

TARGETED FLORA AND BLACK-COCKATOO FORAGING HABITAT ASSESSMENT

LAKE INDOON / ENEABBA-COOLIMBA ROAD INTERSECTION

MAIN ROADS WESTERN AUSTRALIA

DECEMBER 2023

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EXECUTIVE SUMMARY

Main Roads Western Australia (Main Roads) commissioned Focused Vision Consulting Pty Ltd (FVC) to undertake and report on a targeted flora and Black-Cockatoo foraging habitat quality assessment for proposed clearing and/or pruning of vegetation within the Eneabba-Coolimba Road reserve at the entrance of the Lake Indoon campsite.

The key findings and conclusions arising from the targeted flora and Black-Cockatoo foraging habitat assessment within the survey area are as follows:

- No Threatened flora under the *Biodiversity and Conservation Act 2016* (BC Act) or under the *Environment Protection and Biodiversity Conservation* Act *1999* (EPBC Act) were recorded.
- One Priority flora listed by the Department of Biodiversity, Conservation and Attractions (DBCA), *Banksia elegans* (Priority 4) was recorded within the proposed clearing area and the larger survey area.
- The proposed clearing area and survey area contain 'moderate' quality foraging habitat for Carnaby's Black-Cockatoo.
- Based on the findings of desktop assessment, combined with field observations, it is considered that Carnaby's Black-Cockatoo is likely to utilise the survey area for foraging.

1 INTRODUCTION

1.1 BACKGROUND

To improve the sightline safety of motorists turning out of the entrance to Lake Indoon Campsite onto Eneabba-Coolimba Road, Main Roads Western Australia (Main Roads) requires clearing and/or pruning of vegetation within the Eneabba-Coolimba Road reserve. Clearing and/or pruning works of an area approximately 0.144 hectare (ha) are proposed to be undertaken in February/March 2024.

To assess the vegetation proposed for clearing and/or pruning, Main Roads commissioned Focused Vision Consulting Pty Ltd (FVC) to undertake a targeted flora and Black-Cockatoo foraging habitat quality assessment within the survey area, encompassing the proposed clearing area plus a 10 metre (m) buffer (**Figure 1**).

This report presents the findings of the assessment and will be used to supplement previous data collected by Stream Environment and Water Pty Ltd (Stream Environment and Water) in April 2023.

1.2 SCOPE OF WORK

The scope of work was to undertake a targeted flora assessment within the survey area, with the following actions to be undertaken:

- Conduct a targeted flora assessment for the three key Threatened flora; *Eremophila subangustifolia*, *Grevillea althoferorum* subsp. *althoferorum* and *Paracaleana dixonii*, as well as the remaining 28 conservation significant species as identified by Department of Water and Environmental Regulation (DWER).
- Where populations are identified, survey and map the extent of populations to determine number and habitat area for each population. Where large populations are identified beyond the survey area, the full extent of the population was to be mapped.
- Undertake Black-Cockatoo foraging habitat quality mapping based on the presence and density of food source plants in the survey area, in combination with desktop assessment results, to allow interpretation of the context and utilisation of the habitat in regard to Black-Cockatoos.
- Track logs from GPS to be recorded during the field assessment to attest to time and effort.
- Provide a brief report on the finding of the assessment.

1.3 LOCATION

The survey area is located at the entrance to the Lake Indoon campsite on Eneabba-Coolimba Road, between straight line kilometres (SLKs) 10.59 and 10.95, approximately 12 kilometres (km) west of the town of Eneabba (**Figure 1**). The proposed clearing area is wholly located within the road reserve for Eneabba-Coolimba Road, a Shire of Carnamah managed road reserve.



Figure 1 - Survey Area

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1.4 CLIMATE

The survey area experiences a Mediterranean climate which is characterised by hot dry summers and mild wet winters (McKenzie and May 2003). Badgingarra Research Station (site number 009037) is one of the Bureau of Meteorology's (BoM) meteorological recording stations located approximately 68 km from the study area, operating since 1962 (BoM 2023). The site has recorded an average annual rainfall of 520.4 mm and annual mean maximum temperatures ranging from 17.6°C in winter to 34.6°C in summer (BoM 2023) (**Figure 2**). In the months leading up to the November field assessment (July to October) temperature was trending above the long-term average, and rainfall was consistently below the long-term average, experiencing an unusually dry October, with only 15% of the long-term average rainfall occurring. Below average rainfall in late winter and early spring would not provide optimal spring conditions for the growth of flora species, decreasing the likelihood of annual species being present.

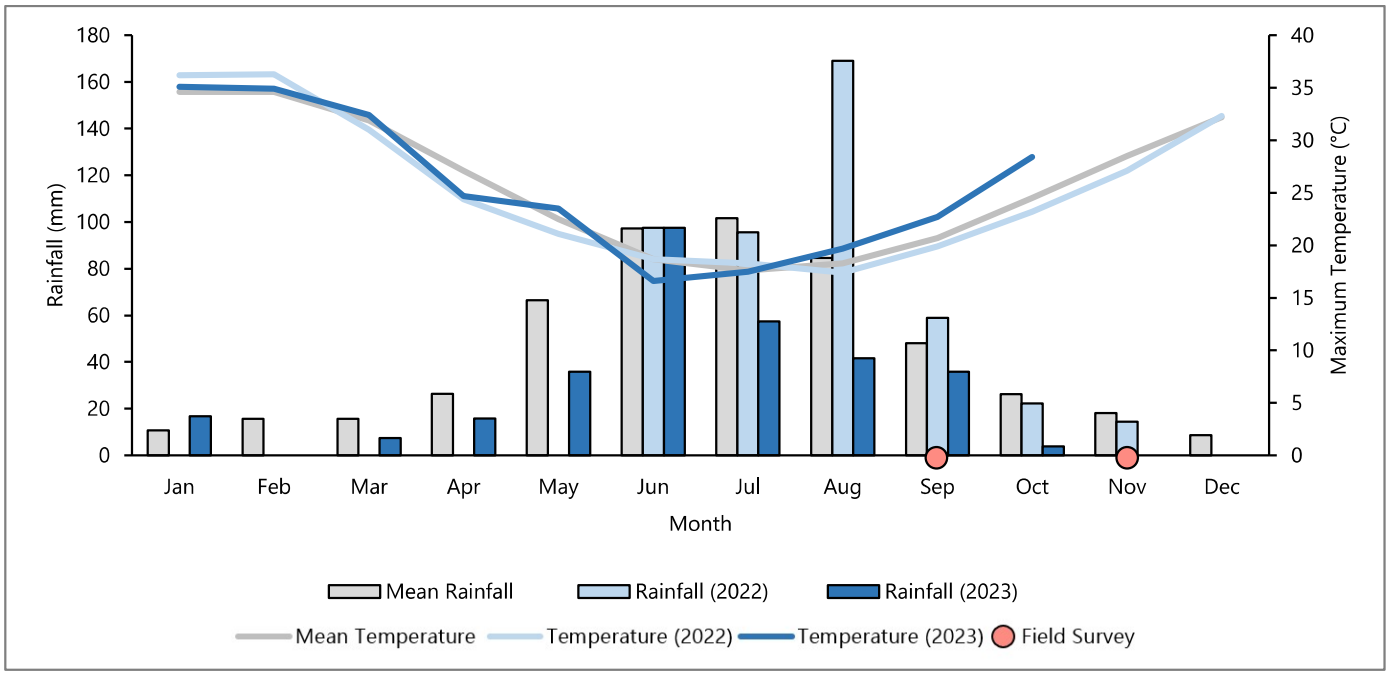


Figure 2 - Climate Data for Badgingarra Research Station 009037 (BoM 2023)

1.5 PRE-EUROPEAN VEGETATION

Vegetation of the Geraldton Sandplains region has been broadly characterised by Beard (Beard 1990; Beard *et al.* 2005) and later reassessed by Shepherd *et al.* (2002) into vegetation associations. Mapping depicted the native vegetation as it was presumed to be at the time of European settlement and is referred to as pre-European vegetation mapping. One vegetation association, 378, is present within the survey area (**Figure 3**).

Vegetation association 378 is described as supporting shrublands and scrub-heath of tall, scattered *Banksia spp.*, *Eucalyptus todtiana* and *Xylomelum angustifolium,* as well as mixed Proteaceae and Myrtaceae. Vegetation association 378 is restricted to Geraldton Sandplains IBRA region on deep sandy flats (Government of Western Australia 2019).

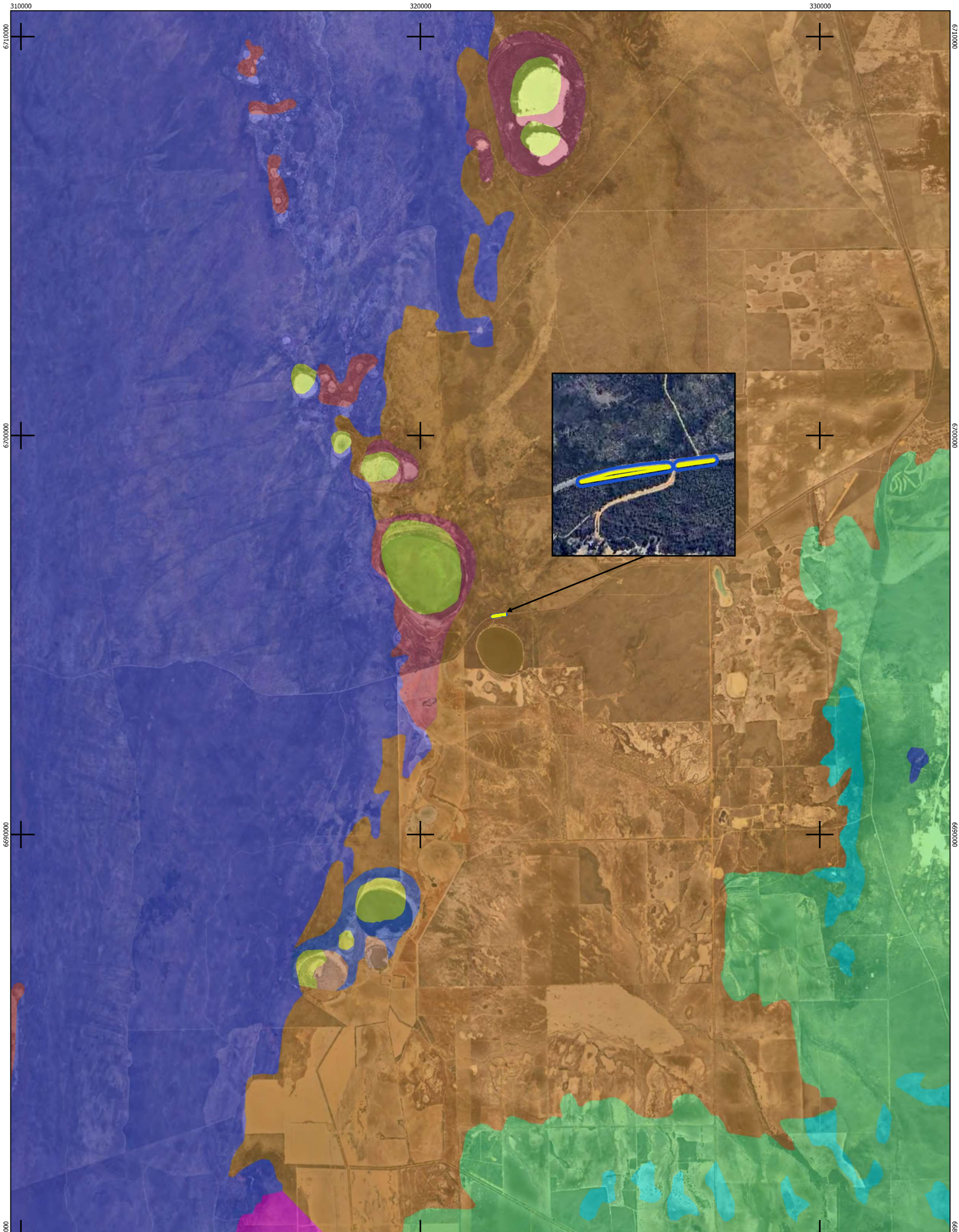


Figure 3 - Pre-European Vegetation

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2 METHODOLOGY

The field assessment and reporting were carried out within the survey area (**Figure 1**), in accordance with:

- Commonwealth of Australia (Department of the Environment and Energy (DEE) (2013) *Guidelines for detecting orchids listed as 'threatened' under the Environment Protection and Biodiversity Conservation Act 1999*
- Department of Agriculture, Water and the Environment (DAWE) (2022) *Referral guideline for 3 WA threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black-cockatoo*
- Department of the Environment and Energy (DEE) (2017) *Revised Draft Referral Guideline for Three Threatened Black Cockatoo Species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-Tailed Black Cockatoo*
- EPA (2020) *Technical Guidance – Terrestrial Fauna Surveys for Environmental Impact Assessment*
- EPA (2016) *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment.*

The survey area was assessed over two phases, consisting of a total survey effort of four person-days (including travel time). The first assessment was conducted by Megan Gray (Botanist/Ecologist) and Sarah Beckwith (Graduate Botanist/Ecologist) on 14 September 2023, and the second phase by Megan Gray and Olga Nazarova (Botanist) on 15 November 2023. Timing of the assessments was based on the flowering times of targeted Threatened and Priority flora species, as outlined in the *Request for Further Information Letter* (Gannaway 2023).

2.1 TARGETED FLORA SURVEY

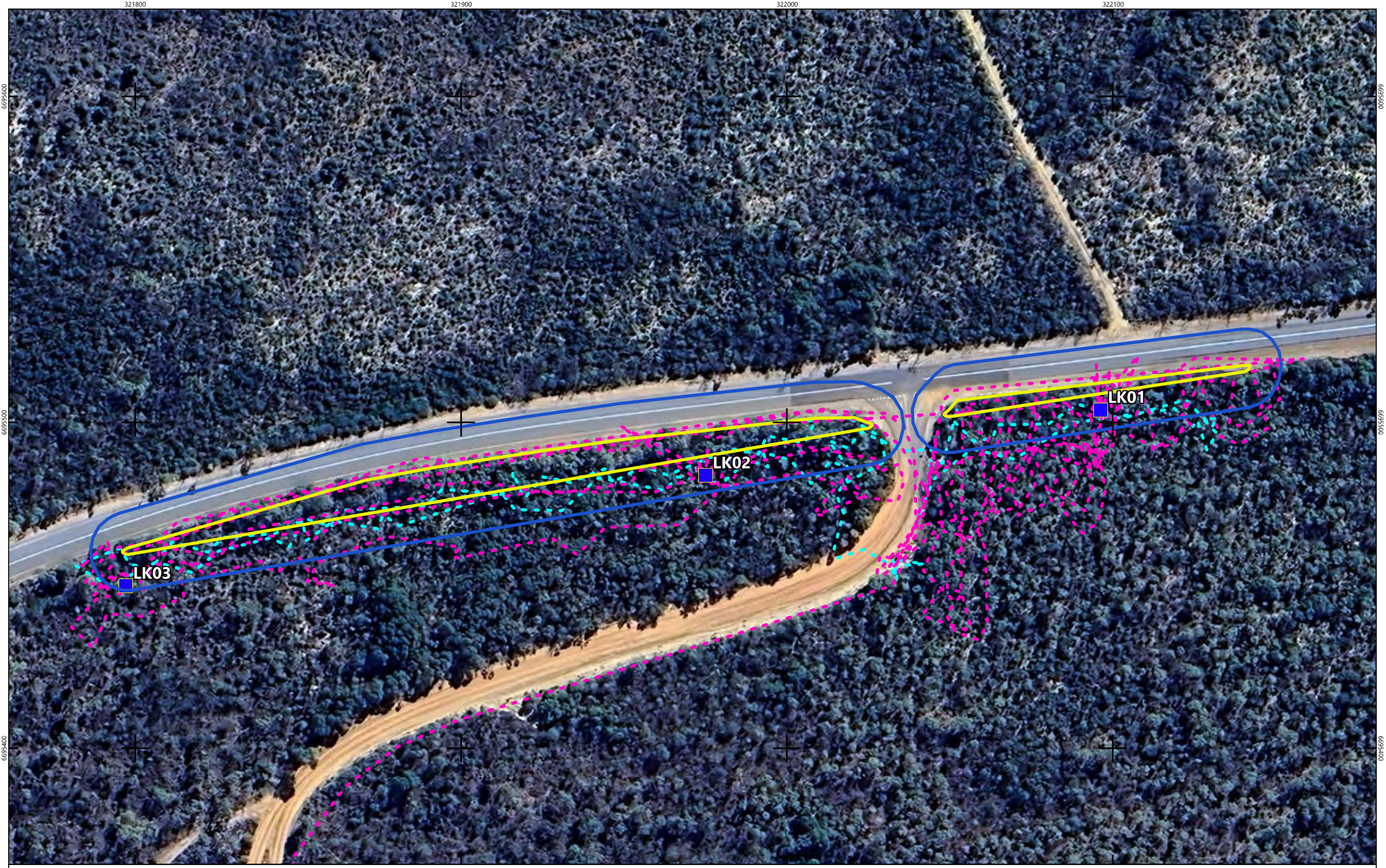
The initial September field assessment was conducted with specific focus on three species listed as Threatened under the EPBC Act and BC Act; *Paracaleana dixonii* (EPBC; Endangered, BC Act; Vulnerable), *Grevillea althoferorum* subsp. *althoferorum* (EPBC Act; Endangered, BC Act; Critically Endangered) and *Eremophila subangustifolia* (EPBC Act; Critically Endangered, BC Act; Critically Endangered). The second assessment targeted only, *Paracaleana dixonii,* due to the species' late spring (November) flowering time.

Where suspected Threatened or Priority flora species were identified within the survey area, extended searches beyond the bounds of the survey area were conducted to determine the species' local population size and distribution. Targeted searches were conducted by botanists walking in parallel transects, spaced at 5 m apart, in accordance with DEE (2013). All traverses were GPS tracked by electronic devices (tablets) or hand-held GPS units, to record track logs and enable shapefiles to be presented showing survey extents and effort within the survey area (**Figure 4**).

Where suspected Threatened or Priority flora were observed in the field, each location was recorded using electronic tablet devices with mobile spatial mapping capability, within the software program, Mappt™ that has at least a 2 m accuracy, in accordance with EPA guidance (2016).

Where suspected Threatened or Priority flora were observed, the following data was recorded, sufficient to allow the completion of DBCA Threatened and Priority Flora Report Forms:

- GPS location of each individual plant (or occurrence with abundance) allowing an inventory of the plants/population size
- vegetation type and condition at the recorded location
- landforms
- condition of plants
- reproductive status
- representative photograph.



0 15 30 45 60 m

GDA 2020

Figure 4 - Survey Effort

Legend

- Survey Area
- Proposed Clearing Area
- September 2023 Traverses
- November 2023 Traverses
- Relevé

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2.2 TARGETED BLACK-COCKATOO HABITAT ASSESSMENT

The Commonwealth environmental regulatory authority (formerly the Department of Agriculture, Water and the Environment (DAWE), and the Department of the Environment and Energy (DEE), now the Department of Climate Change, Energy, Environment and Water (DCCEEW)), provides guidelines for referral of actions that may result in impact to Black-Cockatoos (for assessment under the EPBC Act). The targeted Black-Cockatoo foraging habitat assessment was conducted in accordance with the established guidelines (DSEWPC 2012; DEE 2017). In addition, assessment methodology followed the recommendations listed on the DCCEEW's Species Profile and Threats (SPRAT) Database (DCCEEW 2023).

Correspondence with DWER (Gannaway 2023) states that three Threatened Black-Cockatoo species (Carnaby's Black-Cockatoo (*Zanda latirostris,* syn. *Calyptorhynchus latirostris*), Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*) and Baudin's Black-Cockatoo (*Zanda baudinii,* syn. *Calyptorhynchus baudinii*) are likely to occur within the survey area. Therefore, these species were targeted as part of the field assessment, to determine and suitability of foraging habitat for these species within the survey area, and where present, the extent and quality of this foraging habitat.

The survey area was traversed on foot and assessed in detail, to observe and record suitable foraging habitat for the Baudin's Black-Cockatoo, Carnaby's Black-Cockatoo and the Forest Red-tailed Black-Cockatoo, in the way of the presence and density of suitable food source plants for the respective species (**Table 1**). Floristic data from three relevés was recorded within the survey area, to quantify the presence of suitable Black-Cockatoo foraging species and suitable foraging habitat (**Appendix A** and **Appendix B**).

The targeted foraging field assessment for the three species of Black-Cockatoos and their habitat also sought to record any observed individuals either in the survey area or as an overfly observation, and any evidence of their activity (e.g. chewed nuts), in addition to the habitat suitable for foraging (**Table 1**). Suitable foraging habitat was mapped, delineated and assigned a foraging habitat quality score, as described in the sections below.

2.2.1 Black-Cockatoo Foraging Habitat

The foraging habitat of the survey area was scored in accordance with methodologies developed by Bamford Consulting Ecologists (BCE 2018), in which habitats are awarded a score out of ten to indicate the quality of that foraging habitat. The scoring system is comprised of the following:

- a score out of six for vegetation composition, condition and structure, in accordance with **Table 2**
- a score out of three for site context, in accordance with **Table 3**
- a score out of one for stocking rate (Black-Cockatoo species density).

The resulting total score (out of ten) reflects the quality of Black-Cockatoo foraging habitat and allows future application of the Commonwealth biodiversity offsets calculator (DSEWPC 2012).

The vegetation composition score is based on the presence, density/abundance, condition and proportions of food source plants for the relevant species of Black-Cockatoo. A selection of key examples applicable to each of the scores for the three Black-Cockatoo species is presented in **Table 2**.

Table 1 – Black-Cockatoo Foraging Habitats Assessed

Baudin's Black-Cockatoo	Carnaby's Black-Cockatoo	Forest Red-tailed Black-Cockatoo
Food source plants for Baudin's Cockatoos include primarily Marri, rarely Jarrah, in woodlands and forests, and seeds of native proteaceous plant species (including *Banksia* spp. and *Hakea* spp.). During the breeding season they feed mainly on native vegetation, particularly Marri (seeds, flowers, nectar and grubs). They also feed on insects and insect larvae; pith of Kangaroo Paw (*Anigozanthos flavidus*) tips of *Pinus* spp.; *Macadamia* spp., almonds and pecans; seeds of apples and pears; and persimmons.	Foraging habitat includes native shrubland, Kwongan heathland and woodland on seeds, flowers and nectar of native proteaceous plant species (*Banksia* spp., *Hakea* spp. and *Grevillea* spp.) also *Callistemon* spp. and Marri. Seeds of introduced species can also be used as foraging including Pinus spp. Erodium spp., wild radish, canola, almonds, macadamia, and pecan nuts: insets and insect larvae; occasionally apples and persimmons; and liquidambar.	Foraging consists primarily of seeds of Jarrah and Marri in woodlands and forests, and edges of Karri forests including Wandoo and Blackbutt. They also forage on *Allocasuarina* sp. cones, fruits of snottygobble (*Persoonia longifolia*) and Mountain Marri (*C. haematoxylon*). Other less important foods include Blackbutt, Bullich, *Allocasuarina fraseriana*, *Hakea* spp., Tuart, Redheart Moit (*E. decipiens*) and Bushy Yate (*E. lehmannii*) Some introduced Eucalypts are used for foraging including Red Gum (*E. camaldulensis*), Rose Gum, (*E. grandis*). On the Swan Coastal Plain, they often feed on introduced Cape Lilac (*Melia azedarach*), *E. caesia, E. erythrocorys,* Lemon Scented Gum and Kaffir Plum (*Harpephyllum caffrum*).

Table 2 - Scoring System for the Assessment of Foraging Value of Vegetation for Black-Cockatoos

Site Score	Description of Vegetation		
	Carnaby's Black-Cockatoo	**Baudin's Black-Cockatoo**	**Forest Red-tailed Black-Cockatoo**
0	No foraging value. No Proteaceae, Eucalypts or other potential sources of food. Examples would be salt lakes and bare ground.	No foraging value. No eucalypts or other potential sources of food.	No foraging value. No Eucalypts (i.e. Marri, Jarrah, Wandoo, Blackbutt or Karri) or other potential sources of food.
1	Negligible to low foraging value. Scattered specimens of known food plants but projected foliage cover of these <2%. Could include urban areas with scattered foraging trees. Blue Gum plantations are considered to have a score of 1 as foraging by Black-Cockatoos has been reported but appears to be unusual.	Negligible to low foraging value. Scattered specimens of known food plants (e.g. Marri and Jarrah) but projected foliage cover of these <1%. Could include urban areas with scattered foraging trees.	Negligible to low foraging value. Scattered specimens of known food plants but projected foliage cover of these <1%. Could include urban areas with scattered foraging trees.
2	Low foraging value. Examples: • Shrubland in which species of foraging value, such as shrubby banksias, with <10% projected foliage cover. • Open Eucalypt woodland/mallee of small-fruited species. • Paddocks with melons or other weeds (a short-term, seasonal food source).	Low foraging value. Example: • Woodland or forest with scattered specimens of known food plants (e.g. Marri and Jarrah) but projected foliage cover of these 1-<5%. Could include urban areas with scattered foraging trees.	Low foraging value. Examples: • Open Eucalypt woodland (i.e. Marri, Jarrah, Wandoo, Blackbutt or Karri). Projected foliage cover of these 1-<5%. • Urban areas with scattered food plants such as Cape Lilac, *Eucalyptus caesia* and *Eucalyptus erythrocorys*.
3	Low to Moderate foraging value. Examples: • Shrubland in which species of foraging value, such as shrubby Banksias, with 10-20% projected foliage cover. • Woodland with tree banksias 2-10% projected foliage cover. • Eucalypt woodland/mallee of small-fruited species; Marri, if present, <10% project foliage cover.	Low to Moderate foraging value. Examples: • Eucalypt woodland with known food plants (and in particular Marri) with a projected foliage cover of 5-<10%. • Parkland-cleared eucalypt woodland with projected foliage cover of known food plants of 10-<20% can be considered low-to-moderate because of poor long-term viability without management.	Low to Moderate foraging value. Examples: • Eucalypt woodland (i.e. Marri, Jarrah, Wandoo, and Blackbutt), if present, <10% project foliage cover.

Site Score	Description of Vegetation		
	Carnaby's Black-Cockatoo	**Baudin's Black-Cockatoo**	**Forest Red-tailed Black-Cockatoo**
4	Moderate foraging value. Examples: • Woodland with tree Banksias 20-40% projected foliage cover. • Eucalypt woodland/forest with Marri 20-40% projected foliage cover.	Moderate foraging value. Examples: • Eucalypt woodland with known food plants (and in particular Marri) with a projected foliage cover of 10-<20%. • Parkland-cleared eucalypt woodland with projected foliage cover of known food plants of 20-<40% can be considered moderate because of poor long-term viability without management. • Areas of orchards and especially those with apples can be considered of moderate value.	Moderate foraging value. Example: • Eucalypt woodland/forest (i.e. Marri, Jarrah, Wandoo, and Blackbutt) with 20-40% projected foliage cover.
5	Moderate to High foraging value. Example: • Banksia woodlands with tree Banksias >40%. Vegetation condition moderate due to weed invasion and some tree deaths.	Moderate to High foraging value. Example: • Eucalypt woodland with known food plants (and in particular Marri) with a projected foliage cover of 20-<40%. Parkland-cleared eucalypt woodland with projected foliage cover of known food plants of >40% can be considered moderate because of poor long-term viability without management.	Moderate to High foraging value. Example: • Eucalypt woodland/forest (i.e. Marri, Jarrah, Wandoo, and Blackbutt) with >40% projected foliage cover. Vegetation condition moderate due to weed invasion and some tree deaths.
6	High foraging value. Example: • Banksia woodlands of key species (e.g. *B. attenuata, B. menziesii*) with projected foliage cover >60%. Vegetation condition good with low weed invasion and low tree death to indicate it is robust and unlikely to decline in the medium term.	High foraging value. Example: • Eucalypt woodland/forest with a high proportion of Marri (>40% projected foliage cover). Vegetation condition good with low weed invasion and low tree death to indicate it is robust and unlikely to decline in the medium term.	High foraging value. Example: • Eucalypt woodland/forest (i.e. Marri, Jarrah, Wandoo, and Blackbutt) with >60% projected foliage cover. Vegetation condition good with low weed invasion and low tree death to indicate it is robust and unlikely to decline in the medium term.

Vegetation characteristic scores of ≤2 are not further analysed for context and species presence (stocking rate), as such habitat is considered to be of negligible foraging value.

The site context score is species-specific as it depends upon factors such as the vegetation type and extent, and the presence of breeding birds. Scores for site context are guided by **Table 3**, noting that 'local area' is defined as within a 15 km radius of the centre point of the survey area. To assign a score for site context, a maximum score of three is applied where foraging habitat is known or found to support breeding birds, or it can also be applied in fragmented landscapes where there is little foraging habitat remaining and thus what is left has a high contextual value.

Table 3 – Key to Black-Cockatoo Site Context Score for Foraging Habitat Quality

Site Context Score	Existing Native Vegetation within the 'Local Area' that the Survey Area Represents (%)	
	'Local' Breeding Known/Likely	'Local' Breeding Unlikely
3	> 5	> 10
2	1 - 5	5 - 10
1	0.1 - 1	0.1 - 5
0	< 0.1	< 0.1

The score for stocking rate/species density (0 or 1), is based upon the relevant Black-Cockatoo species being either abundant or low and is species-specific. A score of 1 is applied where the species is seen or known to occur/reported regularly and/or there is abundant foraging evidence. 'Regularly' is considered to be when the species is seen at intervals of every few days or weeks for at least several months of the year. A score of 0 is applied when the species is recorded or reported very infrequently and there is little or no foraging evidence.

2.3 SURVEY LIMITATIONS

The current assessment was assessed against limitations imposed by many variables as outlined in *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016) and *Technical Guidance – Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA 2020) (**Table 4**)

Table 4 – Potential Survey Limitations and Constraints

Aspect	Constraint?	Commentary
Scope (detail)	No	A targeted flora and Black-Cockatoo foraging habitat assessment was carried out in accordance with EPA (2016, 2020). Floristic data was recorded from three relevés to compile and determine the presence and density of suitable Black-Cockatoo foraging species. Parallel traverses spaced at a distance of 5 m apart were conducted to target Threatened and Priority flora. Based on the small size of the survey area, it is deemed that the targeted flora and Black-Cockatoo foraging habitat assessment has been undertaken to an appropriate level of detail.
Competency/ Experience of personnel	No	Leading field Botanist, Megan Gray, has more than 4 years' experience in undertaking biological assessments in Western Australia. All personnel leading all aspects of the study, including survey design, field assessment, flora identifications, data analysis, vegetation mapping and reporting are experienced ecologists and botanists, with specialist skills in their respective fields.
Survey effort/detail/ intensity	No	Traverses were conducted at approximately 5 m apart. The level of detail was considered appropriate to determine the presence and extent of targeted flora populations and to observed, quantify and map the Black-Cockatoo foraging habitat.
Seasonal timing and climatic conditions	No	The first phase targeted flora assessment was conducted during peak optimal flowering period for the target species (September 2023). A second assessment was conducted in November 2023 to align with optimal flower period of *Paracaleana dixonii*. Despite climate data showing the site experienced lower than average rainfall from July to October, on-ground conditions were found to be excellent, and orchids such as *Caladenias* were recorded during the September assessment. *Paracaleana dixonii* prefers hot dry summers and therefore, the seasonal conditions are not considered to have been a limitation for the targeted assessment for this species. Certain timing is necessary to confirm Black-Cockatoo use of habitats, e.g. at dusk during March to April to observe flocks coming into roost and during December and somewhat into January to observe chicks in nests and confirm breeding trees. However, initial assessments as per the scope, to determine foraging habitat quality are not considered seasonally constrained.
Access	No	The entire survey area was easily accessible, with access to the site from both Eneabba-Coolimba Road (main road) and from the Lake Indoon campsite entrance track and all areas were able to be accessed on foot.
Mapping reliability	No	The mapping has been prepared at a scale based on ground-truthed areas, with limited extrapolation given the good accessibility for the majority of the small survey area. Therefore, mapping reliability based on scale is considered high.
Disturbances	No	The survey area is minimally disturbed with only small portions of the survey area disturbed by rabbits and litter. Disturbances are not considered a limitation of the assessment.
Survey completeness	No	The assessment was completed to a high level of detail due to accessibility of the entire area. Furthermore, the effort invested into two phases of survey to appropriately capture suitable flowering windows has further ensured survey completion.

3 RESULTS

3.1 DESKTOP ASSESSMENT

3.1.1 Threatened and Priority Flora

The desktop assessment conducted by Stream Environment and Water (2023) identified 128 Threatened or Priority flora as potentially occurring within 20 km of the survey area. Of these, 31 species were identified by DWER as potentially occurring within the survey area (**Table 5**). This comprised of four Threatened, one Priority 1, five Priority 2, 13 Priority 3 and eight Priority 4 flora.

Table 5 – Significant Flora Potentially Occurring within the Survey Area (Gannaway 2023)

Taxon	Status	Distance from Survey Area (km)	Flowering Time
Eremophila subangustifolia	CR (EPBC), CR (BC)	1.07	August – September
Grevillea althoferorum subsp. *althoferorum*	EN (EPBC), CR (BC)	1.22	Unknown (considered potentially to flower in April)
Styphelia obtecta	EN (EPBC), EN (BC)	9.29	October
Paracaleana dixonii	EN (EPBC), VU (BC)	1.21	October – December or January
Stylidium carnosum subsp. Narrow leaves (J.A. Wege 490)	1	3.63	October
Calytrix purpurea	2	5.93	September – October or December
Chordifex reseminans	2	9.24	March – May
Fabronia hampeana	2	0.02	Unknown
Scaevola eneabba	2	4.09	February
Verticordia argentea	2	6.43	November – December or January – April
Acacia telmica	3	1.03	July – September
Centrolepis milleri	3	8.3	October – November
Comesperma rhadinocarpum	3	4.48	October – November
Desmocladus biformis	3	4.09	September – October
Grevillea biformis subsp. *cymbiformis*	3	4.05	August - September
Grevillea erinacea	3	7.48	July – December
Grevillea uniformis	3	8.81	September - November
Guichenotia alba	3	1.22	July – August
Haemodorum loratum	3	8.79	November
Lepidobolus quadratus	3	8.79	August – September
Mesomelaena stygia subsp. *deflexa*	3	6.43	March – October
Persoonia rudis	3	10.03	September – December or January
Thryptomene sp. Lancelin (M.E. Trudgen 14000)	3	4.37	September
Calytrix chrysantha	4	0.77	December or January – February
Calytrix eneabbensis	4	0.93	July – October
Calytrix superba	4	1.22	December or January – February
Desmocladus elongatus	4	6.48	August – December

Taxon	Status	Distance from Survey Area (km)	Flowering Time
Eremophila microtheca	4	3.83	August - September
Schoenus griffinianus	4	5.23	September - October
Stawellia dimorphantha	4	7.24	June – November
Verticordia aurea	4	2.66	September – December

3.1.2 Black-Cockatoo Habitat

Correspondence with DWER (Gannaway 2023) states that three Threatened Black-Cockatoo species (Carnaby's Black-Cockatoo (*Zanda latirostris*), Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*) and Baudin's Black-Cockatoo (*Zanda baudinii*) were likely to occur within the survey area.

The EPBC Act and BC Act listed Endangered Carnaby's Black-Cockatoo occurs from Cape Arid in the south-east to Kalbarri in the north, and as far inland as Perenjori to the east, in areas receiving between 300 and 750 millimetres (mm) of rainfall annually (Saunders 1979a; Saunders and Ingram 1995; DPaW 2013; DAWE 2022). The survey area is within the known distribution range of Carnaby's Black-Cockatoo and receives an annual average rainfall within the range needed by the species (BoM 2023). Carnaby's Black-Cockatoo is known to forage mainly on multiple *Banksia, Eucalyptus, Grevillea* and *Hakea* species, as well as a number of other species (Valentine and Stock 2008; DPaW 2013; DAWE 2022).

Baudin's Black-Cockatoo is an Endangered listed EPBC Act and Critically Endangered BC Act listed species, which is known to occur in the south-west of Western Australia. The species' distribution extends as far north as Gidgegannup and Mundaring (DCCEEW 2023) and it is considered that the survey area is outside of the documented range for Baudin's Black-Cockatoos. During the breeding season, Baudin's Black-Cockatoo's distribution differs from the non-breeding season and only extends as far north as Donnybrook (Johnstone and Storr 1998). The survey area is approximately 230 km north of the known species distribution, and hence, this species will not be further assessed or discussed in this report.

The Forest Red-tailed Black-Cockatoo is a Vulnerable EPBC Act and BC Act listed species, endemic to the south-west of Western Australia, extending as far north as Gingin (DCCEEW 2023), and it is considered that the survey area is outside of the documented range of the species. The species used to inhabit north of Gingin to Dandaragan, however, habitat fragmentation and food availability has been attributed to the reduction in distribution (Johnstone 1997). The survey area is approximately 170 km north of the current species distribution, and hence, this species will not be further assessed or discussed in this report.

The desktop assessment identified no confirmed or unconfirmed Carnaby's Black-Cockatoo roosting sites occur within the survey area, nor within 20 km of this. Roosting sites for Carnaby's Black-Cockatoo are distributed to the north and the south of the survey area, suggesting that the survey area falls within their active range. The closest Carnaby's Black-Cockatoo roosting site occurs 23 km south-east of the survey area (**Figure 5**).

No confirmed or unconfirmed Carnaby's Black Cockatoo breeding sites occur within the survey area or within 20 km of the survey area. The closest Carnaby's Black-Cockatoo breeding site occurs 24 km south of the survey area (**Figure 5**).

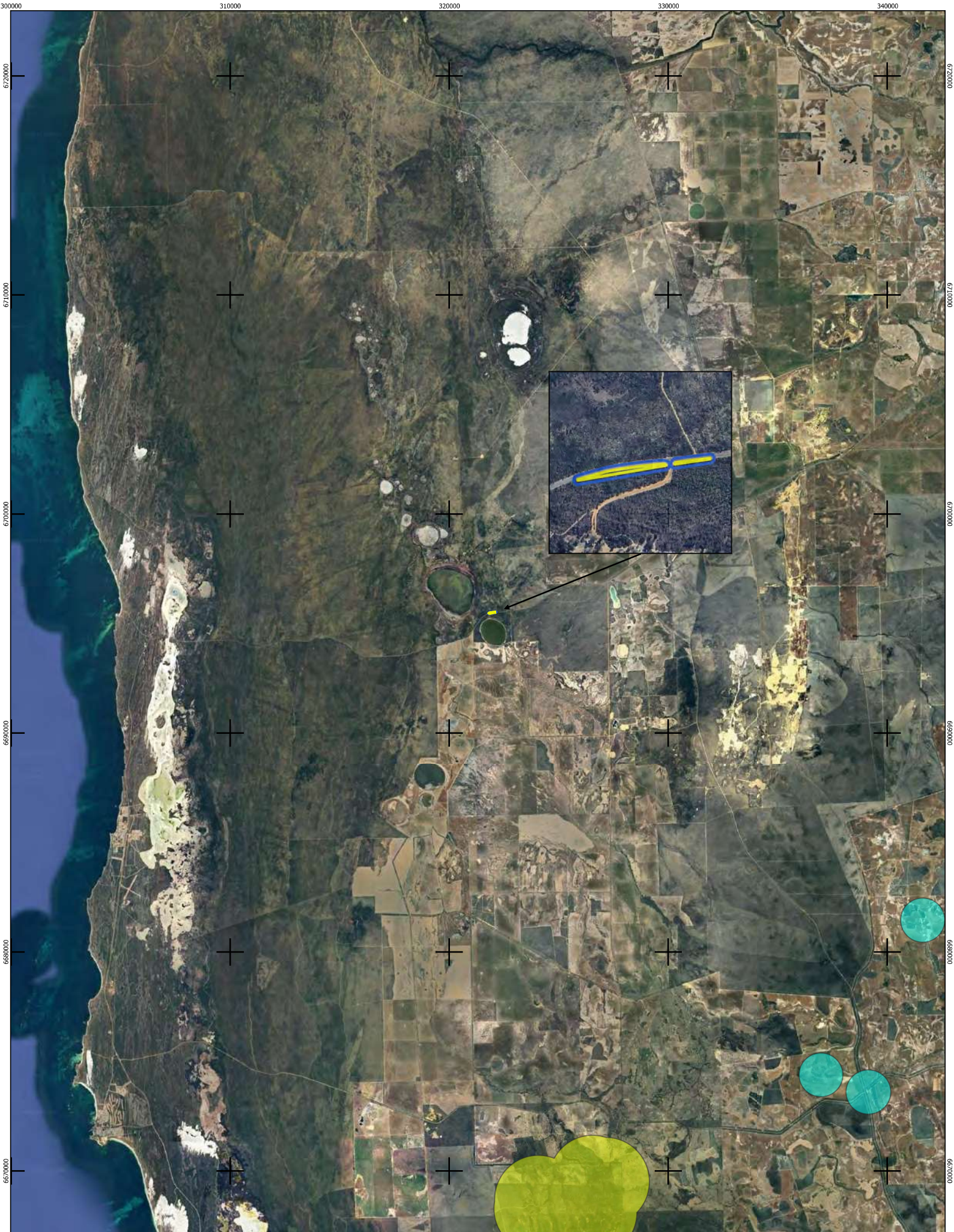


Figure 5 - Black-Cockatoo Habitat

FOCUSED VISION consulting

3.2 FIELD ASSESSMENT

3.2.1 Flora and Vegetation

A total of 50 flora species, from 42 genera and 28 families were recorded during the field surveys. The dominant families were found to be Asteraceae (five taxa), Fabaceae (five taxa) and Proteaceae (five taxa). The total includes 41 native species and nine introduced (weed) species. No Weeds of National Significance (WoNS) or Declared Pest (DP) plants listed under the *Biosecurity and Agriculture Management Act 2007* (BAM Act) were recorded within the survey area (Centre for Invasive Species Solutions 2021; DPIRD 2022). The full list of vascular flora species recorded is presented in **Appendix A**

Vegetation observations made on site indicated the survey area is *Banksia attenuata* woodland.

3.2.1.1 Significant Flora

No flora species listed as Threatened flora under the EPBC Act or the BC Act were recorded during the field assessment.

One Priority flora species; *Banksia elegans* (Priority 4) was initially recorded during the September assessment (**Plate 1**). A total 101 individuals were recorded during the field assessment (**Table 6**). The locations of these records are summarised in **Appendix C** and spatially presented in **Figure 6**. The



Plate 1 – *Banksia elegans* recorded during field assessment [photo by Sarah Beckwith]

Table 6 – Recorded Priority Flora

Species	Number within Clearing Area	Number within Survey Area	Number Outside Survey Area	Total
Banksia elegans (P4)	3	44	54	**101**

Banksia elegans is described as a shrub with often suckering, fire tolerant rootstock, growing between 1 to 4 m in height. The species produces yellow to green-yellow flowers from October to November (WAH 1998-). *Banksia elegans* has a distribution of approximately 170 km from Eradu in the north to Coomallo Nature Reserve in the south (**Plate 2**). The species is known from 44 FloraBase records and 98 Atlas of Living Australia (ALA) records,

and is typically recorded within the Geraldton Sandplains region, although one FloraBase record occurs within the Avon Wheatbelt region (WAH 1998-; ALA 2023). *Banksia elegans* was previously recorded by Stream Environment and Water within the survey area in April 2023, where it was recorded from seven locations within the proposed clearing area, from 12 locations within the survey area and a further 13 locations within the surrounding area (Stream Environment and Water 2023). During the September assessment, *Banksia elegans* was recorded at 50 locations, with 98 individuals recorded in total. Out of the 98 recorded individuals, 44 occur within the survey area, across 20 locations, and two of these locations (three individuals) were recorded within the proposed clearing area (**Figure 6**).

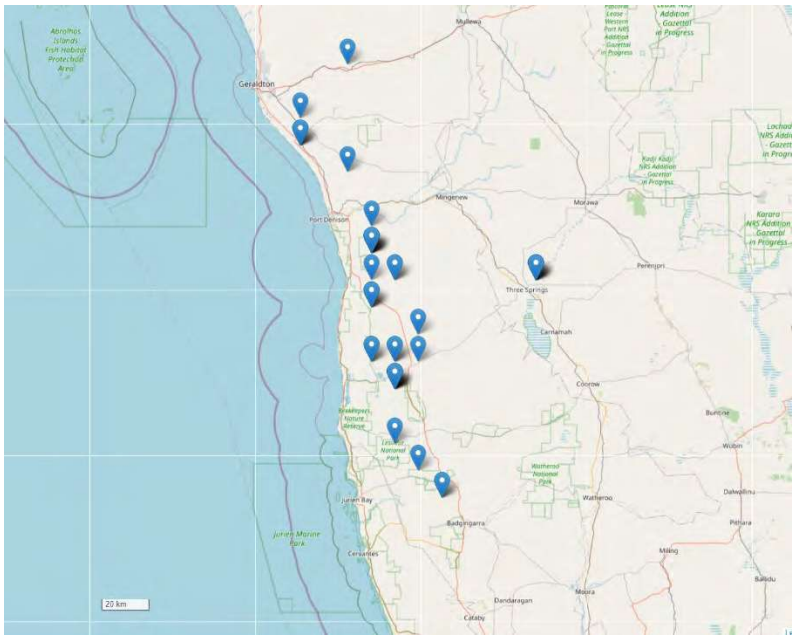


Plate 2 – *Banksia elegans* distribution (WAH 1998-)

Paracaleana dixonii is described as a tuberous perennial orchid that grows between 0.09-0.2 m in height and is commonly referred to as the Sandplain Duck Orchid. The species produces yellow to brown flowers from October to December or January (WAH 1998-). *Paracaleana dixonii* has a distribution of approximately 145 km from east of Dongara in the north, to north of Cataby in the south (**Plate 3**), on deep sand in open areas under tall, dense shrubland (Hopper and Brown 2006). The species is known from 20 FloraBase records and 24 ALA records, and is typically recorded within the Geraldton Sandplains region, although one FloraBase record occurs on the Swan Coastal Plain (WAH 1998-; ALA 2023). Despite the intensive searches, *Paracaleana dixonii* was not recorded within the survey area nor the surrounding area.

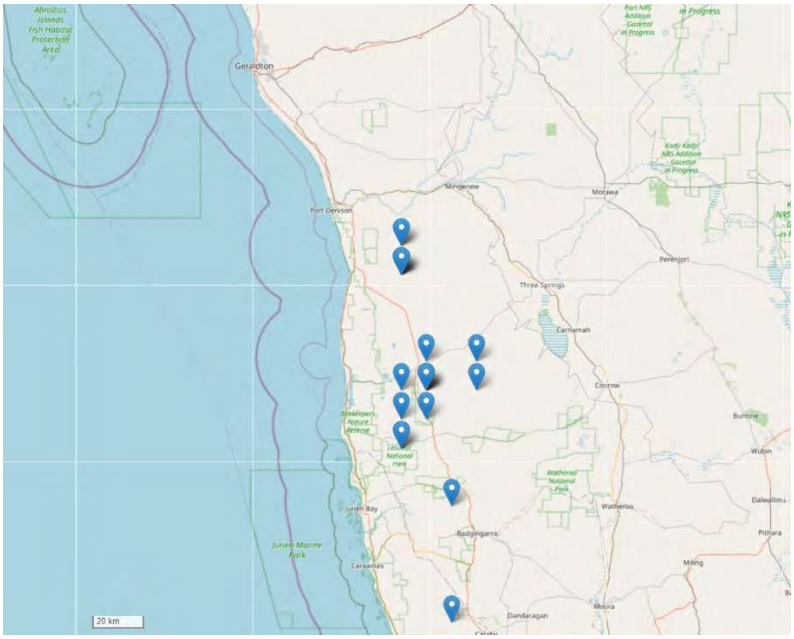


Plate 3 – *Paracaleana dixonii* distribution (WAH 1998-)

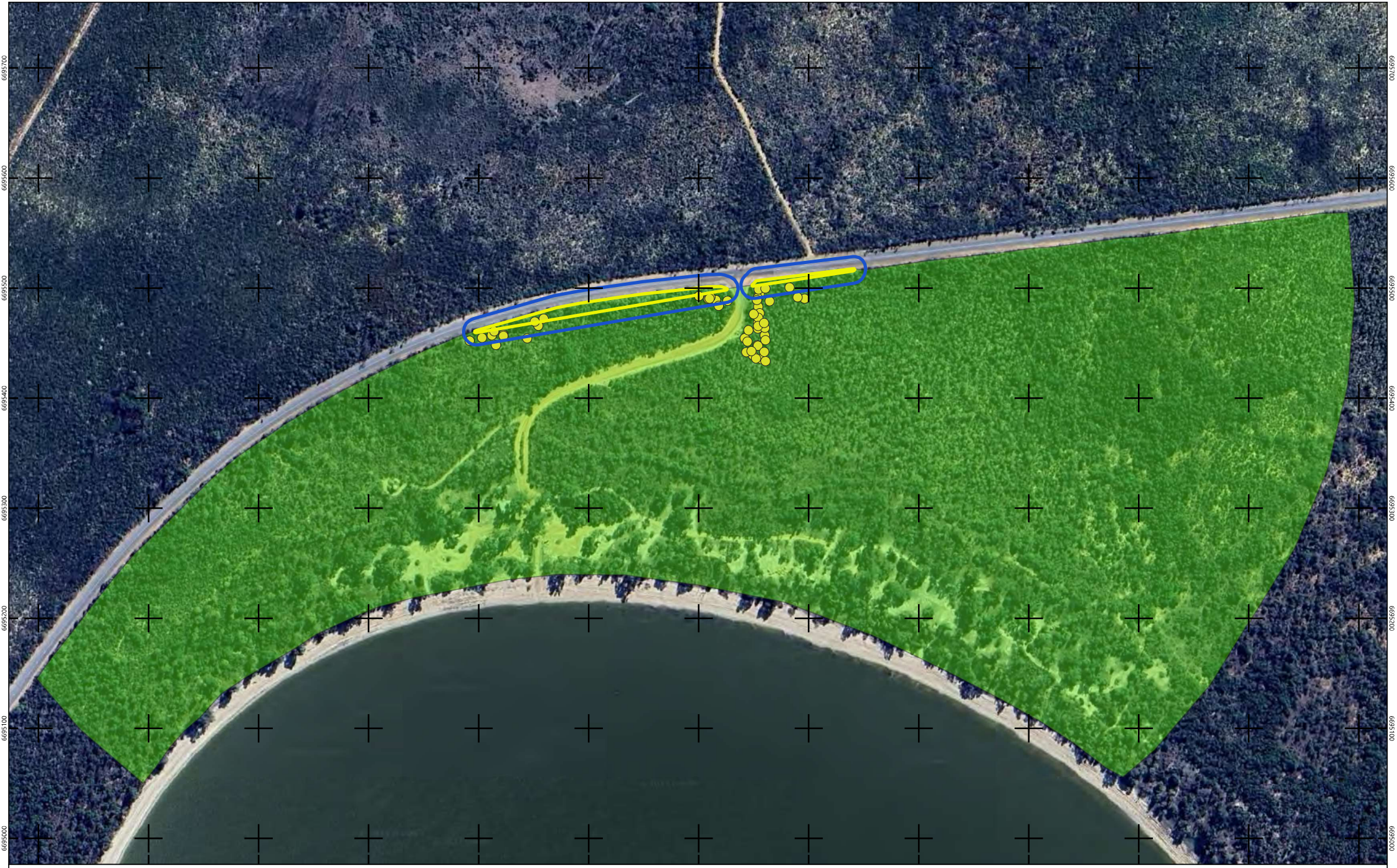


Figure 6 - Recorded Significant Flora

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3.2.2 Black-Cockatoo Foraging Habitat Assessment

A single fauna habitat, Banksia woodland, is supported in the survey area, and this was mapped with an assigned foraging quality value in accordance with the BCE (2018) methodology previously described (**Table 7**). A summary of key Black-Cockatoo foraging species recorded in the survey area is summarised in **Table 8**.

Table 7 - Summary of Black-Cockatoo Foraging Habitat Quality within the Survey Area

Habitat	Habitat Quality Scores			
	Vegetation Characteristics	Site Context*	Stocking Rate/ Species Density*	Total Score
Carnaby's Black-Cockatoo				
Banksia Woodland	4	0	0	**4**
Cleared	0	NA	NA	**0**

Foraging Habitat Quality Scores:
0 = none/negligible; 1 = negligible to low; 2 = low; 3 = low to moderate; 4 = moderate; 5 = moderate to high; 6 = high; 7+ = very high
*Vegetation characteristic scores ≤2 are not further analysed for context and stocking rate as these habitats are of negligible foraging value.

Table 8 - Summary of Key Black-Cockatoo Foraging Species Within the Survey Area

Species	Carnaby's Black-Cockatoo
Acacia saligna	✓
Banksia attenuata	✓
Banksia menziesii	✓
Banksia prionotes	✓
Mesomelaena pseudostygia	✓

Data compiled from the literature (Davies 1966; Saunders 1979a; b, 1980, 1986; Saunders *et al.* 1982; Johnstone and Storr 1998; Higgins 1999; Johnstone and Kirkby 1999, 2008; Groom 2011; Johnstone *et al.* 2011; DSEWPC 2012)

The majority (0.628 ha, 62.42%) of the survey area provides 'Moderate' quality foraging habitat for Carnaby's Black-Cockatoo. The cleared areas (0.378 ha) within the survey area provide 'None/Negligible' quality foraging habitat.

Application of additional scores for context and stocking rate for those habitats that have recorded vegetation characteristic scores ≥3 are applicable as shown in **Table 7**. The site context score considered factors such as the presence of known Black-Cockatoo breeding sites within or near of the survey area. No known Black-Cockatoo breeding sites occur within 15 km of the survey area.

In order to further consider context, and to select the appropriate site context score, the proportion of native vegetation within the survey area in the context of the local area (15 km radius) was considered. The local area contains 71,096.991 ha of remnant vegetation, of which 0.325 ha (0.0007 %) occurs within the survey area. Based on the proportion of remnant vegetation remaining within the survey area and the lack of known breeding locations within the local area (15 km buffer), a site context of zero was applied.

The species stocking rate (presence) score considered factors such as numerous and regular DBCA database records for the various species of Black-Cockatoo in the survey area and vicinity, and observations made in the field. In this instance, no Carnaby's Black-Cockatoos were observed during the field assessment and therefore, a score of zero for stocking rate was applied for this species.

The foraging habitat value for Carnaby's Black-Cockatoo species is presented in **Table 7** and is presented spatially in **Figure 7**.



Figure 7- Black-Cockatoo Habitat Mapping

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4 DISCUSSION

4.1 FLORA

No Threatened flora species listed under EPBC Act or the BC Act were recorded during the field assessment.

One DBCA Priority 4 listed species, *Banksia elegans,* was found to occur throughout the survey area. Due to the intensity of the assessment, it is considered likely that all *Banksia elegans* occurring within the proposed clearing area and survey area were recorded, however, the full extent of the *Banksia elegans* population beyond the survey area was not traversed. All recorded individuals are considered to be part of a single local population, in accordance with EPA's Technical Guidelines (2016) (**Figure 6**). It is likely the population extends beyond the individuals recorded, as two DBCA records of *Banksia elegans* occur within 1.2 km of the survey area, surrounding Lake Indoon (Stream Environment and Water 2023).

Despite extensive searching, *Paracaleana dixonii* was not recorded within the survey area. The species is known to occur on deep sands in open areas beneath tall, dense shrubland (Hopper and Brown 2006). Suitable habitat for this species was not observed within the proposed clearing area, with limited suitable micro-habitat (open sand lenses void of other vegetation or litter) that the species typically occupies occurring within the survey area. Where small sand lenses occur within the western portion of the survey area, *Paracaleana dixonii* was not recorded, and it is considered unlikely that the species is present within the survey area.

4.2 BLACK-COCKATOO

The survey area is outside of the distribution range for both the Baudin's Black-Cockatoo and Forest Red-tailed Black-Cockatoo and therefore foraging quality for these species was not assessed.

Carnaby's Black-Cockatoo are known to feed on a wide range of foods including a variety of Eucalyptus species, the seeds of various Banksia spp., as well as Hakea, Grevillea and *Pinus* spp., as well as flower buds, flowers and nectar of various Eucalypts, *Banksia* spp., *Callistemon* spp. and Marri. Insect larvae and insects (including weevils) are also consumed from under bark, from wood of live and dead trees and shrubs, from galls and from flowers and flower stems of *Acacia*, *Jacksonia*, *Agonis* and *Xanthorrhoea*, as well as the flesh and juice of apples and persimmons (Johnstone *et al.* 2011). Whilst recording a complete flora species inventory for the survey area was not part of the scope, recorded relevé data comprehensively confirmed the presence of Proteaceae and Fabaceae species (*Banksia* spp. and *Acacia saligna*) suitable for Carnaby's Black-Cockatoo foraging.

The majority of the survey area contains Banksia woodland, with Proteaceous understorey species, which represents foraging habitat for Carnaby's Black-Cockatoo. The vegetation characteristic score was allocated a four (out six) as the Banksia woodland exhibits a projected foliage cover of 24.67%. Site context scored a zero (out of three) as the survey area supports 0.325 ha (0.0007%) of remnant vegetation within the local area (15 km). No observations of the Carnaby's Black-Cockatoo or the foraging evidence of the species were recorded during the field assessment, resulting in a stocking rate score of zero (out of one). As a result, the foraging quality score of the majority of the survey area (not including cleared areas) is four (Moderate) for Carnaby's Black-Cockatoo.

Although no confirmed Black-Cockatoo roost sites occur within the survey area, suitable trees for roosting (tall trees of at least 10 m in height, within 2 km of water) which represent potential roosting habitat were observed by the Lake's edge, approximately 200 m south of the survey area. Lake Indoon is a brackish to freshwater lake, potentially providing a drinking water source for Black-Cockatoos.

Potential roosting and breeding trees of large *Eucalyptus camaldulensis* (Bourne *et al.* 2023) with a diameter at breast height (DBH) greater than 500 mm were observed around the Lake's edge, and Carnaby's Black-Cockatoos have also been previously recorded within the vicinity of Lake Indoon through the citizen science program, eBird

(The Cornell Lab of Ornithology n.d.). There are six recorded observations of Carnaby's Black-Cockatoo at Lake Indoon since 2017, the most recent being in August of 2023 (The Cornell Lab of Ornithology n.d.). Due to the close proximity to known recent Carnaby's Black-Cockatoo observations, it is considered likely that the survey area has the potential to be utilised by this species for foraging.

5 LIST OF PARTICIPANTS

The FVC personnel who contributed to the project are summarised in **Table 9**.

Table 9 - Project Team

Name	Qualification	Years of Relevant Experience	Role
Kellie Bauer–Simpson Principal Ecologist	BSc. (Biological Science)	24	Project manager, technical and authorisation review
Megan Gray Botanist/Ecologist	B.Sc. (Environmental Science)	4	Project lead, field assessment, spatial data management and reporting
Olga Nazarova Botanist	B.Sc. (Botany and Genetics)	4	Field assessment and flora identifications
Sarah Beckwith Graduate Botanist/Ecologist	BSc. (Environmental Biology)	1	Field assessment and reporting support
Will Bauer–Simpson Technician/Advisor	Cert IV (Health and Safety)	11	GIS, spatial data management and mapping

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APPENDIX A – FLORA INVENTORY

Family	Species	WA Cons. Status
ASPARAGACEAE	*Sowerbaea laxiflora*	
ASTERACEAE	*Arctotheca calendula*	
ASTERACEAE	*Hypochaeris glabra*	
ASTERACEAE	*Podolepis gracilis*	
ASTERACEAE	*Ursinia anthemoides* subsp. *anthemoides*	
ASTERACEAE	*Waitzia acuminata* var. *albicans*	
CAMPANULACEAE	*Wahlenbergia capensis*	
CARYOPHYLLACEAE	*Polycarpaea longiflora*	
CHENOPODIACEAE	*Rhagodia preissii* ?subsp. *obovata*	
COLCHICACEAE	*Burchardia congesta*	
CRASSULACEAE	*Crassula colorata*	
CYPERACEAE	*Mesomelaena pseudostygia*	
DILLENIACEAE	*Hibbertia hypericoides* subsp. *septentrionalis*	
ECDEIOCOLEACEAE	*Ecdeiocolea monostachya*	
FABACEAE	*Acacia saligna*	
FABACEAE	*Acacia spathulifolia*	
FABACEAE	*Daviesia divaricata* subsp. *divaricata*	
FABACEAE	*Gompholobium tomentosum*	
FABACEAE	*Jacksonia sternbergiana*	
GOODENIACEAE	*Goodenia berardiana*	
GOODENIACEAE	*Lechenaultia linarioides*	
HAEMODORACEAE	*Anigozanthos humilis*	
HAEMODORACEAE	*Conostylis candicans* subsp. *candicans*	
HEMEROCALLIDACEAE	*Corynotheca sp.*	
HEMEROCALLIDACEAE	*Dianella revoluta*	
HEMEROCALLIDACEAE	*Tricoryne elatior*	
LAMIACEAE	LAMIACEAE sp.	
MACARTHURIACEAE	*Macarthuria australis*	
MALVACEAE	*Seringia integrifolia*	
MYRTACEAE	*Melaleuca leuropoma*	
MYRTACEAE	*Scholtzia laxiflora*	
ORCHIDACEAE	*Caladenia crebra*	
ORCHIDACEAE	*Caladenia flava*	
ORCHIDACEAE	*Caladenia longicauda*	
POACEAE	*Avena barbata*	
POACEAE	*Briza maxima*	
POACEAE	*Ehrharta calycina*	
POACEAE	*Ehrharta longiflora*	

Family	Species	WA Cons. Status
POLYGALACEAE	*Comesperma* sp.	
PRIMULACEAE	*Lysimachia arvensis*	
PROTEACEAE	*Banksia attenuata*	
PROTEACEAE	*Banksia elegans*	Priority 4
PROTEACEAE	*Banksia menziesii*	
PROTEACEAE	*Banksia prionotes*	
PROTEACEAE	*Synaphea spinulosa* subsp. *spinulosa*	
RESTIONACEAE	*Desmocladus asper*	
RUBIACEAE	*Opercularia vaginata*	
THYMELAEACEAE	*Pimelea floribunda*	
XANTHORRHOEACEAE	*Xanthorrhoea drummondii*	
ZAMIACEAE	*Macrozamia riedlei*	

APPENDIX B – RELEVÉ DATA

Site LK01

Date	14/09/2023
Botanist	Megan Gray & Sarah Beckwith
Relevé Size	10 x 10 m
NW Corner Coordinates	322096.31 mE 6695503.80 mN
Vegetation Unit	**Banksia Woodland –** *Banksia prionotes, Banksia attenuata* and *Acacia saligna* Tall Open Woodland over *Banksia elegans* (**P4**), *Xanthorrhoea drummondii* and *Macrozamia riedlei* Sparse Shrubland over *Hibbertia hypericoides* subsp. *septentrionalis* and *Conostylis candicans* subsp. *candicans* Sparse Low Shrubland.
Slope	Gentle
Landform	Plain
Soil Colour	Yellow/brown
Soil Type	Loamy Sand
Litter	72%
Bare Ground	7%
Fire Age	>10 Years
Vegetation Condition	Excellent
Disturbances/Impacts	Main road near by, litter and rabbit evidence



Species	Height (cm)	Cover (%)
Banksia prionotes	6.5	35
Acacia saligna	6	15
Banksia menziesii	5	2
Banksia attenuata	1.5	8
Scholtzia laxiflora	1.4	1
Xanthorrhoea drummondii	1.2	1
Macrozamia riedlei	1	1
Ehrharta calycina	0.8	40
Hibbertia hypericoides subsp. *septentrionalis*	0.6	1
Conostylis candicans subsp. *candicans*	0.3	2
Anigozanthos humilis		+
Briza maxima		+
Burchardia congesta		+
Caladenia flava		+
Corynotheca sp.		+
Desmocladus asper		+
Dianella revoluta		+
Ecdeiocolea monostachya		+
Ehrharta longiflora		+
Gompholobium tomentosum		+
Hypochaeris glabra		+
Lysimachia arvensis		+
Opercularia vaginata		+
Pimelea floribunda		+
Podolepis gracilis		+
Polycarpaea longiflora		+
Sowerbaea laxiflora		+
Ursinia anthemoides subsp. *anthemoides*		+
Waitzia acuminata var. *albicans*		+

Site LK02

Date	14/09/2023
Botanist	Megan Gray & Sarah Beckwith
Relevé Size	10 x 10 m
NW Corner Coordinates	321975.07 mE 6695483.76 mN
Vegetation Unit	**Banksia Woodland –** *Banksia prionotes, Banksia attenuata* and *Acacia saligna* Tall Open Woodland over *Banksia elegans* (**P4**), *Xanthorrhoea drummondii* and *Macrozamia riedlei* Sparse Shrubland over *Hibbertia hypericoides* subsp. *septentrionalis* and *Conostylis candicans* subsp. *candicans* Sparse Low Shrubland.
Slope	Gentle
Landform	Plain
Soil Colour	Light grey brown
Soil Type	Loamy Sand
Litter	65%
Bare Ground	8%
Fire Age	>10 Years
Vegetation Condition	Excellent
Disturbances/Impacts	Main road near by



Species	Height (cm)	Cover (%)
Banksia prionotes		0.5
Acacia saligna		1
Banksia menziesii		1
Xanthorrhoea drummondii		1
Scholtzia laxiflora		1.5
Banksia elegans (**P4**)		2
Macrozamia riedlei		4
Ehrharta calycina		4
Mesomelaena pseudostygia		8
Avena barbata		15
Conostylis candicans subsp. *candicans*		30
Avena barbata		+
Banksia attenuata		+
Caladenia crebra		+
Caladenia longicauda		+
Comesperma sp.		+
Corynotheca sp.		+
Crassula colorata		+
Goodenia berardiana		+
Hibbertia hypericoides subsp. septentrionalis		+
Jacksonia sternbergiana		+
Lechenaultia linarioides		+
Macrozamia riedlei		+
Melaleuca leuropoma		+
Pimelea floribunda		+
Rhagodia preissii ?subsp. *obovata*		+
Sowerbaea laxiflora		+
Tricoryne elatior		+
Ursinia anthemoides subsp. *anthemoides*		+
Wahlenbergia capensis		+
Waitzia acuminata var. *albicans*		+

Site LK03

Date	14/09/2023
Botanist	Megan Gray & Sarah Beckwith
Relevé Size	10 x 10 m
NW Corner Coordinates	321797.07 mE 6695449.89 mN
Vegetation Unit	**Banksia Woodland –** *Banksia prionotes, Banksia attenuata* and *Acacia saligna* Tall Open Woodland over *Banksia elegans* (**P4**), *Xanthorrhoea drummondii* and *Macrozamia riedlei* Sparse Shrubland over *Hibbertia hypericoides* subsp. *septentrionalis* and *Conostylis candicans* subsp. *candicans* Sparse Low Shrubland.
Slope	Flat
Landform	Plain
Soil Colour	Light grey/brown
Soil Type	Loamy Sandy
Litter	54%
Bare Ground	18%
Fire Age	>10 Years
Vegetation Condition	Excellent
Disturbances/Impacts	Rabbit evidence



Species	Height (cm)	Cover (%)
Banksia prionotes	6.5	5
Acacia saligna	6	4
Banksia attenuata	5	5
Xanthorrhoea drummondii	1.5	3
Scholtzia laxiflora	1.2	1.5
Banksia elegans (**P4**)	1	1
Macrozamia riedlei	1	1.5
Hibbertia hypericoides subsp. *septentrionalis*	0.6	0.1
Acacia spathulifolia	0.5	0.2
Synaphea spinulosa subsp. *spinulosa*	0.2	0.2
Arctotheca calendula	0.1	0.1
Conostylis candicans subsp. *candicans*		+
Daviesia divaricata subsp. *divaricata*		+
Ehrharta calycina		+
LAMIACEAE sp.		+
Macarthuria australis		+
Scholtzia laxiflora		+
Seringia integrifolia		+
Ursinia anthemoides subsp. *anthemoides*		+

APPENDIX C – SIGNIFICANT FLORA LOCATIONS

Species	WA Cons. Status	Location		Abundance
		Easting (mE)	Northing (mN)	
Banksia elegans	Priority 4	322008.875	6695490.205	2
Banksia elegans	Priority 4	322055.392	6695494.786	3
Banksia elegans	Priority 4	322053.449	6695448.206	5
Banksia elegans	Priority 4	322049.254	6695439.081	1
Banksia elegans	Priority 4	322054.217	6695483.195	3
Banksia elegans	Priority 4	322053.733	6695491.181	1
Banksia elegans	Priority 4	322053.051	6695489.268	1
Banksia elegans	Priority 4	322041.976	6695454.502	2
Banksia elegans	Priority 4	321822.518	6695457.658	2
Banksia elegans	Priority 4	322015.825	6695489.220	3
Banksia elegans	Priority 4	322064.538	6695488.163	3
Banksia elegans	Priority 4	322010.794	6695491.815	5
Banksia elegans	Priority 4	322056.956	6695435.562	1
Banksia elegans	Priority 4	322054.549	6695498.866	6
Banksia elegans	Priority 4	322045.327	6695461.712	3
Banksia elegans	Priority 4	321803.188	6695454.866	4
Banksia elegans	Priority 4	322043.376	6695441.920	1
Banksia elegans	Priority 4	322054.088	6695469.009	1
Banksia elegans	Priority 4	322055.511	6695477.219	1
Banksia elegans	Priority 4	321791.825	6695452.298	1
Banksia elegans	Priority 4	321822.567	6695456.627	1
Banksia elegans	Priority 4	322053.823	6695463.266	1
Banksia elegans	Priority 4	322044.487	6695451.480	1
Banksia elegans	Priority 4	322054.281	6695473.106	3
Banksia elegans	Priority 4	321854.300	6695465.872	1
Banksia elegans	Priority 4	321812.029	6695457.135	1
Banksia elegans	Priority 4	321815.799	6695448.363	1
Banksia elegans	Priority 4	322060.110	6695457.146	2
Banksia elegans	Priority 4	322026.333	6695488.518	1
Banksia elegans	Priority 4	322060.725	6695499.675	1
Banksia elegans	Priority 4	322060.227	6695463.982	1
Banksia elegans	Priority 4	322018.340	6695483.909	1
Banksia elegans	Priority 4	322053.944	6695447.634	1
Banksia elegans	Priority 4	322049.984	6695476.422	3
Banksia elegans	Priority 4	322054.044	6695465.688	2
Banksia elegans	Priority 4	322060.842	6695433.690	2
Banksia elegans	Priority 4	321859.122	6695472.268	1

Species	WA Cons. Status	Location		Abundance
		Easting (mE)	Northing (mN)	
Banksia elegans	Priority 4	322060.829	6695452.709	3
Banksia elegans	Priority 4	321851.130	6695469.561	2
Banksia elegans	Priority 4	322096.345	6695490.396	4
Banksia elegans	Priority 4	322010.004	6695490.513	1
Banksia elegans	Priority 4	322052.218	6695436.066	1
Banksia elegans	Priority 4	322000.280	6695492.807	3
Banksia elegans	Priority 4	322082.675	6695500.703	2
Banksia elegans	Priority 4	322059.703	6695442.085	2
Banksia elegans	Priority 4	322090.012	6695491.665	1
Banksia elegans	Priority 4	322059.509	6695468.322	1
Banksia elegans	Priority 4	322047.995	6695442.800	1
Banksia elegans	Priority 4	321844.214	6695454.363	1
Banksia elegans	Priority 4	321814.271	6695460.814	3

APPENDIX D – SPECIMEN SUBMISSION FORM

Specimen Submission to the Western Australian Herbarium

Identification and/or incorporation requests

Date: 6/12/23 Number of boxes: 1 Number of specimens: 1

Contact name: Olga Nazarova

Organisation: Focused Vision Consulting

Postal Address: 8/83 Mell Rd, Spearwood

Postcode: 6163

Scientific collecting licence number(s): FB62000334

Contact Phone No.:

Email: olga@focusedvision.com.au

Your reference code: MRWA23007

Preferred communication method:

☐ post ☐ phone ☒ email

Please describe the purpose for specimen collection (e.g., survey of a particular area, research voucher):

Lodging priority species into the Herbarium collection.

Please select the following:

Identification

☐ paid

☐ unpaid

☐ not requested

Incorporation

☒ paid

☐ unpaid

☐ not requested

Purpose of identification

☐ general identification

☐ permit requirement

☐ legal requirement (Chain of Custody required)

☐ other (describe):

Return of specimens

☒ Pickup from Reference Herbarium

☐ Australia Post (fee)

☐ Courier (prior arrangement needed)

☐ Return not required

Invoicing Information (for paid identification, incorporation, shipping)

Purchase order for invoicing or ETJ for internal invoicing:

Focused Vision Consulting (MRWA23007 - Lake Indoon)

HERBARIUM USE ONLY:

PERTH Accession #: _____ RECEIPT DATE: ____ / ____ / ____

Specimen list

Client Reference: MRWA23007

PERTH Accession #:

Field/taxon name	Collector	Collection #	Collector licence #	Other information/reason for incorporation
Banksia elegans	Sarah Beckwith	SAB.15	FB62000334	P4