Detailed Flora and Vegetation Survey and Black Cockatoo Habitat Assessment

Daddow Road, Warralakin, 2025.



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EXECUTIVE SUMMARY

This report has been prepared by Del Botanics Environmental Consulting on behalf of Q Krete Pty Ltd to present the results of a spring Detailed Flora and Vegetation survey adjacent to Daddow Road, Warralakin. The location of the site is shown on **Figures 1** and **2.**

The recent Flora and Vegetation Assessment undertaken in the area described above identified 46 flora species, with 15% represented by weed species. The vegetation condition is "Very Good".

One vegetation community was recorded at a local level during the survey. No species of Threatened (T), or Priority Flora or Threatened Ecological Communities (TECs) pursuant to the *Biodiversity Conservation* (BC) *Act*, 2016 and the *Environment Protection and Biodiversity Conservation* (EPBC) *Act*, 1999 were located *during* the time of the survey.

One Suitable Black Cockatoo Habitat Tree was recorded on site. No evidence of Black Cockatoo foraging (chewed nuts) was recorded in the survey area.

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 Environmental Consulting 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 Environmental Consulting 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 Environmental Consulting 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 Environmental Consulting 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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1. INTRODUCTION

1.1 BACKGROUND

This report has been prepared by Del Botanics Environmental Consulting on behalf of Q Krete Pty Ltd, to present the results of a spring Detailed Flora and Vegetation survey adjacent to Daddow Road, Warralakin. The location of the site is shown on **Figures 1** & **2**. The site is approximately 340 kilometres northeast of the Perth central area and 73.5km northeast of Merredin.

The botanical survey of the flora species and vegetation and the potential Black Cockatoo Habitat Assessment was undertaken on 25th November 2025.

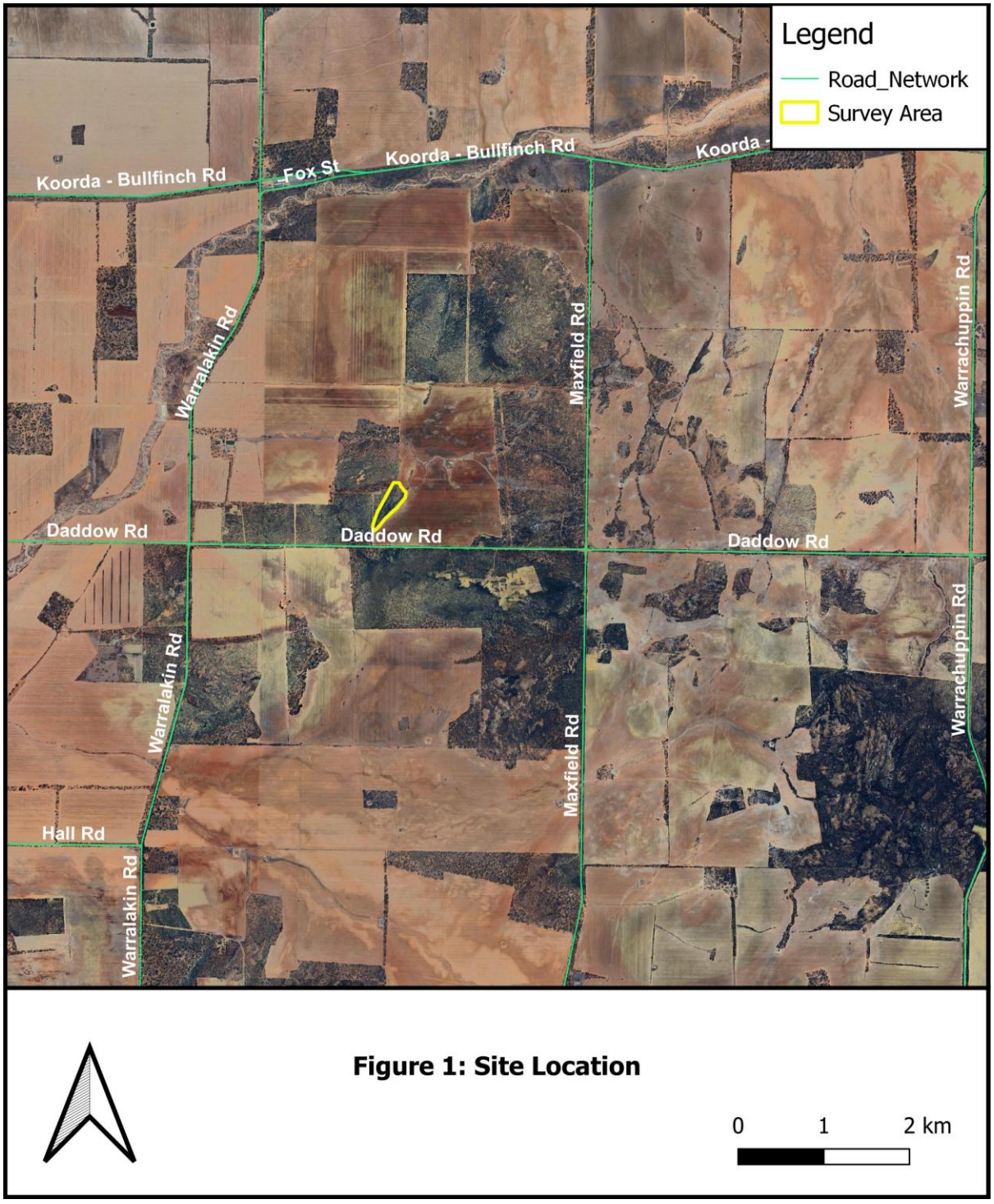


Figure 1: Site Location

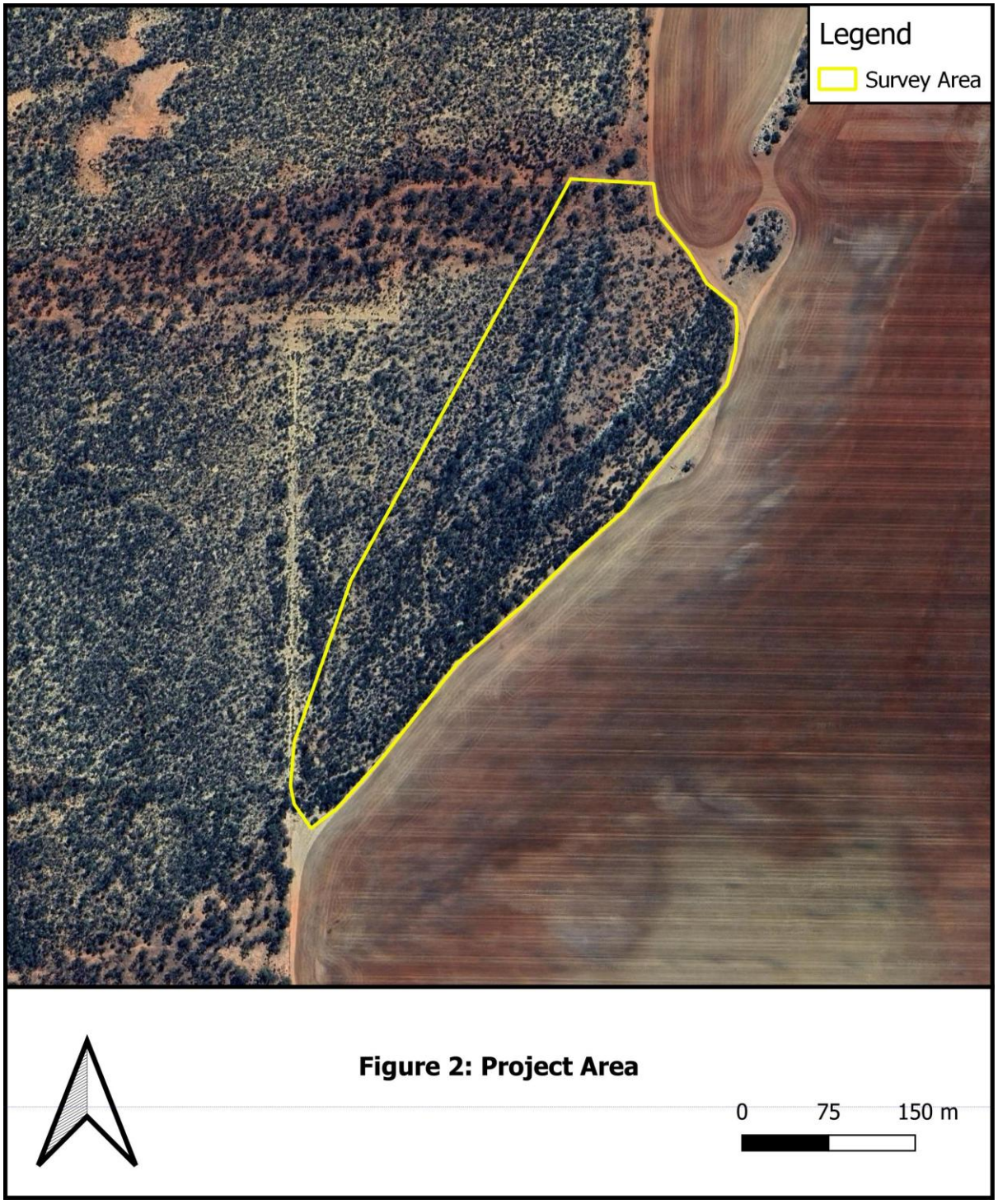


Figure 2: Project Area

1.2 PURPOSE OF THIS REPORT

This report was prepared to present the results of the Flora and Vegetation Survey undertaken within the area described above. The flora species and vegetation were used to determine the significance of the site. In summary this report provides:

- A Department of Biodiversity, Conservation and Attractions (DBCA) Threatened Flora (T), Threatened Ecological Communities (TECs) and Black Cockatoo database search;

- A Department of Climate Change, Energy, the Environment and Water (DCCEEW) database search;
- A spring botanical survey;
- An assessment of vegetation communities and conditions; and
- A Black Cockatoo Habitat Assessment.

2. EXISTING ENVIRONMENT

2.1 LANDFORM, TOPOGRAPHY AND SOILS

The Avon Wheatbelt is an area of active drainage dissecting a Tertiary plateau in Yilgarn Craton. The Yilgarn block is bounded by the Darling Fault in the west and by the greenstone belts of the Southern Cross and Murchison districts in the east. It has a gently undulating landscape of low relief, with proteaceous scrub heaths, rich in endemics, on residual lateritic uplands and derived sandplains with mixed Eucalypt, *Allocasuarina huegeliana* and Jam-York Gum woodlands (Beecham, 2001).

Within this bioregion is an ancient peneplain with low relief and gently undulating landscape. There is no connected drainage and salt lake chains occur as remnants of ancient drainage systems which only function in very wet years. Lateritic uplands are dominated by yellow sandplain (Department of Agriculture and Food WA, 2012). The Wheatbelt landscape creates a mosaic of plant habitats that include open woodlands, gravely or sandy heaths, extensive salt lakes and the specialised habitats associated with granite outcrops (Beecham, 2001).

Soil-landscape system mapping of Western Australia describes broad soil and landscape characteristics from regional to local scales. The survey area is within the Northern Zone of Ancient Drainage. The Northern Zone of Ancient Drainage is described as an ancient plain with low relief on weathered granite.

2.2 VEGETATION

The survey area lies in the Avon Botanical District, in the eastern central Wheatbelt Region of the Southwest Botanical Province as described by Beard (1981, 1990). The Avon Botanical System comprises of scrub heath on sandplains, Acacia-Casuarina thickets on ironstone, woodlands of York Gum (*Eucalyptus loxophleba*), Salmon Gum (*Eucalyptus salomonphloia*) and Wandoo (*Eucalyptus wandoo*) on loams and halophytes on saline soils (Beard 1981).

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 Avon Wheatbelt (AVW) subregion. This subregion is characterised by proteaceous scrub heaths, rich in endemics, on residual lateritic uplands and derived sandplains of

mixed Eucalypt, *Allocasuarina huegeliana* and Jam-York Gum woodlands on Quaternary alluvials and eluvials (DCCEEW, 2024).

3. CLIMATE

The southwest of Australia experiences a Mediterranean climate, with cool wet winters and hot dry summers. The nearest weather station to the survey area is 52.6 km away at the Merredin station (Site 010092). The average annual rainfall for the area recorded between 1903 and 2026 is 324.6mm, with the highest monthly rainfall experienced in June, July and August (Bureau of Meteorology, 2026).

The average monthly maximum temperature ranges from 16.4 °C in July to 34.1 °C in January. Average monthly minimum temperatures range from 5.6 °C in July to 18.1 °C in February, from 1966 to 2025 (Bureau of Meteorology, 2026).

Mean maximum temperature (°C) for years 1903 to 2026 and Mean rainfall (mm) for years 1966 to 2026 is presented in **Figure 3** below (Bureau of Meteorology, 2026).

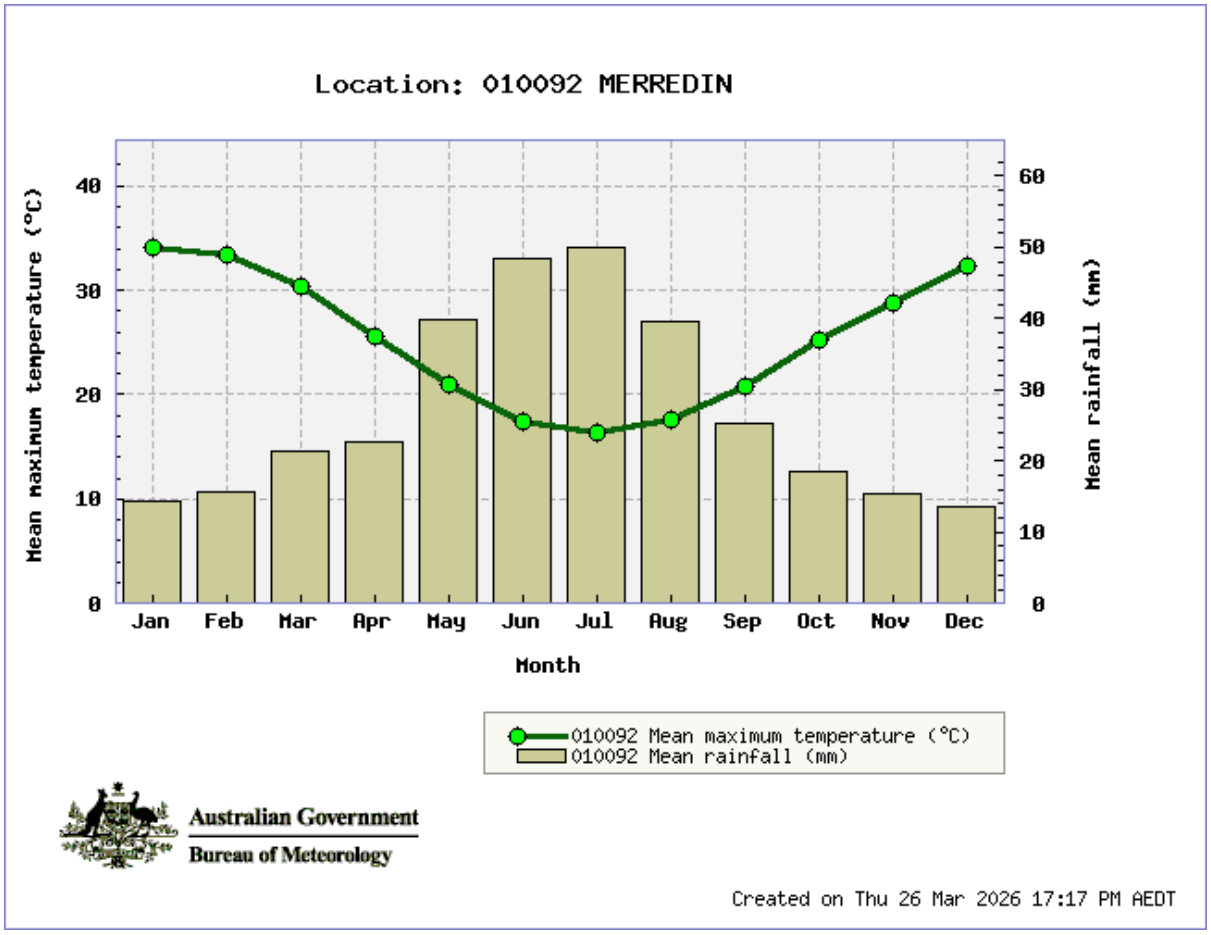


Figure 3: Mean maximum temperature (°C) and Mean rainfall (mm)

4. FLORA AND VEGETATION ASSESSMENT

4.1 VEGETATION METHODS

A Detailed Flora and Vegetation Survey was undertaken on the 25th November 2025. The site was surveyed for flora species including the potential to support Threatened Flora (T), Priority Flora (PF), potential areas of Threatened Ecological Communities (TECs) 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, five quadrats were assembled to record the 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.

4.2 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 and vegetation communities. 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 Threatened and Priority Flora Species (DEC 2012)

Conservation Code	Category
T	**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. **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
X	**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.
P1	**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.
P2	**Priority Two: Poorly known species** Species that are known from one or a few collections or sight records, some of which are on land 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.
P3	**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.
P4	**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.
P5	**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

4.2.1 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 2** below.

Table 2: Categories of Threatened Species (EPBC Act, Section 179, 1999)

1	**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.
2	**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.
3	**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.
4	**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.
5	**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.
6	**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.

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

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 3**. The search was conducted within a 10km radial area from the central coordinate.

Table 3: DBCA Threatened and Priority Flora Search Results

Taxon	Conservation Status DBCA	EPBC	Likely to occur onsite	Survey undertaken in flowering time
Acacia ascendens	2		Yes	No
Acacia crenulate	3		Yes	No
Acacia cylindrica	3		No	No
Acacia lobulate	T	EN	Yes	No
Arthropodium sp. Yenyenning	1		No	Yes
Balaustion mukinbudin	3		No	Yes
Calytrix plumulosa	3		No	Yes
Dampiera scaevolina	1		No	Yes
Darwinia sp. Chiddarcooping	4		Yes	Yes
Eremophila complanata	2		No	No
Eremophila resinosa	T	EN	No	Yes
Eremophila virens	T	EN	Yes	Yes
Eremophila viscida	T	EN	Yes	Yes
Eucalyptus brevipes	T		No	No
Eucalyptus caesia subsp. *magna*	4		Yes	No
Eucalyptus crucis subsp. *crucis*	T	EN	No	Yes
Goodenia granitica	2		No	Yes
Grevillea minutiflora	1		No	No
Grevillea squiresiae	1		Yes	Yes
Hakea rigida	2		No	No
Hemigenia dulcis	1		No	Yes
Hibbertia graniticola	3		Yes	Yes
Lasiopetalum fitzgibbonii	3		Yes	Yes
Lechenaultia galactites	3		No	No
Leucopogon sp. Yanneymooning	3		Yes	No
Melaleuca sciotostyla	T	EN	Yes	No
Myriophyllum lapidicola	T	EN	No	No
Stylidium chiddarcoopingense	2		Yes	No
Tecticornia sp. Lake Wallambin	1		No	No
Verticordia mitodes	3		No	Yes

4.2.3 Department of Climate Change, Energy, the Environment and Water (DCCEEW) Flora Search

In addition to the background search undertaken through the DBCA, a Department of Climate Change, Energy, the Environmental and Water (DCCEEW) Protected Matters search was undertaken. The DCCEEW Protected Matters Tool was undertaken within a 5km radius of the site. The search result noted ten flora species of significance likely to occur in the area. These species are listed in **Table 4** below.

Table 4: DCCEEW Protected Matters Threatened and Priority Flora Search Results

Species Name	Conservation Code	Likely to occur onsite	Survey undertaken in flowering time
Banksia dolichostyla	Vulnerable (listed as *Banksia sphaerocarpa* var. *dolichostyla*)	Yes	No
Boronia adamsiana	Vulnerable	Yes	No
Dasymalla axillaris	Critically Endangered	No	Yes
Eremophila resinosa	Endangered	No	Yes
Eremophila virens	Endangered	Yes	Yes
Eremophila viscida	Endangered	Yes	Yes
Eucalyptus brevipes	Endangered	No	No
Eucalyptus crucis subsp. *crucis*	Vulnerable	No	Yes
Gastrolobium diabolophyllum	Critically Endangered	No	No
Roycea pycnophylloides	Endangered	No	No

4.3 THREATENED ECOLOGICAL COMMUNITIES

In Western Australia Threatened Ecological Communities (TECs) are assessed through a procedure coordinated by the DBCA and are assigned to one of the categories outlined below in **Table 5**. 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 TECs 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, 2*016 (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 of 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 5: 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 TECs, 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 Types (FCTs) as adopted by DBCA, however not all TECs listed by the DBCA are scheduled under the EPBC Act.

4.3.1 Department of Biodiversity, Conservation and Attractions (DBCA) TEC Database 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 TECs. The results noted three known TECs to occur within a 10km radial area from the central coordinate. This information is provided in **Table 6** below.

Table 6: DBCA listed Threatened Ecological Communities

Species Name	Conservation Code		Likely to occur on site
	DBCA	EPBC	
Eucalypt woodlands of the Western Australian Wheatbelt	Priority 3	Critically Endangered	No
Salmon Gum Woodlands of the wheatbelt	Priority 3	Critically Endangered	No
Red Morrel Woodlands of the Wheatbelt	Priority 1	Critically Endangered	No

4.3.2 Department of Climate Change, Energy, the Environment and Water (DCCEEW) TEC Database Search

In addition to the background search undertaken through the DBCA a search through the Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters was undertaken. The (DCCEEW) Protected Matters report indicated there is one known Threatened Ecological Community (TEC) likely to occur within a 5km radius of the area.

Table 7: DCCEEW listed Threatened Ecological Communities

Species Name	Conservation Code	Likely to occur on site
Eucalypt Woodlands of the Western Australian Wheatbelt	Critically Endangered	No

5. FLORA AND VEGETATION ASSESSMENT RESULTS

Quadrats were recorded in areas of the best vegetation condition within the site. This approach ensures all dominant species are recorded during the survey. A total of 46 taxa, comprising of 24 families and 39 genera were recorded within the survey area. A list of these species has been provided in **Appendix A**. Species representation was greatest among the Asteraceae and Poaceae families.

5.1 INTRODUCED SPECIES

Three introduced flora species were recorded within the survey area, shown in **Table 8** below. This represents 15% of the total number of flora species recorded within the survey area. No Weeds of National Significance (WoNS) were recorded during the survey. *Biosecurity and Agriculture Management* (BAM) *Act* 2007 definitions are provided in **Appendix C**.

Table 8: Introduced Flora Recorded in the Survey Area

Taxa	Common Name	BAM Act
**Aira caryophyllea*	Silvery Hairgrass	Permitted – s11
**Avena barbata*	Bearded Oat	Permitted – s11
**Ursinia anthemoides*	Ursinia	Permitted – s11

5.2 THREATENED AND PRIORITY FLORA

No flora, pursuant to the *Biodiversity Conservation* (BC) *Act*, 2016 or the *Environment Protection and Biodiversity Conservation* (EPBC) *Act*, 1999 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. A number of Threatened and Priority flora species listed in **Tables 3 & 4** have been acknowledged as likely to occur within the survey area, based on soil and vegetation composition. The botanical survey was undertaken in spring, while 70% of the species likely to occur were within their flowering period. No Targeted Search was undertaken as part of this survey.

5.3 THREATENED ECOLOGICAL COMMUNITIES

No Threatened Ecological Communities pursuant to the *Biodiversity Conservation* (BC) *Act*, 2016 or the *Environment Protection and Biodiversity Conservation* (EPBC) *Act*, 1999 were located during the time of the survey.

The Eucalypt Woodlands of the Western Australian Wheatbelt ecological community was recording as occurring within a 10km radius of the survey area, through the DBCA database search. However, the site assessment did not record the TEC as occurring within the survey area.

Eucalypt Woodlands do not include:

- Woodlands dominated by mallee trees.
- Non-eucalypt woodlands, e.g. with jam, sheoak, banksia.
- Woodlands limited to granite or rock outcrops and higher elevations
- Vegetation with a sparse tree canopy cover, under 10%.

- Isolated paddock trees, very small remnants and patches that are degraded and in poor low condition.

The survey area is dominated by mallee trees and non-eucalyptus woodland with a sparse tree canopy; the survey area consists of a granite outcrop at a high elevation. Therefore, Del Botanics Environmental Consulting concludes that the survey area does not contain the Eucalypt Woodlands of the Western Australian Wheatbelt TEC.

5.4 LOCAL VEGETATION COMMUNITIES

Vegetation structure recorded in each vegetation community is used to determine the coverage class as described below in **Table 9.** These vegetation structure classes are defined in the Technical Guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (2016).

Table 9: Vegetation Structure Classes

Life Form/ Height Class	Canopy Cover (percentage)			
	100% - 70%	70% - 30%	30% - 10%	10% - 2%
Trees 10-30m Trees < 10m	Closed Forest Low Closed Forest	Open Forest Low Open Forest	Woodland Low Woodland	Open Woodland Low Open Woodland
Shrub Mallee	Closed Shrub Mallee	Shrub Mallee	Open Shrub Mallee	Very Open Shrub Mallee
Shrubs > 2m Shrubs 1-2m Shrubs <1m	Closed Tall Scrub Closed Heath Closed Low Heath	Tall Open Scrub Open Heath Open Low Heath	Tall Shrubland Shrubland Low Shrubland	Tall Open Shrubland Open 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 within the survey area at a local level, which has been described below in **Table 10.** 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 10: Local Vegetation Community recorded within the survey area, Warralakin, November 2025.

Community Description
Vegetation Community 1 –*Allocasuarina campestris* shrubland
Open shrubland of *Allocasuarina campestris, Calothamnus gilesii* and *Grevillea paradoxa* over very open herbland of *Stypandra glauca* and *Waitzia acuminata* over very open grassland of *Monachather paradoxus* and *Enneapogon nigricans*

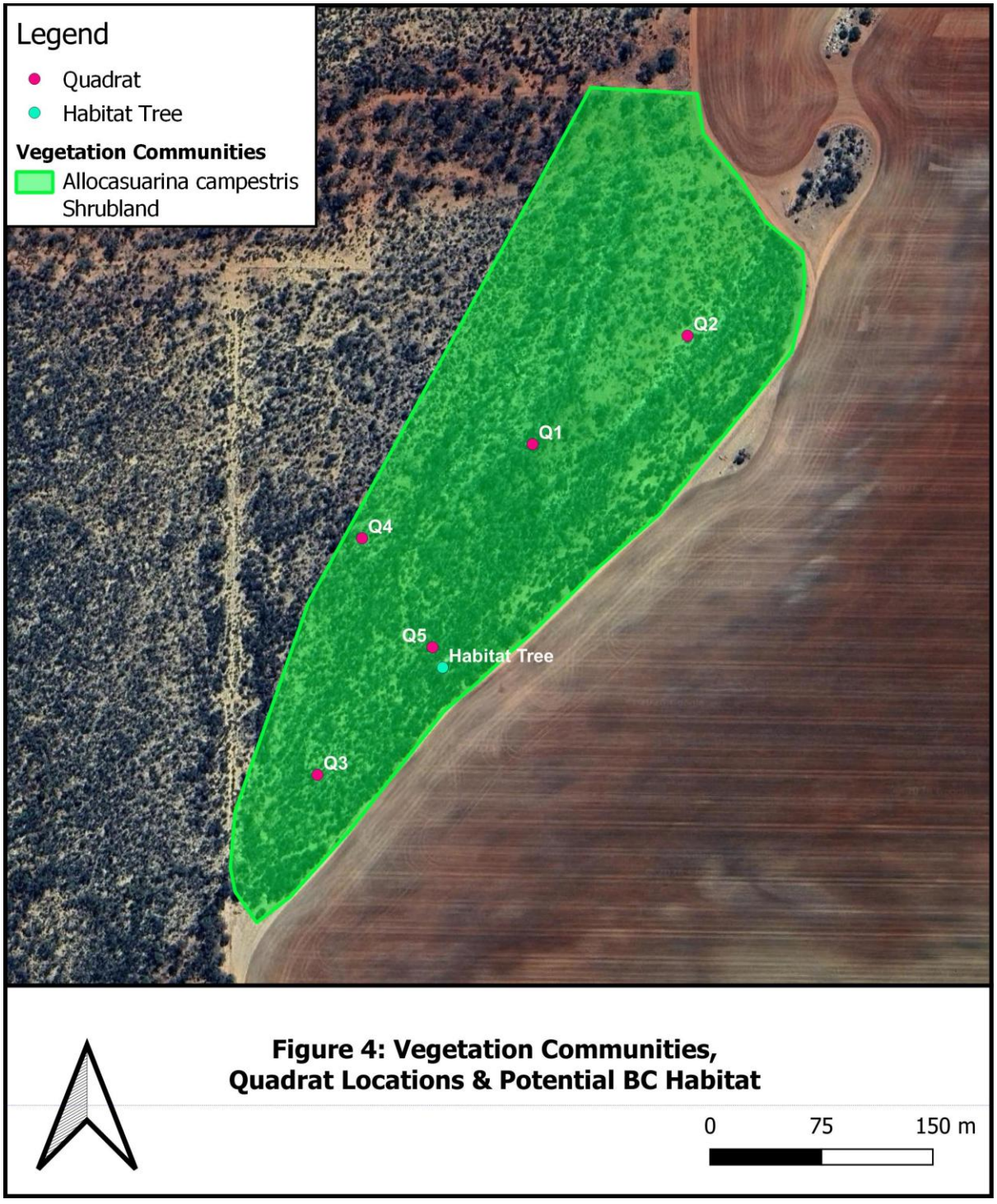


Figure 4: Vegetation Communities, Quadrat Locations & Potential BC Habitat

5.5 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 (Urban Bushland Council, 2018).

The site has had significant historic land disturbances, primarily for agriculture. The survey area is part of isolated remnants of vegetation, which have been retained on granite outcrops. The remnant vegetation is predominantly shrubland with no trees and a low weed density and diversity.

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 11** below. The vegetation condition recorded across the site was "Very Good". Vegetation condition mapping is provided on **Figure 5.**

Table 11: 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

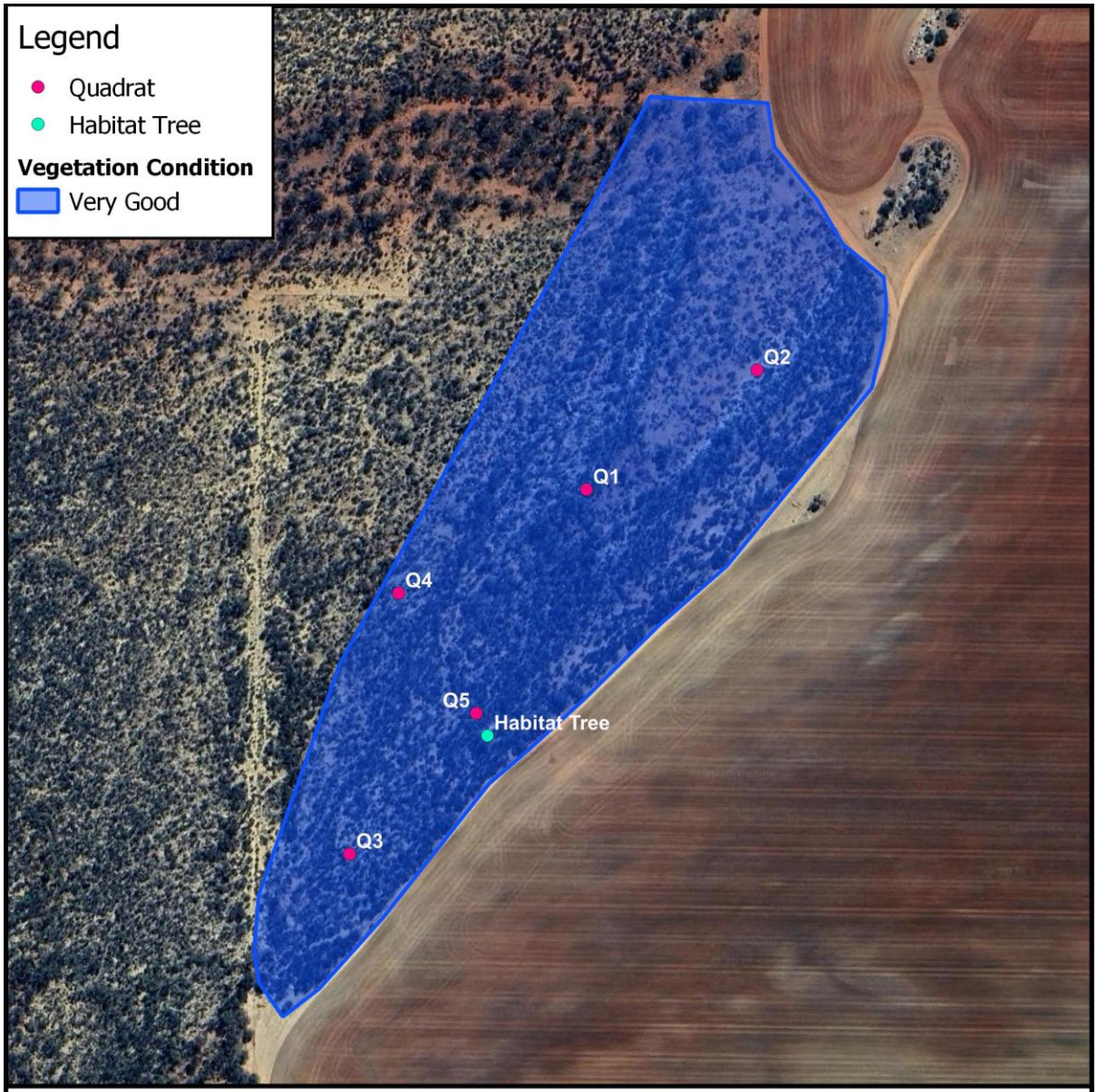


Figure 5: Vegetation Condition, Quadrat Locations & Potential BC Habitat

6. BLACK COCKATOO HABITAT ASSESSMENT

A Black Cockatoo Habitat Assessment was undertaken on the 25th of November 2025. The Black Cockatoo Habitat Assessment recorded all potentially significant Black Cockatoo Habitat Trees within the survey area, with a DBH of >500mm for Jarrah and Marri and >300mm DBH for Salmon Gum and Wandoo. The assessment includes categorising foraging habitat for the three WA Threatened Black Cockatoo species; Carnaby's Cockatoo (*Zanda latirostris*), Baudin's Cockatoo (*Zanda baudinii*) and Forest Red-tailed Black-cockatoo (*Calyptorhynchus banksii naso*).

The following information was collected for each native tree species within the survey area, with a minimum DBH of 500 mm (300mm for Salmon Gum and Wandoo).

- Tree number;
- Tree species;
- GPS Coordinates;
- DBH;
- Tree Health;
- Presence and size of hollows; and
- A photo of each tree.

6.1 FORAGING, ROOSTING AND BREEDING HABITAT

The survey area is outside the modelled breeding and foraging distribution for Baudin's Cockatoo (*Zanda baudinii*), outside of the known breeding distribution for Carnaby's Cockatoo (*Zanda latirostris*), and outside the modelled distribution for Forest Red-tailed Black-cockatoo (*Calyptorhynchus banksii naso*). The survey area lies within the Wheatbelt region. The following information was recorded from the survey area.

6.1.1 Foraging

High value foraging habitat is defined as those areas containing high densities of species that have historical and known records of regular consumption by Black Cockatoos. Medium value forage consists of vegetation dominated by flora species that Black Cockatoos have been recorded consuming only occasionally or those areas that have low densities of high value forage species. Low foraging areas are defined as areas of cleared vegetation, predominately paddocks in completely degraded condition. This includes isolated paddock trees with no native understorey. Areas catergorised as No forage contain no known forage value for the Black Cockatoo species.

The forage value recorded within the survey area consists of low to no quality forage. No evidence of Black Cockatoo foraging (chewed nuts) was recorded in the survey area.

6.1.2 Roosting

No signs of roosting were recorded during the survey, no field observations of piles of pruned branches, feathers or droppings were recorded.

DBCA database results identified no White-tailed Black Cockatoos (WTBC) (Baudin's or Carnaby's Cockatoo) or Forest Red-tailed Black Cockatoo (FRTBC) roosts recorded with a 100km radius of the survey area.

6.1.3 Breeding

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, or claws. Only old trees have hollows (CALM, 2005).

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). Each tree within the survey area was recorded with a GPS location and information was collected for each individual tree. Tree location is shown on **Figures 4 & 5** and information is provided in **Table 12**.

One Suitable Black Cockatoo Habitat Tree was recorded on site with a suitable DBH. Details are provided in **Table 12** below. No signs of use were noted during the survey.

DBCA database search results indicated there is one confirmed use of a natural hollow by FRTBCs approximately 50km northeast of the site and eight natural hollows potentially used by WTBCs, recorded approximately 48km southeast of the site. The DBCA Black Cockatoo database search radius was 100km from the survey area. Sightings of Carnaby's Cockatoo was recorded approximately 60km to the west of the survey area.

Table 12: Black Cockatoo Habitat Tree

Tree Number	Photo	Tree Species	Height (m)	Hollows	Health	Potential, Suitable, or Known	UTM
1		*Eucalyptus transcontinentalis*	20	1 large, 1 small	Very Good	Suitable	50 J 654664.71 m E 6563118.82 m S

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	< 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

7. CONCLUSION

The Detailed Flora and Vegetation survey adjacent to Daddow Road, Warralakin, identified a total of 46 taxa representing 39 genera and 24 families. Weed species comprised of 15% of the total flora recorded. The vegetation condition across the site is “Very Good”.

One vegetation community was recorded at a local level during the survey. Vegetation consisted of open shrubland of *Allocasuarina campestris, Calothamnus gilesii* and *Grevillea paradoxa* over very open herbland of *Stypandra glauca* and *Waitzia acuminata* over very open grassland of *Monachather paradoxus* and *Enneapogon nigricans.*

A number of Threatened and Priority flora species listed in **Tables 3 & 4** have been acknowledged as likely to occur within the survey area, based on soil and vegetation composition. The botanical survey was undertaken in spring while 70% of the species likely to occur were within their flowering period. No Targeted Search was undertaken as part of this survey.

No species of Threatened (T), or Priority Flora pursuant to the *Biodiversity Conservation* (BC) *Act* 2016 or the *Environment Protection and Biodiversity Conservation* (EPBC) *Act* 1999 were located during the time of the survey.

No Threatened Ecological Communities pursuant to the *Biodiversity Conservation* (BC) *Act* 2016 or the *Environment Protection and Biodiversity Conservation* (EPBC) *Act* 1999 were located during the time of the survey.

One Suitable Black Cockatoo Habitat Tree was recorded within the survey area. No signs of foraging by Black Cockatoos were observed during the survey. No evidence of recent or historical Black Cockatoo roosting or breeding activity was observed within the survey area. The results suggest that the survey area is not utilised by Black Cockatoos, as it provides limited forage and lacks suitable breeding and roosting trees. The survey area is outside the modelled distribution for Baudins, Carnaby's and Forest Red-tailed Black Cockatoos. Adjacent surrounding vegetation was not assessed as part of this survey.

8. REFERENCES

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APPENDIX A
VASCULAR PLANT SPECIES RECORDED

APPENDIX A:
VASCULAR PLANT SPECIES RECORDED WITHIN THE SURVEY AREA, WARRALAKIN, NOVEMBER 2025.
*(*Denotes a weed species)*

Apocynaceae	*Alyxia buxifolia*
Araliaceae	*Trachymene ?ornata*
Asparagaceae	*Dichopogon capillipes*
	Lomandra sp.
Asteraceae	**Ursinia anthemoides*
	Podolepis sp.
	Podotheca sp.
	Senecio ?multicaulis
	Waitzia acuminata
	Pterochaeta paniculata
	Asteraceae sp.1 (lack of identification material)
	Asteraceae sp.2 (lack of identification material)
	Asteraceae sp.3 (lack of identification material)
Boryaceae	*Borya sphaerocephala*
Casuarinaceae	*Allocasuarina campestris*
Chenopodiaceae	*Enchylaena tomentosa*
Cyperaceae	*Cyperaceae* sp.
	Cyperaceae sp. 2
Droseraceae	*Drosera macrantha*
Ericaceae	*Stypandra glauca*
Fabaceaea	*Acacia acuminata*
	Acacia coolgardiensis
Goodeniaceae	*Goodenia berardiana*
Haloragaceae	*Glischrocaryon ?flavescens*
Hemerocallidaceae	*Dianella revoluta*
Malvaceae	*Sida calyxhymenia*
Myrtaceae	*Calothamnus gilesii*
	Calothamnus sp.
	Eucalyptus loxophleba
	Melaleuca radula
Poaceae	*Spartochloa scirpoidea*
	**Aira caryophyllea*
	**Avena barbata*
	Austrostipa elegantissima
	Austrostipa sp.
	Enneapogon nigricans
	Triodia sp.
	Monochather paradoxus
Proteaceae	*Grevillea paradoxa*
Pteridaceae	*Cheilanthes austrotenuifolia*
Sapindaceae	*Dodonaea inaequifolia*
Scrophulariaceae	*Eremophila scoparia*
	Eremophila clarkei
Solanaceae	*Solanum lasiophyllum*
Stylidiaceae	*Stylidium* sp.

Thymelaeaceae *Pimelea* sp.

APPENDIX B
QUADRAT DATA

Del Botanics Environmental Consulting

FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Daddow Rd, Warralakin	**Date:** 25/11/2025	**Site:** Q1
GPS Datum: (50) 654725.24 m E 6563269.30 m S	**Topography:** Upper slope	**Litter cover:** 20 % twigs, 10 % leaves 30% logs
Age since fire: >10 yrs	**Disturbance:** Hi Med **Lo**	**Soils:** Clay (orange/brown) Quartz outcropping
Vegetation Description: *Allocasuarina campestris* shrubland		
Vegetation Condition: Very Good		
Observations:		



Coll No.		Taxon	Ht (cm)	% Alive	% Dead	% Cover
	Middle	*Eucalyptus loxophleba*	300	100		10
	Middle	*Allocasuarina campestris*	250	80	20	12
Sp1	Middle	*Grevillea paradoxa*	200	100		6
Sp2	Bottom	*Dodonaea inaequifolia*	200	100		4
	Bottom	*Stypandra glauca*	50	90	10	5
Sp3	Bottom	*Enneapogon nigricans*	40	100		3
	Bottom	*Waitzia acuminata*	15	100		3
	Bottom	*Cheilanthes austrotenuifolia*	15	50	70	4
		**Avena barbata*				
		**Ursinia anthemoides*				
		Dichopogon capillipes				
		Dianella revoluta				
		Austrostipa sp.				
		Austrostipa elegantissima				

Sp4		*Alyxia buxifolia*				
		Lomandra sp.				
Sp6		*Eremophila scoparia*				
Sp7		*Eremophila scoparia*				
Sp8		*Sida calyxhymenia*				
Sp5		*Spartochloa scirpoidea*				
Opp		*Enchylaena tomentosa*				
Sp9		*Acacia acuminata*				
		Senecio ?multicaulis				

Del Botanics Environmental Consulting

FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Daddow Rd, Warralakin	**Date:** 25/11/2025	**Site:** Q2
GPS Datum: (50) 654829.58 m E 6563342.35 m S	**Topography:** Upper slope	**Litter cover:** 30 % twigs, 10 % leaves 30% logs
Age since fire: >10 yrs	**Disturbance:** Hi **Med** Lo	**Soils:** Clay (orange/brown) Quartz outcropping
Vegetation Description: *Allocasuarina campestris* shrubland		
Vegetation Condition: Very Good		
Observations: High bare ground		



Coll No.		Taxon	Ht (cm)	% Alive	% Dead	% Cover
	Middle	*Allocasuarina campestris*	150	30	70	5
Sp2	Middle	*Dodonaea inaequifolia*	250	90	10	7
Sp7	Middle	*Eremophila scoparia*	200	100	0	4.5
Sp3	Bottom	*Enneapogon nigricans*	40	100	0	6
	Bottom	*Senecio ?multicaulis*	15	0	100	3
Sp8	Bottom	*Sida calyxhymenia*	15	50	50	5
Sp1		*Grevillea paradoxa*				
Sp9		*Acacia acuminata*				
Sp10		*Melaleuca radula*				
		Austrostipa sp.				
Sp5		*Spartochloa scirpoidea*				
		Dichopogon capillipes				
		Cheilanthes austrotenuifolia				
		**Aira caryophyllea*				

		Austrostipa elegantissima				
Opp		*Eucalyptus loxophleba*				
Sp11		*Monachather paradoxus*				
Opp		*Solanum lasiophyllum*				
Sp12		Asteraceae sp.1 (lack of identification material)				
Sp13		Asteraceae sp.2 (lack of identification material)				
Sp14		Asteraceae sp.3 (lack of identification material)				
Sp15		*Goodenia berardiana*				

Del Botanics Environmental Consulting

FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Daddow Rd, Warralakin	**Date:** 25/11/2025	**Site:** Q3
GPS Datum: (50) 654580.38 m E 6563046.53 m S	**Topography:** Mid slope	**Litter cover:** 20 % twigs, 30 % leaves 30% logs
Age since fire: >10 yrs	**Disturbance:** Hi Med **Lo**	**Soils:** Clay (orange/brown) Quartz outcropping
Vegetation Description: *Allocasuarina campestris* shrubland		
Vegetation Condition: Very Good		
Observations:		



Coll No.		Taxon	Ht (cm)	% Alive	% Dead	% Cover
	Middle	*Calothamnus gilesii*	200	100		4
	Middle	*Allocasuarina campestris*	150	80	20	12
Sp10	Middle	*Melaleuca radula*	150	100		3
Sp5	Bottom	*Spartochloa scirpoidea*	60	100		6.6
	Bottom	*Stypandra glauca*	100	100		3
Sp3	Bottom	*Enneapogon nigricans*	100	100		1
		Dichopogon capillipes				
		Austrostipa sp.				
		Borya sphaerocephala				
Sp1		*Grevillea paradoxa*				
Sp11		*Monachather paradoxus*				
Sp6		*Eremophila scoparia*				
		Waitzia acuminata				
Sp15		*Goodenia berardiana*				

		Austrostipa elegantissima				
Sp8		*Sida calyxhymenia*				
Sp17		*Glischrocaryon ?flavescens*				
Sp18		*Eremophila clarkei*				
Sp19		*Pimelea* sp.				
		**Aira caryophyllea*				
Sp20		Cyperaceae sp. 2				
		Stylidium sp.				
Opp		*Eucalyptus loxophleba*				
		Solanum lasiophyllum				

Del Botanics Environmental Consulting

FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Daddow Rd, Warralakin	**Date:** 25/11/2025	**Site:** Q4
GPS Datum: (50) 654610.45 m E 6563205.95 m S	**Topography:** Mid slope	**Litter cover:** 20 % twigs, 30 % leaves 30% logs
Age since fire: >10 yrs	**Disturbance:** Hi Med **Lo**	**Soils:** Clay (orange/brown) Quartz outcropping
Vegetation Description: *Allocasuarina campestris* shrubland		
Vegetation Condition: Very Good		
Observations: Low disturbances, low weeds		



Coll No.		Taxon	Ht (cm)	% Alive	% Dead	% Cover
	Middle	*Allocasuarina campestris*	150	50	50	2
Sp21	Middle	*Acacia coolgardiensis*	200	60	40	30
Sp1	Middle	*Grevillea paradoxa*	100	100		1
Sp3	Bottom	*Enneapogon nigricans*	60	100		12
	Bottom	*Waitzia acuminata*	40	50	50	10
	Bottom	*Stypandra glauca*	60	100		1
Opp		*Eucalyptus loxophleba*				
Sp16		*Calothamnus gilesii*				
		Dichopogon capillipes				
		Triodia sp.				
		**Aira caryophyllea*				
Sp22		*Pterochaeta paniculata*				
Sp2		*Dodonaea inaequifolia*				
Sp15		*Goodenia berardiana*				

		Austrostipa elegantissima				
		Dianella revoluta				
		Senecio ?multicaulis				
Sp8		*Sida calyxhymenia*				
Sp21		*Acacia coolgardiensis*				
Sp23		*Podolepis* sp.				

Del Botanics Environmental Consulting

FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Daddow Rd, Warralakin	**Date:** 25/11/2025	**Site:** Q5
GPS Datum: (50) 654657.90 m E 6563132.52 m S	**Topography:** Mid slope	**Litter cover:** 20 % twigs, 30 % leaves 30% logs
Age since fire: >10 yrs	**Disturbance:** Hi Med **Lo**	**Soils:** Clay (orange/brown) Quartz outcropping
Vegetation Description: *Allocasuarina campestris* shrubland		
Vegetation Condition: Very Good		
Observations: Low disturbances, low weeds		



Coll No.		Taxon	Ht (cm)	% Alive	% Dead	% Cover
	Middle	*Allocasuarina campestris*	200	95	15	50
Sp1	Middle	*Grevillea paradoxa*	150	100		6
Sp16	Middle	*Calothamnus gilesii*	200	100		1
	Bottom	*Waitzia acuminata*	15	50	50	3
	Bottom	*Stypandra glauca*	60	100		2
Sp5	Bottom	*Spartochloa scirpoidea*	60	100		4
		Dichopogon capillipes				
		Cheilanthes austrotenuifolia				
		Senecio ?multicaulis				
Sp15		*Goodenia berardiana*				
		Austrostipa sp.				
Sp3		*Enneapogon nigricans*				
Sp23		*Podolepis* sp.				
Sp11		*Monachather paradoxus*				

		Austrostipa elegantissima				
		**Aira caryophyllea*				
		Drosera macrantha				
Sp1		*Trachymene ?ornata*				

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