera</i>	3		Yes	Yes
<i>Thelymitra variegata</i>	2		No	No
<i>Thysanotus anceps</i>	3		Yes	Yes
<i>Thysanotus</i> sp. Badgingarra (E.A. Griffin 2511)	2		No	No
<i>Verticordia serrata</i> var. <i>linearis</i>	3		No	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*). Scheduled TEC's are afforded statutory protection at a Federal level pursuant to the EPBC Act. The department has been identifying and listing threatened ecological communities since 1994 through the non-statutory process.

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	<p>Presumably Totally Destroyed An ecological community that has been adequately searched for but for which no representative occurrences have been located.</p>
CE	<p>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.</p>
E	<p>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.</p>
V	<p>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.</p>

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 no known Threatened Ecological Communities (TEC’s) likely to occur within a 5km radius of the area.

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. Six Threatened Ecological Communities have been recorded within a 10km radius of the site. It is unlikely that the listed TEC’s will occur within the survey area due to the current vegetation condition and the soil complexes which do not support the listed TEC’s. The closest TEC, which has been recorded near the site is, *Central Northern Darling Scarp Granite Shrubland Community*. This TEC was not recorded during the survey.

Table 8: DBCA listed Threatened Ecological Communities

Species 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 (floristic community type 20b as originally described in Gibson et al. (1994))	Endangered [DBCA] Endangered [EPBC]	No
Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region	Priority 3 [DBCA] Endangered [EPBC]	No
Central Northern Darling Scarp Granite Shrubland Community	Priority 4 [DBCA]	No
<i>Corymbia calophylla</i> - <i>Kingia australis</i> woodlands on heavy soils, Swan Coastal Plain (floristic community type 3a as originally described in Gibson et al. (1994))	Critically Endangered [DBCA] Endangered [EPBC]	No
<i>Corymbia calophylla</i> - <i>Xanthorrhoea preissii</i> woodlands and shrublands, Swan Coastal Plain (floristic community type 3c as originally described in Gibson et al. (1994))	Critically Endangered [DBCA] Endangered [EPBC]	No
Shrublands and woodlands of the eastern side of the Swan Coastal Plain (floristic community type 20c as originally described in Gibson et al. (1994))	Critically Endangered [DBCA] Endangered [EPBC]	No

3.4 LOCAL NATURAL AREA'S (LNA'S)

Local Natural Areas (LNAs) are the focus of the Shire of Mundaring's Local Biodiversity Strategy (LBS). There are 9175 ha of LNAs in the Shire, with 7075 ha in private ownership or managed by the Shire (6730 ha and 285 ha respectively). LNAs are natural areas that currently have an unclear protection status given that they are not part of the public conservation estate, State Forests, proclaimed water catchments or Bush Forever sites. LNAs are in addition to other areas of native vegetation that are either protected or retained as State Forest, Proclaimed Water Catchment or Bush Forever sites. (EcoLogical Australia & Ironbark Environmental, 2009).

The Shire of Mundaring's LBS notes that all LNAs should be retained, regardless of conservation priority. However, some LNAs are already committed to a level of subdivision and development due to existing or proposed lot sizes, zoning and subdivision potential. The Shire of Mundaring's Local Biodiversity Strategy clearly identifies conservation priorities in an effort to focus protection and management efforts to the highest biodiversity value areas.

3.4.1 Levels of protection for natural areas

All LNAs in the Shire have been assigned a protection category based on the following considerations:

- 1) Known ecological values;
- 2) Other environmental attributes, such as proximity to watercourses;
- 3) Relative Conservation Priority;
- 4) Zoning in Town Planning Scheme No. 3; and
- 5) Other relevant planning considerations, such as existing LSIPs or lot size.

There are five preliminary protection categories:

- 1) Conservation
- 2) Protection
- 3) Retention
- 4) Limited Protection/Already Committed by Zoning
- 5) To Be Determined/Negotiate.

Following is a description of each of the preliminary protection categories and sub-categories for LNAs within the Shire of Mundaring:

1) CONSERVATION – LNAs on Crown Land vested for a conservation purpose, included in a proposed Local Reserve for Conservation in the Shire’s new Town Planning Scheme No. 4, or included in a Conservation Covenant.

2) PROTECTION – P1 and P2 LNAs on land zoned General Rural, P1 and P2 LNAs and LNAs near (within 20 m) watercourses on land zoned Rural Landscape Living and having an existing or proposed lot size below 2 ha, and all LNAs on other land zoned Rural Landscape Living. LNAs on rural residential lots within Special Purpose zones in Parkerville and Stoneville are also included in the Protection Category.

3) RETENTION – P3 LNAs on land zoned General Rural or on land zoned Rural Landscape Living and having an existing or proposed lot size below 2 ha. LNAs near (within 20 m) watercourses on land zoned Residential R2.5 are also included in the Retention Category.

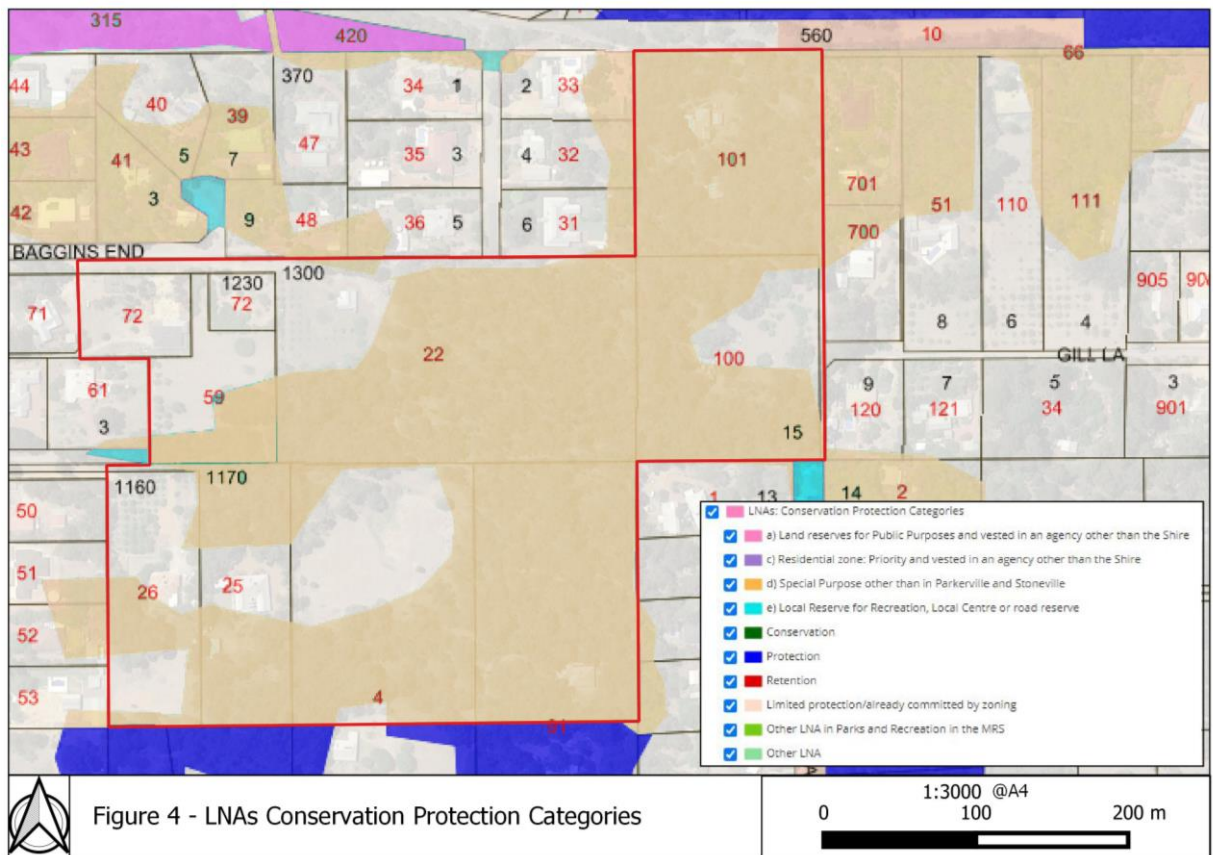
4) LIMITED PROTECTION/ ALREADY COMMITTED BY ZONING – LNAs on land zoned Residential (except those within 20 m of watercourses on land coded R2.5) or on land zoned Special Purpose for the proposed Parkerville and Stoneville Townsite Developments and not identified in the structure plans endorsed by Council for those proposed townsites as open space or rural residential. It should be noted that residential subdivision in these proposed townsites cannot occur unless and until the land is changed from Urban Deferred to Urban in the Metropolitan Region Scheme. Where residential subdivision takes place, most LNAs will be lost, due to clearing for development or for protection and/or hazard reduction zones to reduce bushfire hazard for residences. However, some vegetation retention may be possible in some circumstances, particularly in the delineation of Public Open Space. LNAs on land zoned Light Industry or within road reserves are also included in this category. As with residential land, some small parcels of LNAs in these areas may be able to be retained.

5) TO BE DETERMINED/ NEGOTIATED – These LNAs are in areas where decisions on conserving, protecting or retaining LNAs will be made over time through the planning and land management processes and by negotiations.

The proposed Coppin Rd Structure Plan Area incorporates a specified area of Local Natural Area’s (LNA’s) as determined by the Shire of Mundaring’s Local Biodiversity Strategy.

The properties within the proposed development area are included in the *limited protection/ already committed by zoning* LNA zone. Where residential subdivision takes place, most LNAs in these zones will be lost, however some vegetation retention may be possible by conserving bushland in Public Open Space or by retaining small parcels of bushland.

Seven properties within the proposed development area (1300, 1160 & 1170 Coppin Rd and 6115 & 6245 Great Eastern Highway and 15 &16 Grancy Ave) are also included in the *Other LNA* zone, which shows the vegetated areas within the *limited protection/ already committed by zoning* LNA zone. The site is shown below on **Figure 4**.



4. FLORA AND VEGETATION ASSESSMENT RESULTS

A total of 89 taxa, comprising of 23 families and 58 genera were recorded on site. A list of these species has been provided in **Appendix A**. Species representation was greatest among the Proteaceae and Fabaceae families.

4.1 INTRODUCED SPECIES

Twelve introduced flora species were recorded on the site. Species representation was greatest among the Fabaceae and Iridaceae families. This represents 13.5% of the total number of flora species recorded on site. Of these introduced species, one species is listed as Declared Pest species under the *Biosecurity and Agriculture Management Act 2007* (BAM Act). The weed species is One Leaf Cape Tulip (*Moraea flaccida*) which was recorded adjacent to Revele 1. BAM Act definitions are provided in **Appendix D**.

Table 9: Introduced Flora Recorded in the Survey Area

Taxa	Common Name	BAM Act
* <i>Acacia pycnantha</i>	Golden wattle	Permitted – s11
* <i>Acacia decurrens</i>	Black Wattle	Permitted – s11
* <i>Acacia iteaphylla</i>	Flinders Range wattle	Permitted – s11
* <i>Briza maxima</i>	Blowfly Grass	Permitted – s11
* <i>Chamaecytisus palmensis</i>	Tagasaste	Permitted – s11
* <i>Ehrharta calycina</i>	Perennial Veldt grass	Permitted – s11
* <i>Freesia alba</i> × <i>leichtlinii</i>	Freesia	Permitted – s11
* <i>Moraea flaccida</i>	Cape Tulip	Declared Pest - s22
* <i>Oxalis glabra</i>	Finger-leaf oxalis	Permitted – s11
* <i>Oxalis pes-capre</i>	Soursob	Permitted – s11
* <i>Romulea rosea</i>	Guildford Grass	Permitted – s11
* <i>Taraxacum khatoonae</i>	Dandelion	Not Listed

4.2 THREATENED AND PRIORITY FLORA

No species of Threatened (T) or Priority Flora were recorded during the survey; No other flora, pursuant to *Biodiversity Conservation Act 2016* 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

No Threatened Ecological Communities listed by Department of Agriculture, Water and the Environment (DAWE) or Department of Biodiversity, Conservation and Attractions (DBCA) were located during the time of the survey.

4.4 LOCAL VEGETATION COMMUNITIES

Vegetation structure recorded in each vegetation community is used to determine the coverage class as described below in **Table 10**. These vegetation structure classes are defined and used in the Technical Guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (2016).

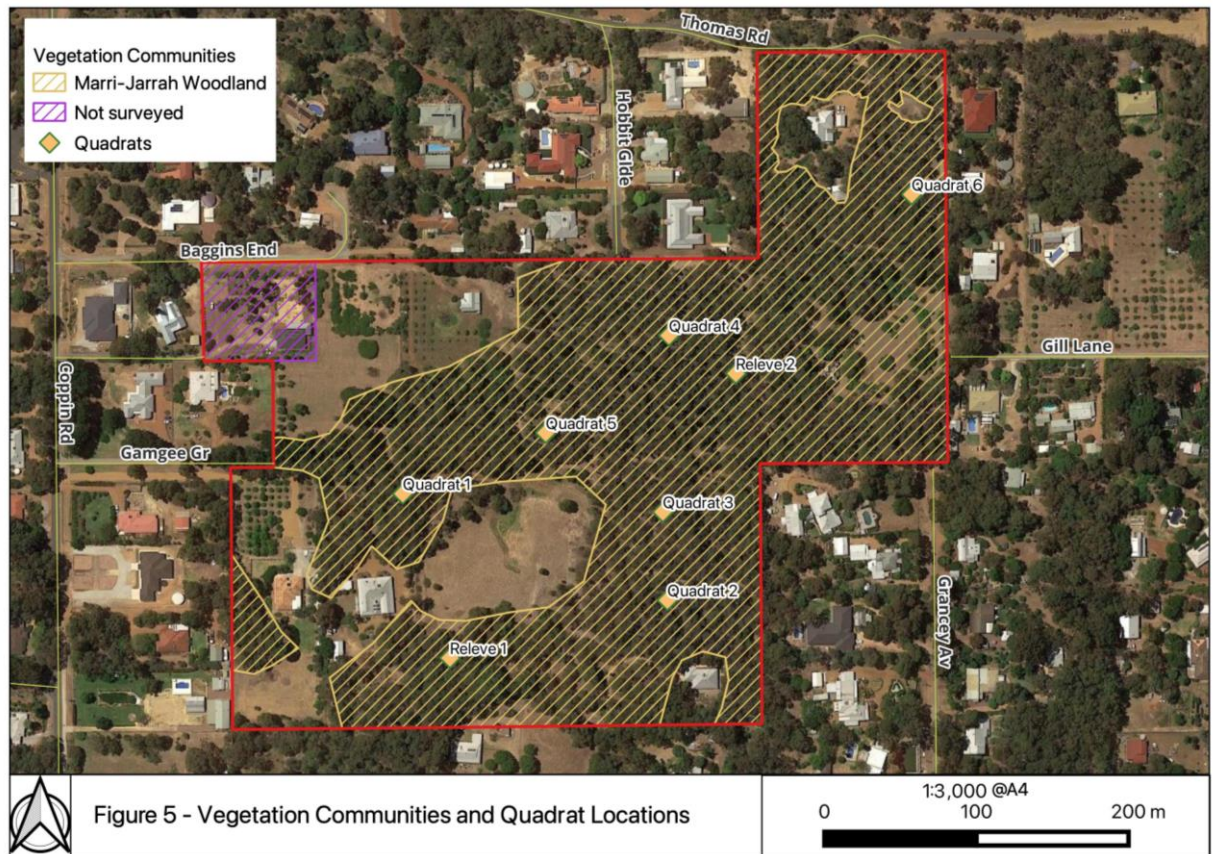
Table 10: Vegetation Structure Classes

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

One vegetation community was 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 5 & 6**.

Table 11: Local Vegetation Communities Recorded within the Coppin Rd Structure Plan Area Mundaring, September 2021

Community Descriptions
Vegetation Community 1 –Marri – Jarrah Woodland
Open Forrest of <i>Eucalyptus marginata</i> and <i>Corymbia calophylla</i> over open shrubland of <i>Xanthorrhoea preissii</i> , <i>Hibbertia hypericoides</i> and <i>Bossiaea pulchella</i> over open herbland of <i>Burchardia congesta</i> and <i>Patersonia occidentalis</i> .



4.5 VEGETATION CONDITION

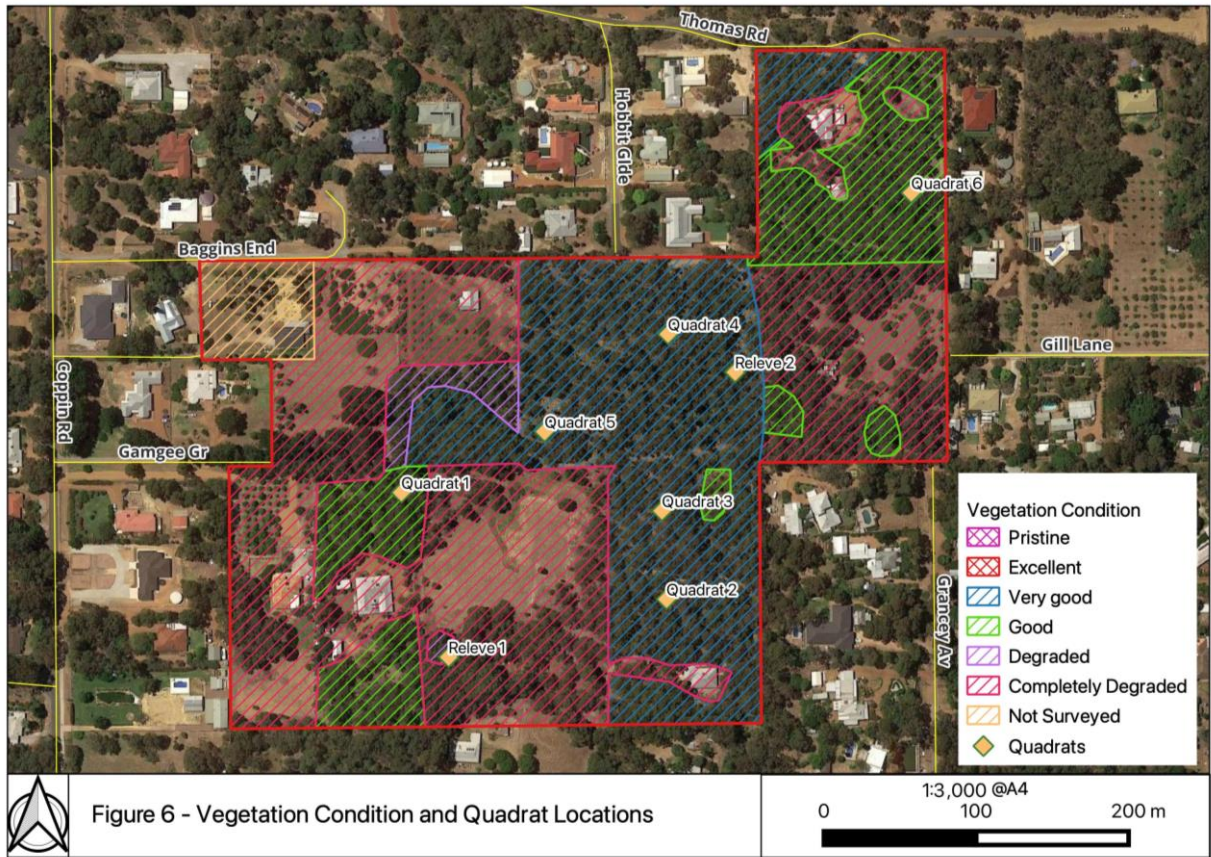
Many bushland remnants have been historically degraded and current land use activities continue degradation and fragmentation processes. As a result, these remnants are especially susceptible to disturbances arising from indirect impacts such as surrounding developments and human activity. Degradation 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 due to land development, grazing, pine plantations and fruit orchards. 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

In general, the vegetation condition varied from “Completely Degraded” to “Very Good” in the study area. Vegetation condition mapping is provided on **Figure 6**.



5. BLACK COCKATOO HABITAT TREES

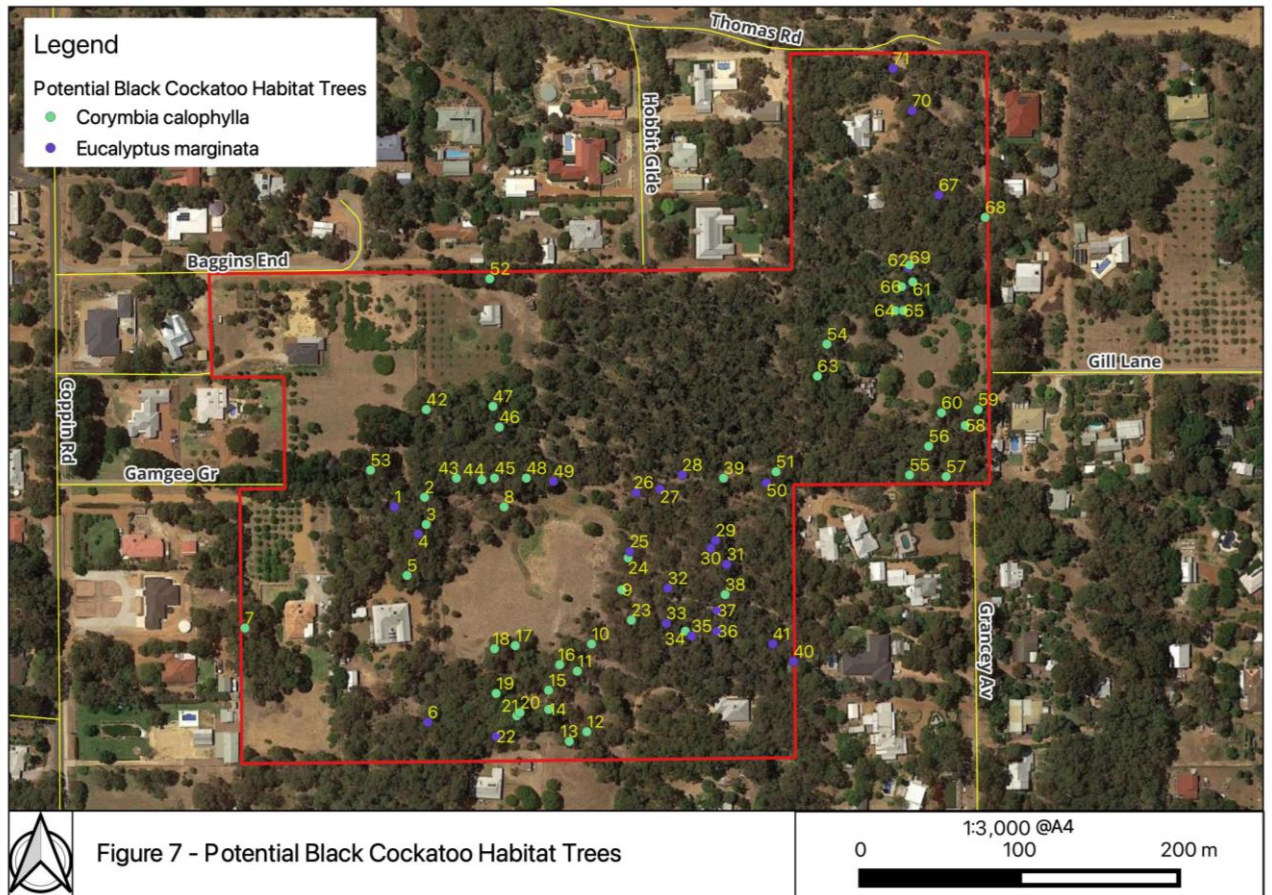
Tree hollows are essential to provide shelter and breeding sites for many native animals. Australia-wide, it is estimated that around 300 species of vertebrates use hollows at some time and many of these are now endangered, in part because of the removal of hollow-bearing trees. The hollows provide refuge from the weather and predators, and safe sites for roosting and breeding. In order to maintain this essential wildlife habitat, it is important to retain both living and dead hollow-bearing trees (CALM, 2005).

Hollows form as trees age, over time, the trees are subject to various natural forces such as fire or storm that cause injury to the protective bark. While the living, outer sapwood may remain healthy, wood-rotting fungi and termites gain access to the heartwood, beginning the decay process. In Western Australia, fire often contributes to the initial cause of injury, as well as, by burning decayed wood, enlarging existing hollows. Wildlife can also renovate hollows using beaks, teeth or claws. Only old trees have hollows.

Research has shown that Jarrah, Wandoo and Salmon Gum rarely form hollows before they are 120-150 years of age. A hollow large enough for a black cockatoo (which requires an entrance hole 25cm in diameter) will only be found in a tree that is even older than that (CALM, 2005).

The size of the tree (measured as the diameter at breast height) can be a useful indication of the hollow-bearing potential of the tree. Habitat trees are recorded with a diameter at breast height (DBH) of 500 mm (for salmon gum and wandoo, suitable DBH is 300 mm). The Shire of Mundaring requires all native trees with a DBH greater than 800mm be recorded. Each tree was recorded with a GPS location and information was collected for each individual tree. Tree locations are shown on **Figure 7** and information is provided in **Appendix C**.

Seventy-one potential Black Cockatoo Habitat Trees were recorded within the Coppin Rd Structure Plan Area with a DBH of 800mm or greater, consisting of twenty two Jarrah (*Eucalyptus marginata*) and forty-nine Marri (*Corymbia calophylla*). Thirty-two trees were recorded with hollows, of which fifteen contained hollows suitable for Black Cockatoo habitat. No signs of use of hollows by Black Cockatoos was noted, however there were signs of foraging on the site.



6. CONCLUSIONS AND RECOMMENDATIONS

The Detailed Flora and Vegetation survey and Tree Habitat Assessment at the Coppin Rd Structure Plan Area in Mundaring identified a total of 89 taxa representing 58 genera and 23 families. Weeds species comprised of 13.5% of the total flora recorded. The vegetation condition across the site ranged from “Completely Degraded” to “Very Good”. During the survey no areas of vegetation within the site were recorded as being “Excellent” or “Pristine” vegetation condition.

One vegetation community was recorded at a local level during the survey. Vegetation consisted of Open Forrest of *Eucalyptus marginata* and *Corymbia calophylla* over open shrubland of *Xanthorrhoea preissii*, *Hibbertia hypericoides*, *Bossiaea pulchella* over open herbland of *Burchardia congesta* and *Patersonia occidentalis*. This community shows similarities with the previously mapped Dwellingup 2 (D2) - Open Forest of *Eucalyptus marginata* subsp. *marginata* - *Corymbia calophylla* on lateritic uplands in subhumid and semiarid zones’ vegetation complex (Hedde et al. 1980). These similarities include species composition (Jarrah [*Eucalyptus marginata*] and Marri [*Corymbia calophylla*]) and structure (forest).

No species of Threatened (T), or Priority Flora pursuant to The *Biodiversity and Conservation Act* 2016 were located during the time of the survey. No Threatened Ecological Communities listed by Department of Agriculture, Water and the Environment (DAWE) or Department of Biodiversity, Conservation and Attractions (DBCAs) were located during the time of the survey.

The properties within the proposed development area are included in the limited protection/ already committed by zoning LNA zone. Where residential subdivision takes place, most LNAs in these zones will be lost, however some vegetation retention may be possible by conserving bushland in Public Open Space or by retaining small parcels of bushland.

Seventy-one potential Black Cockatoo Habitat Trees with a DBH greater than 800mm were recorded on site. Thirty-two of these trees have hollows, with fifteen trees recorded with hollows suitable for Black Cockatoo’s.

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

- Where possible retain all trees with a DBH greater than 800mm;
- Where possible retain vegetation in Good or better condition; and
- Encourage best practice weed management.

7. REFERENCES

Beard J. S. (1990). *Plant life of Western Australia*. Kangaroo Press, Perth.

Bureau of Meteorology (2020) *Monthly climate data statistics*

Department of Agriculture and Food WA (2012) *Soil-landscape systems of Western Australia (GIS dataset)*. Perth, Australia.

English, V. and Blyth, J. (1997). *Identifying and conserving Threatened Ecological Communities in the South West Botanical Province*. ANCA National Reserves System Cooperative Program, Project Number N702.

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) (s 266B) Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the Swan Coastal Plain ecological community, DEE, Perth.

Environmental Protection Authority (2001a). Position Statement No. 2. *Environmental Protection of Native Vegetation in Western Australia*. EPA, Perth.

Environmental Protection Authority (2001b). Position Statement No. 3. *Terrestrial biological surveys as an element of biodiversity protection*. EPA, Perth.

Environmental Protection Authority (2003a). Guidance statement No. 10. *Guidance for the Assessment of Environmental Factors – Level of assessment for proposals affecting natural areas within the System 6 Region and Swan Coastal Plain portion of the System 1 Region*. EPA, Perth.

Environmental Protection Authority (2003b). Guidance statement No. 51. *Guidance for the Assessment of Environmental Factors – Terrestrial flora and vegetation surveys for environmental impact assessment in Western Australia*. EPA, Perth.

Hedde, E.M., Loneragan, O.W. and Havel, J.J. (1980). *Darling Systems – Vegetation Complexes*. In: Atlas of Natural Resources Darling System, Western Australia. Department of Conservation and Environment, Perth.

EcoLogical Australia & Ironbark Environmental (2009) *Shire of Mundaring Local Biodiversity Strategy*, Shire of Mundaring, Mundaring.

Western Australian Herbarium (2022). *FloraBase - The Western Australian Flora*. Department of Biodiversity, Conservation and Attractions

Williams, K. and Mitchell, D. (2001) *Jarrah Forest 1 (JF1 – Northern Jarrah Forest subregion)*. Perth, Australia.

PHOTOGRAPHIC PLATES



Plate 1: Degraded - Completely Degraded Vegetation Condition



Plate 2: Good Vegetation Condition



Plate 3: Very Good Vegetation Condition

APPENDIX A
VASCULAR PLANT SPECIES RECORDED

**APPENDIX A:
VASCULAR PLANT SPECIES RECORDED AT COPPIN RD STRUCTURE PLAN AREA,
SEPTEMBER 2021 AND NOVEMBER 2022**

(*Denotes a weed species)

Family	Genus/Species
Apiaceae	<i>Pentapeltis peltigera</i>
	<i>Platysace compressa</i>
	<i>Xanthosia atkinsoniana</i>
Asparagaceae	<i>Laxmannia squarrosa</i>
	<i>Lomandra ? caespitosa</i>
	<i>Lomandra ? nigricans</i>
	<i>Lomandra ?preissii</i>
	<i>Lomandra ?purpurea</i>
	<i>Lomandra ?sericea</i>
	<i>Lomandra purpurea</i>
	<i>Lomandra sp</i>
	<i>Thysanotus sparteus</i>
Asteraceae	* <i>Taraxacum khatoonae</i>
Colchicaceae	<i>Burchardia congesta</i>
Cyperaceae	<i>Lepidosperma ?tenue</i>
	<i>Lepidosperma leptostachyum</i>
	<i>Lepidosperma pubisquameum</i>
	<i>Lepidosperma sp</i>
	<i>Lepidosperma tenue</i>
	<i>Leucopogon verticillatus</i>
Dilleniaceae	<i>Hibbertia hypericoides</i>
Droseraceae	<i>Drosera erythrorhiza</i>
	<i>Drosera glanduligera</i>
	<i>Drosera macrantha</i>
Elaeocarpaceae	<i>Tetratheca hirsuta</i>
Fabaceae	* <i>Acacia decurrens</i>
	* <i>Acacia iteaphylla</i>
	* <i>Acacia pycnantha</i>
	* <i>Chamaecytisus palmensis</i>
	<i>Acacia drummondii</i>
	<i>Acacia pulchella</i>
	<i>Bossiaea eriocarpa</i>
	<i>Bossiaea ornata</i>
	<i>Bossiaea preissii</i>
	<i>Bossiaea puchella</i>
	<i>Gompholobium knightianum</i>
	<i>Gompholobium marginatum</i>
	<i>Gompolobium tomentosum</i>
<i>Labichea punctata</i>	
Goodeniaceae	<i>Damperia linearis</i>
	<i>Lechenaultia biloba</i>
	<i>Scaevola calliptera</i>
Haemodoraceae	<i>Conostylis setosa</i>
	<i>Conostylis setigera</i>

	<i>Haemodorum sp</i>
Hemerocallidaceae	<i>Caesia micrantha</i>
	<i>Dianella revoluta</i>
	<i>Trichocline spathulata</i>
	<i>Tricoryne elatior</i>
Iridaceae	* <i>Freesia alba</i> × <i>leichtlinii</i>
	* <i>Moraea flaccida</i>
	* <i>Oxalis glabra</i>
	* <i>Oxalis pes-capre</i>
	* <i>Romulea rosea</i>
	<i>Patersonia occidentalis</i>
Laminaceae	<i>Hemiandra pungens</i>
Myrtaceae	<i>Corymbia calophylla</i>
	<i>Eucalyptus marginata</i>
Orchidaceae	<i>Caladenia flava</i>
	<i>Orchidiaceae sp</i>
	<i>Pterostylis ?barbata</i>
	<i>Pyrorchis nigricans</i>
	<i>Thelymitra macrophylla</i>
	<i>Thelymitra crinita</i>
Poaceae	* <i>Briza maxima</i>
	* <i>Ehrharta calycina</i>
	<i>Amphipogon amphipogonoides</i>
	<i>Austrostipa sp</i>
	<i>Tetrarrhena hirsuata</i>
Proteaceae	<i>Adenanthos barbiger</i>
	<i>Banksia grandis</i>
	<i>Banksia nivea</i>
	<i>Banksia sessilis</i>
	<i>Daviesia decurrens</i>
	<i>Grevillea quercifolia</i>
	<i>Grevillea synapheae</i>
	<i>Hakea amplexicaulis</i>
	<i>Hakea lissocarpha</i>
	<i>Hakea ruscifolia</i>
	<i>Kennedia coccinea</i>
	<i>Persoonia elliptica</i>
Restionaceae	<i>Desmocladius flexuosus</i>
Rubiaceae	<i>Opercularia echinocephala</i>
Stylidiaceae	<i>Stylidium ? schoenoides</i>
Xanthorrhoeaceae	<i>Xanthorrhoea brunonis</i>
	<i>Xanthorrhoea gracilis</i>
	<i>Xanthorrhoea preissii</i>
Zamiaceae	<i>Macrozamia riedlei</i>

APPENDIX B
QUADRAT DATA

Del Botanics

FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Coppin Rd Structure Plan Area, Mundaring	Date: 24/09//2021	Site: Q1
GPS Datum: 04199999 6470539	Topography: Flat	Litter cover: 30 % twigs, 30 % leaves 50% logs
Age since fire: >10 yrs	Disturbance: Hi Med Lo	Soils: Clay/Loam (brown/orange)
Vegetation Description: Jarrah – Marri Woodland		
Vegetation Condition: Good		
Observations: High number of weeds, missing structure		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Corymbia calophylla</i>	1200	100		50
	<i>Eucalyptus marginata</i>	1000	100		15
Middle	<i>Xanthorrhoea preissii</i>	100	100		12
	<i>Xanthorrhoea gracilis</i>	80	100		3
Lower	<i>Scaevola calliptera</i>	10	100		4
	<i>*Freesia alba × leichtlinii</i>				
	<i>Hibbertia hypericoides</i>				
	<i>Burchardia congesta</i>				
	<i>Patersonia occidentalis</i>				
	<i>Bossiaea ornata</i>				
	<i>Kennedia coccinea</i>				
	<i>Banksia nivea</i>				
	<i>*Ehrharta calycina</i>				

	<i>Damperia linearis</i>				
	<i>Stylidium ? schoenoides</i>				
	<i>Constylis setigera</i>				
	<i>Drosera macrantha</i>				
	<i>Hakea amplexicaulis</i>				
	<i>Lechenaultia biloba</i>				
	<i>Daviesia decurrens</i>				
	<i>Caesia micrantha</i>				
	* <i>Oxalis glabra</i>				
	<i>Opercularia echinocephala</i>				
	<i>Gompholobium marginatum</i>				
	* <i>Taraxacum khatoonae</i>				
	* <i>Briza maxima</i>				
	<i>Austrostipa sp</i>				
	<i>Platysace compressa</i>				
	<i>Gompholobium knightianum</i>				
	* <i>Romulea rosea</i>				
	<i>Haemodorum sp</i>				
	<i>Orchidiaceae sp</i>				
	<i>Lepidosperma sp</i>				

Del Botanics

FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Coppin Rd Structure Plan Area, Mundaring	Date: 24/09//2021	Site: Q2
GPS Datum: 0420173 6470469	Topography: Mid slope	Litter cover: 20 % twigs, 40 % leaves 20% logs
Age since fire: >10 yrs	Disturbance: Hi Med Lo	Soils: Clay/Loam/Gravel (brown/orange)
Vegetation Description: Jarrah – Marri Woodland		
Vegetation Condition: Very Good		
Observations: Few disturbances, Signs of Echidna's		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Corymbia calophylla</i>	1800	100		10
	<i>Eucalyptus marginata</i>	2000	100		20
Middle	<i>Banksia sessilis</i>	400	100		5
	<i>Xanthorrhoea preissii</i>	100	100		2
Lower	<i>Bossiaea preissii</i>	50	100		10
	<i>Burchardia congesta</i>				
	<i>Banksia nivea</i>				
	* <i>Freesia alba</i> × <i>leichtlinii</i>				
	* <i>Briza maxima</i>				
	<i>Lomandra ?sericea</i>				
	<i>Hibbertia hypericoides</i>				
	<i>Drosera erythrorhiza</i>				

	<i>Haemodorum sp</i>				
	<i>Adenanthos barbiger</i>				
	<i>Conostylis setosa</i>				
	<i>Morelotia octandra</i>				
	<i>Hakea lissocarpha</i>				
	<i>Bossiaea ornata</i>				
	<i>Pentapeltis peltigera</i>				
	<i>Drosera macrantha</i>				
	<i>Acacia pulchella</i>				
	<i>Lepidosperma pubisquameum</i>				
	<i>Pterostylis ?barbata</i>				
	<i>Damperia linearis</i>				
	<i>Caesia micrantha</i>				
	<i>Scaevola calliptera</i>				
	<i>Daviesia decurrens</i>				
	<i>Patersonia occidentalis</i>				
	<i>Tetrarrhena laevis</i>				
	* <i>Taraxacum khatoonae</i>				
	<i>Grevillea quercifolia</i>				

Del Botanics

FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Coppin Rd Structure Plan Area, Mundaring	Date: 24/09//2021	Site: Q3
GPS Datum: 0420170 6470522	Topography: Mid slope	Litter cover: 30 % twigs, 30 % leaves 50% logs
Age since fire: >10 yrs	Disturbance: Hi Med Lo	Soils: Clay/Loam (brown/orange)
Vegetation Description: Jarrah – Marri Woodland		
Vegetation Condition: Very Good		
Observations: few weeds, low disturbances		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Corymbia calophylla</i>	2500	100		25
	<i>Eucalyptus marginata</i>	2000	100		60
	* <i>Acacia pycnantha</i>	600	100		3
Middle	<i>Xanthorrhoea preissii</i>	100	100		5
	<i>Bossiaea puchella</i>	60	100		10
Lower	<i>Lepidosperma pubisquameum</i>	70	100		10
	<i>Hakea ruscifolia</i>				
	* <i>Freesia alba</i> × <i>leichtlinii</i>				
	<i>Burchardia congesta</i>				
	<i>Gompholobium knightianum</i>				
	<i>Hibbertia hypericoides</i>				
	<i>Lomandra ?sericea</i>				
	<i>Lepidosperma leptostachyum</i>				
	<i>Bossiaea ornata</i>				

	<i>Damperia linearis</i>				
	<i>Haemodorum sp</i>				
	<i>Xanthosia atkinsoniana</i>				
	<i>Drosera erythrorhiza</i>				
	<i>Caesia micrantha</i>				
	<i>Patersonia occidentalis</i>				
	<i>Banksia nivea</i>				
	<i>Orchidiaceae sp</i>				
	<i>Lomandra ? caespitosa</i>				
	<i>Pentapeltis peltigera</i>				
	<i>Conostylis setosa</i>				
	<i>Lomandra sp</i>				
	<i>Kennedia coccinea</i>				
	<i>Xanthorrhoea brunonis</i>				
	<i>Scaevola calliptera</i>				
	* <i>Briza maxima</i>				

Del Botanics

FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Coppin Rd Structure Plan Area, Mundaring	Date: 24/09//2021	Site: Q4
GPS Datum: 0420174 6470643	Topography: Mid slope	Litter cover: 30 % twigs, 60 % leaves 10% logs
Age since fire: >10 yrs	Disturbance: Hi Med Lo	Soils: Gravel/Loam (brown/orange)
Vegetation Description: Jarrah – Marri Woodland		
Vegetation Condition: Very Good		
Observations: few weeds, low disturbances, signs of Echidna's		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Eucalyptus marginata</i>	2500	100		8
	<i>Corymbia calophylla</i>	2200	100		6
Middle	<i>Xanthorrhoea preissii</i>	150	100		3
	<i>Macrozamia riedlei</i>	120	100		4
Lower	<i>Bossiaea puchella</i>	60	100		70
	<i>Lepidosperma ?tenue</i>	40	100		3
	<i>Lechenaultia biloba</i>				
	<i>Lomandra purpurea</i>				
	<i>Damperia linearis</i>				
	<i>Caladenia flava</i>				
	<i>Platysace compressa</i>				
	<i>Burchardia congesta</i>				
	<i>Adenanthos barbiger</i>				

	<i>Hakea ruscifolia</i>				
	<i>Bossiaea eriocarpa</i>				
	<i>Persoonia elliptica</i>				
	<i>Bossiaea ornata</i>				
	<i>Kennedia coccinea</i>				
	<i>Hibbertia hypericoides</i>				
	<i>Grevillea synapheae</i>				
	<i>Dianella revoluta</i>				
	<i>Drosera erythrorhiza</i>				
	<i>Drosera macrantha</i>				
	<i>Scaevola calliptera</i>				
	<i>Caesia micrantha</i>				
	* <i>Acacia decurrens</i>				
	<i>Lomandra sp</i>				
	<i>Gompholobium knightianum</i>				
	<i>Pentapeltis peltigera</i>				
	<i>Labichea punctata</i>				
	<i>Tetratheca hirsuta</i>				
	<i>Hakea lissocarpha</i>				
	<i>Xanthorrhoea brunonis</i>				

Del Botanicis

FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Coppin Rd Structure Plan Area, Mundaring	Date: 24/09//2021	Site: Q5
GPS Datum: 0420093 6470579	Topography: Upper Slope	Litter cover: 30 % twigs, 30 % leaves 50% logs
Age since fire: >10 yrs	Disturbance: Hi Med Lo	Soils: Granite/Loam/Sand (brown/orange)
Vegetation Description: Jarrah – Marri Woodland		
Vegetation Condition: Very Good		
Observations: few weeds, low disturbances		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Corymbia calophylla</i>	3000	100		65
	<i>Eucalyptus marginata</i>	2700	100		10
Middle	na				
	na				
Lower	<i>Bossiaea puchella</i>	60	100		20
	<i>Xanthorrhoea preissii</i>	100	100		3
	<i>Drosera glanduligera</i>				
	<i>Hibbertia hypericoides</i>				
	<i>Gompholobium knightianum</i>				
	<i>Banksia nivea</i>				
	<i>Burchardia congesta</i>				
	<i>Adenanthos barbiger</i>				
	<i>Drosera erythrorhiza</i>				

	<i>Hibbertia hypericoides</i>				
	<i>Pyrorchis nigricans</i>				
	<i>Kennedia coccinea</i>				
	<i>Gompolobium tomentosum</i>				
	<i>Lomandra ?purpurea</i>				
	<i>Bossiaea ornata</i>				
	<i>Conostylis setosa</i>				
	<i>Xanthosia atkinsoniana</i>				
	<i>Bossiaea eriocarpa</i>				
	<i>Lepidosperma pubisquameum</i>				
	<i>Lepidosperma leptostachyum</i>				
	<i>Lepidosperma ?tenue</i>				
	<i>Morelotia octandra</i>				
	<i>Haemodorum sp</i>				
	<i>Gompholobium knightianum</i>				
	<i>Amphipogon amphipogonoides</i>				
Opp	<i>Hemiandra pungens</i>				
Opp	<i>Desmocladius flexuosus</i>				
Opp	<i>Laxmannia squarrosa</i>				
Opp	<i>Conostylis setosa</i>				
	<i>Persoonia elliptica</i>				

Del Botanics

FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Coppin Rd Structure Plan Area, Mundaring	Date: 4/11/2022	Site: Q6
GPS Datum: 0420333 6470735	Topography: Mid Slope	Litter cover: 30 % twigs, 80 % leaves 10% logs
Age since fire: >10 yrs	Disturbance: Hi Med Lo	Soils: Granite/Loam/Sand (brown/orange)
Vegetation Description: Jarrah – Marri Woodland		
Vegetation Condition: Good		
Observations: few weeds, historic disturbances		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Corymbia calophylla</i>	2000	90	10	75
	<i>Eucalyptus marginata</i>	2000	100		12
Middle	<i>Xanthorrhoea preissii</i>	120	50	50	4
	<i>Bossiaea puchella</i>	60	80	20	7
Lower	<i>Scaevola calliptera</i>	15	100		3
	<i>Lechenaultia biloba</i>	30	100		2
	<i>Banksia grandis</i>				
	<i>Bossiaea ornata</i>				
	<i>Leucopogon verticillatus</i>				
	* <i>Briza maxima</i>				
	<i>Banksia nivea</i>				
	<i>Thysanotus sparteus</i>				

	<i>Thelymitra macrophylla</i>				
	<i>Kennedia coccinea</i>				
	* <i>Oxalis pes-caprae</i>				
	<i>Lomandra purpurea</i>				
	<i>Pentapeltis peltigera</i>				
	<i>Adenanthos barbiger</i>				
	* <i>Taraxacum khatoonae</i>				
	<i>Conostylis setosa</i>				
	<i>Lomandra ?caespitosa</i>				
	<i>Trichocline spathulata</i>				
	<i>Tetrarrhena laevis</i>				
	<i>Xanthorrhoea gracilis</i>				
	<i>Lomandra ?nigricans</i>				
	<i>Lepidosperma tenue</i>				
	<i>Gompholobium knightianum</i>				
	<i>Lomandra ?preissii</i>				
	* <i>Freesia alba</i> × <i>leichtlinii</i>				
opp	* <i>Acacia iteaphylla</i>				
	<i>Thelymitra crinita</i>				

Del Botanics

FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Coppin Rd Structure Plan Area, Mundaring	Date: 24/09//2021	Site: R1
GPS Datum: 0420030 6470431	Topography: Flat	Litter cover: 10 % twigs, 50 % leaves 10% logs
Age since fire: >10 yrs	Disturbance: Hi Med Lo	Soils: Peaty sand (brown/orange)
Vegetation Description: 2 Jarrah – Marri Woodland		
Vegetation Condition: Degraded – Completely Degraded		
Observations: High number of weeds, no structure, low number of native flora species		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
	<i>Eucalyptus marginata</i>				
	<i>Corymbia calophylla</i>				
	<i>Burchardia congesta</i>				
	* <i>Freesia alba</i> × <i>leichtlinii</i>				
	<i>Bossiaea puchella</i>				
	<i>Lepidosperma leptostachyum</i>				
	<i>Lepidosperma pubisquameum</i>				
	* <i>Briza maxima</i>				
	* <i>Chamaecytisus palmensis</i>				
	<i>Caesia micrantha</i>				
Opp	* <i>Moraea flaccida</i>				
Opp	* <i>Oxalis glabra</i>				
Opp	* <i>Ehrharta calycina</i>				

Del Botanics

FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Coppin Rd Structure Plan Area, Mundaring	Date: 24/09//2021	Site: R2
GPS Datum: 0420281 6470618	Topography: Mid Slope	Litter cover: 10 % twigs, 30 % leaves 10% logs
Age since fire: >10 yrs	Disturbance: Hi Med Lo	Soils: Clay/Loam (brown/orange)
Vegetation Description: 2 Jarrah – Marri Woodland		
Vegetation Condition: Very Good (only in a small section)		
Observations: few weeds, low disturbances		









Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
	<i>Eucalyptus marginata</i>				
	<i>Corymbia calophylla</i>				
	<i>Xanthorrhoea preissii</i>				
	<i>Daviesia decurrens</i>				
	<i>Bossiaea preissii</i>				
	<i>Burchardia congesta</i>				
	<i>Bossiaea ornata</i>				
	<i>Lechenaultia biloba</i>				
	<i>Gompholobium knightianum</i>				
	<i>Macrozamia riedlei</i>				
	<i>Hibbertia hypericoides</i>				
	<i>Acacia drummondii</i>				
	<i>Patersonia occidentalis</i>				
	* <i>Briza maxima</i>				
	<i>Lepidosperma leptostachyum</i>				



	<i>Platysace compressa</i>				
	<i>Banksia nivea</i>				
	<i>Xanthorrhoea brunonis</i>				
	<i>Scaevola calliptera</i>				
	<i>Drosera erythrorhiza</i>				
	<i>Conostylis setosa</i>				
	<i>Lepidosperma pubisquameum</i>				
	<i>Opercularia echinocephala</i>				
	<i>Lomandra ?purpurea</i>				
	<i>Drosera macrantha</i>				



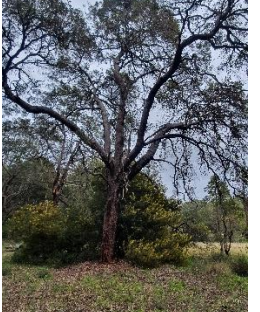
APPENDIX C

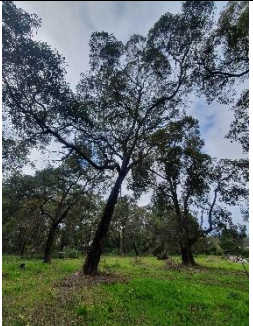


POTENTIAL BLACK COCKATOO HABITAT TREE DATA




Tree No.	Photo	Tree species	Location (Eastings/Nor things) WG84 (50)	Health (Very Good, Good, Stressed, Dead)	Approx. height (m)	DBH (mm)	Hollows	Comments
1		<i>Eucalyptus marginata</i>	0419983 6470545	Good	25	703.82	Nil	
2		<i>Corymbia calophylla</i>	0420002 6470551	Good	25	891.72	Nil	
3		<i>Corymbia calophylla</i>	0420003 6470534	Good	27	831.21	Nil	




Tree No.	Photo	Tree species	Location (Eastings/Nor things) WG84 (50)	Health (Very Good, Good, Stressed, Dead)	Approx. height (m)	DBH (mm)	Hollows	Comments
4		<i>Eucalyptus marginata</i>	0419998 6470528	Good	30	1503.18	Nil	
5		<i>Corymbia calophylla</i>	0419991 6470502	Good	25	831.21	Nil	
6		<i>Eucalyptus marginata</i>	0420004 6470410	Good	25	821.66	Nil	




Tree No.	Photo	Tree species	Location (Eastings/Nor things) WG84 (50)	Health (Very Good, Good, Stressed, Dead)	Approx. height (m)	DBH (mm)	Hollows	Comments
7		<i>Corymbia calophylla</i>	0149889 6470469	Good	27	834.39	Nil	Canker
8		<i>Corymbia calophylla</i>	0420052 6470545	Stressed	28	971.34	Nil	Canker


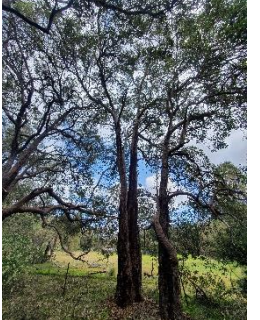

9		<i>Corymbia calophylla</i>	0420126 6470493	Stressed	25	901.27		1 x Small
10		<i>Corymbia calophylla</i>	0420107 6470459	Stressed	30	1433.12	Nil	Baudin's Cockatoo Canker
11		<i>Corymbia calophylla</i>	0420098 6470442	Stressed	30	888.54	Nil	


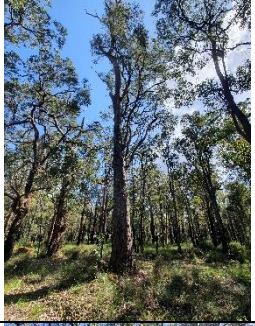

12		<i>Corymbia calophylla</i>	0420104 6470404	Good	30	964.97	Nil	
13		<i>Corymbia calophylla</i>	0420093 6470398	Good	30	1054.14	Nil	Termites
14		<i>Corymbia calophylla</i>	0420080 6470418	Good	31	1009.55	3 x Small	




15		<i>Corymbia calophylla</i>	0420080 6470430	Good	31	968.15	Nil	
16		<i>Corymbia calophylla</i>	0420087 6470446	Good	30	805.73	1 x Medium 1 x Small	
17		<i>Corymbia calophylla</i>	0420059 6470458	Good	25	1028.66	Nil	Canker in main trunk




18		<i>Corymbia calophylla</i>	0420046 6470456	Good	30	891.72	Nil	
19		<i>Corymbia calophylla</i>	0420047 6470428	Good	32	824.84	Nil	
20		<i>Corymbia calophylla</i>	0420062 6470416	Good	33	1257.96	Nil	




21		<i>Corymbia calophylla</i>	0420060 6470414	Good	30	853.50	Nil	Canker in main trunk
22		<i>Eucalyptus marginata</i>	0420047 6470401	Stressed	30	847.13	1 x Small	Canker
23		<i>Corymbia calophylla</i>	0420132 6470474	Good	27	987.26	1 x Medium 1 X Small	




24		<i>Corymbia calophylla</i>	0420130 6470513	Good	30	821.66	Nil	
25		<i>Eucalyptus marginata</i>	0420131 6470517	Good	30	990.45	Nil	
26		<i>Eucalyptus marginata</i>	0420135 6470554	Dead	25	831.21	1 x Large 1x Medium	




27		<i>Eucalyptus marginata</i>	0420150 6470556	Good	25	824.84	2 x Large	
28		<i>Eucalyptus marginata</i>	0420164 6470565	Good	30	907.64	1 x Large, 1 x Medium 3 x Small	
29		<i>Eucalyptus marginata</i>	0420185 6470524	Good	34	987.26	1 x Large	




30		<i>Eucalyptus marginata</i>	0420182 6470519	Good	34	843.95	1 x Large 1 x Small	
31		<i>Eucalyptus marginata</i>	0420192 6470509	Good	34	1121.02	1 x Medium	One side of trunk good, one side dead
32		<i>Eucalyptus marginata</i>	0420155 6470494	Good	33	1038.22	1 x Medium 1 x Small	




33		<i>Eucalyptus marginata</i>	0420154 6470472	Good	33	843.95	2 x Medium	
34		<i>Corymbia calophylla</i>	0402166 6470467	Good	25	936.31	1 x Large	
35		<i>Eucalyptus marginata</i>	0420170 6470464	Good	32	796.18	1 x Medium	

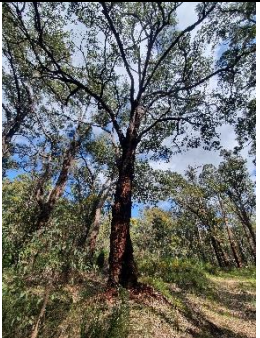


36		<i>Eucalyptus marginata</i>	0420186 6470467	Good	33	923.57	1 x Medium 1 x Small	Adjacent tree (617mm) has hollows
37		<i>Eucalyptus marginata</i>	0420186 6470480	Good	30	831.21	1 x Large 1 x Small	
38		<i>Corymbia calophylla</i>	0420191 6470490	Good	30	799.36	Nil	




39		<i>Corymbia calophylla</i>	0420190 6470563	Good	35	812.10	Nil	
40		<i>Eucalyptus marginata</i>	0420234 6470448	Good	32	815.29	1 x Large 1 x Medium	
41		<i>Eucalyptus marginata</i>	0420221 6470459	Good	30	1098.73	1 x Large 3 x Medium 1 x Small	




42		<i>Corymbia calophylla</i>	0420003 6470606	Good	27	1197.45	Nil	
43		<i>Corymbia calophylla</i>	0420022 6470563	Good	35	1015.92	1 x Small	
44		<i>Corymbia calophylla</i>	0420038 6470562	Good	35	828.03	Nil	




45		<i>Corymbia calophylla</i>	0420046 6470563	Good	35	818.47	Nil	Canker on main trunk
46		<i>Corymbia calophylla</i>	0420049 6470595	Good	35	840.76	Nil	
47		<i>Corymbia calophylla</i>	0420045 6470608	Good	33	859.87	Nil	




48		<i>Corymbia calophylla</i>	0420066 6470563	Good	35	1213.38	Nil	
49		<i>Eucalyptus marginata</i>	0420083 6470561	Good	35	872.61	Nil	
50		<i>Eucalyptus marginata</i>	0420217 6470560	Good	35	815.29	Nil	




51		<i>Corymbia calophylla</i>	0420223 6470567	Good	32	847.13	1 x Medium 1 x Small	European Bee's using hollows
52		<i>Corymbia calophylla</i>	0420043 6470688	Good	34	872.61	Nil	
53		<i>Corymbia calophylla</i>	0419968 6470568	Good	32	824.84	Nil	




54		<i>Corymbia calophylla</i>	0420255 6470647	Very Good	35	805.73	Nil	
55		<i>Corymbia calophylla</i>	0420307 6470565	Very Good	32	993.63	Nil	
56		<i>Corymbia calophylla</i>	0420319 6470583	Very Good	35	1235.67	2 x Medium 1 x Small	

57		<i>Corymbia calophylla</i>	0420330 6470564	Very Good	35	1509.55	4 x Large 1 x Medium	European Bee's
58		<i>Corymbia calophylla</i>	0420342 6470596	Very Good	35	1130.57	1 x Large 1 x Medium 2 x Small	
59		<i>Corymbia calophylla</i>	0420350 6470606	Very Good	35	1050.96	Nil	

60		<i>Corymbia calophylla</i>	0420327 6470604	Very Good	30	974.52	Nil	
61		<i>Corymbia calophylla</i>	0420309 6470686	Very Good	35	910.83	Nil	
62		<i>Eucalyptus marginata</i>	0420306 6470695	Dead	22	748.41	3 x Large	

63		<i>Corymbia calophylla</i>	0420249 6470627	Good	30	834.39	Nil	
64		<i>Corymbia calophylla</i>	0420298 6470668	Very Good	32	990.45	Nil	
65		<i>Corymbia calophylla</i>	0420303 6470668	Very Good	32	828.03	Nil	

66		<i>Corymbia calophylla</i>	0420302 6470683	Very Good	32	1108.28	3 x Medium	Hollows are being used
67		<i>Eucalyptus marginata</i>	50 J 420325.36 6470740.511	Very Good	30	974.52	na	na
68		<i>Corymbia calophylla</i>	50 J 420354.51 6470726.475	Dead	15	853.50	2 large	bees

69		<i>Corymbia calophylla</i>	50 J 420306.96 6470696.665	Degraded	25	808.92	2 small	main trunk dead
70		<i>Eucalyptus marginata</i>	50 J 420308.49 6470793.359	Good	3100	987.26	1 large	na
71		<i>Eucalyptus marginata</i>	50 J 420296.55 6470819.804	Good	25	1168.79	4 large	na

NB: Each tree's health is determined by the condition of the leaves, bark and observations of any diseases or notable disturbances of the tree.

Hollows	Information
Large Hollow	20-25cm entrance
Medium Hollow	10-20cm entrance
Small Hollow	5-10cm entrance

Tree Health	Information
Very Good	Tree overall health is excellent
Good	Tree presents minor signs of stress
Degraded/Stressed	Tree has some markers of its health deteriorating
Dead	Tree has no alive branches

APPENDIX D

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