Natural Area
CONSULTING MANAGEMENT SERVICES

Beijaflore

Wellington National Park Tree Village Flora, Fauna and Black Cockatoo Habitat Surveys

2024

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Executive Summary

Natural Area Consulting Management Services (Natural Area) was contracted by Beijaflore to undertake a flora, fauna and black cockatoo habitat assessment within five areas within Wellington National Park. The surveys were required to inform Beijaflore of the flora and fauna values at the site; in the context of a proposed tree village and zipline construction project. The surveys will also inform management actions within the management plan required as part of the construction of the tree village and zipline. The scope of services included a comprehensive desktop assessment of flora, fauna, black cockatoo and other relevant environmental factors at the site, a reconnaissance and targeted flora survey, a basic fauna survey and a targeted black cockatoo habitat assessment. The results of the survey have been outlined below:

- A total of 202 flora species were recorded from 49 families during the field survey, comprised of 38 weed species, 2 dubious species and 161 native species.
- One priority species was found on site: *Acacia oncinophylla* subsp. *oncinophylla* (P3)
- Eight locally significant species as outlined by DBCA were found on site during the surveys:
  - *Acacia oncinophylla* subsp. *oncinophylla* (P3)
  - *Adiantum aethiopicum* (Common Maidenhair)
  - *Andersonia lehmanniana*
  - *Borya sphaerocephala* (Pincushions)
  - *Diplolaena drummondii*
  - *Lepidosperma squamatum*
  - *Stypandra glauca* (Blind Grass)
  - *Verticordia pennigera*.
- One declared pest was found within the Suspended Walk and Tree Camping and Zipline Tour area: Arum Lily (**Zantedeschia aethiopica*).
- Nine vegetation types were found within the survey boundaries consisting of forests and woodlands, as well as granite outcroppings.
- Vegetation condition ranged from completely degraded to excellent, with majority of the site being recorded in very good condition.
- No threatened or priority communities were present within the survey boundaries.
- A total of 19 fauna species were found from 15 families, consisting of 2 introduced and 17 native species.
- One declared pest animal was found on site through scat evidence: the European Rabbit (**Oryctolagus cuniculus*).
- Of the 90 trees recorded with a diameter at breast height (DBH) >500 mm, 16 contained hollows, with 7 of these hollows being suitable for black cockatoo breeding purposes. No hollows were in use by black cockatoos at the time of the survey.
- Vegetation meets the requirements to be roosting habitat however as no dusk roosting surveys were undertaken, it cannot be confirmed that trees within the survey area are used for this purpose by black cockatoos.
- Habitat is classified as high-quality foraging habitat due to the extensive Jarrah, Marri and proteaceous species present on site.

Contents

1.0 Introduction

Natural Area Consulting Management Services (Natural Area) was commissioned by Beijaflore to conduct a reconnaissance and targeted flora survey, basic fauna survey, and targeted black cockatoo habitat assessment of an area within Wellington National Park prior to construction of the Wellington National Park Tree Village project. Information gathered during these surveys will be used to inform Beijaflore of the environmental values within the site, culminating in a management plan for the area.

1.1 Location

The site is located approximately 16.5 km south-west of the town of Collie within the Wellington National Park (Figures 1 & 2). The survey areas are spread over two localities, the Shire of Collie and the Shire of Dardanup, which is demarcated by the Collie River. The total combined survey area is approximately 47.5 ha. The site is not part of an environmentally sensitive area (DWER, 2021).

1.2 Scope

The scope of services under this project included the following works to gather environmental data of the required areas within Wellington National Park. The works are required to inform Beijaflore and Department of Biodiversity, Conservation and Attractions (DBCA) about the potential environmental impacts of the proposed tree village project within Wellington National Park. Works included:

- A comprehensive desktop assessment, accessing a range of databases, previous literature, and liaison with DBCA and Beijaflore to gather existing data on the site characteristics, flora, vegetation, fauna and black cockatoo values within the area.
- A field survey undertaking the following components to collect the required environmental data:
  - reconnaissance flora survey
  - targeted flora survey for threatened, priority and locally significant species
  - basic fauna survey
  - black cockatoo habitat assessment.

1.3 Legislative Context

State and Federal environment-related laws impact how environmental values are governed in Western Australia. The following legislation and policies are relevant to this report.

Aboriginal Heritage Act 1972 (WA)

The Aboriginal Heritage Act 1972 makes provision for the recognition, protection, conservation, and preservation of Aboriginal heritage in Western Australia. The site is registered as an Aboriginal Site (number 16713).

Biosecurity and Agriculture Management Act 2007 (WA)

The *Biodiversity and Agriculture Management Act 2007* (BAM Act) regulates the framework for plant and animal pest and disease biosecurity in Western Australia. The framework provides for the control of declared flora and fauna species (declared organisms) that are known to be a significant environmental threat and the management, control and prevention of these declared plants and animals.

Biodiversity Conservation Act 2016 (WA)

The *Biodiversity Conservation Act 2016* (BC Act) aims to protect and conserve biodiversity as well as to promote the ecologically sustainable use of biodiversity components in the State. The BC Act provides the statute relating to conservation and legal protection of flora, fauna, and ecological communities. The BC Act follows the principles of ecologically sustainable development, detailing that decision-making processes should effectively integrate long-term and short-term economic, environmental, social, and equity considerations.

***Environment Protection and Biodiversity Conservation Act 1999* (Cth)**

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) serves to protect and manage nationally and internationally important flora, fauna, ecological communities, and heritage places. The primary objective of the EPBC Act is to promote the conservation of biodiversity and the sustainable use of natural resources while allowing for ecologically sustainable development. The EPBC Act allows for the creation of conservation agreements between the Australian government and individuals, communities, or organisations to support the conservation of biodiversity.

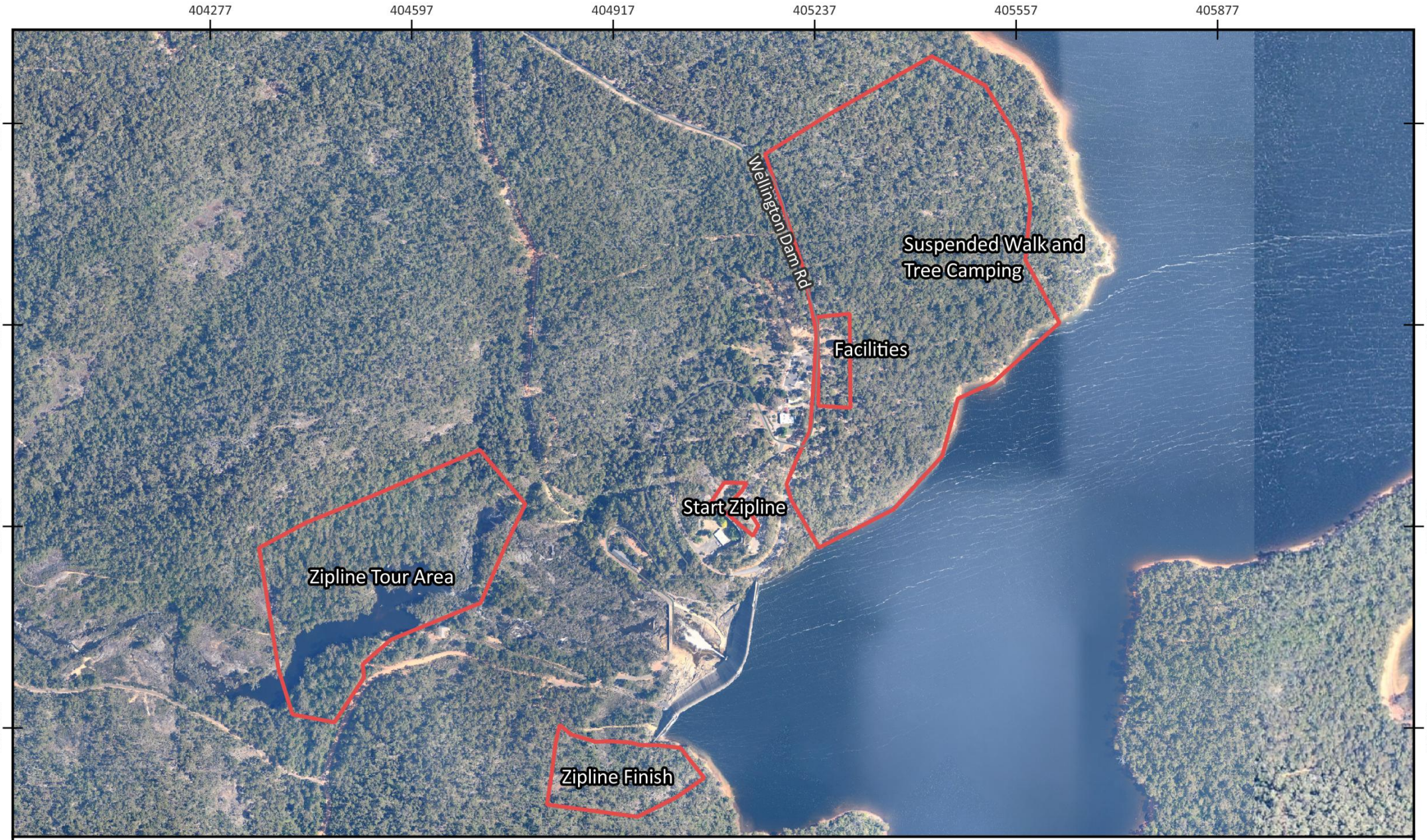

Figure 1:
Site Boundary

Wellington National Park

Legend

Survey Area

Client:	Beijaflore
Date:	04/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 8000

0 100 200 m

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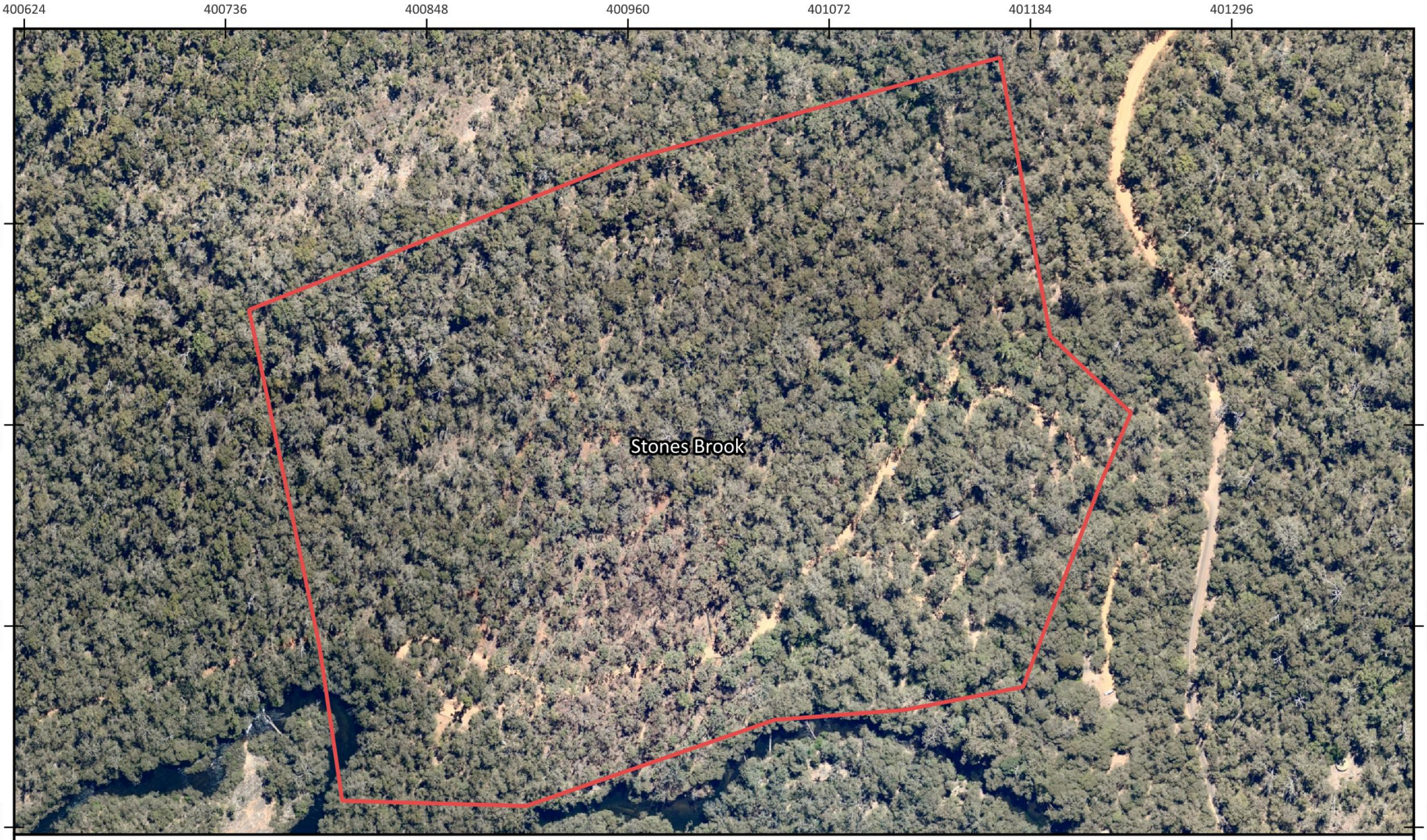

Figure 2:
Site Boundary

Wellington National Park

Legend

Survey Area

Client:	Beijaflore
Date:	04/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 2800

0 50 100 m

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2.0 Site Characteristics

2.1 Regional Context

The site is located within the northern portion of the Southern Jarrah Forest (JF2) IBRA subregion (Department of Primary Industries and Regional Development (DPIRD), 2024). This region is characterised by a gentle sloping from the north towards the south coast, leveling out towards the east resulting in poor drainage and associated wetlands, with dissected drainage in the west. Soils include ironstone covered by sand. Jarrah-Marri Forest in the west and Marri and Wandoo woodlands in the east are typical of this area (Hearn *et al.* 2002).

2.2 Climate

The climate experienced in the area is Mediterranean, with warm summers and mild winters. According to the Bureau of Meteorology (BOM) (2024a); Collie East WA, site number 009994, the region has an average:

- Rainfall of 695.3 mm pa, with rain falling predominantly between May and August (2002 - 2024)
- Maximum temperature ranging from 16.4 °C in winter to 31.0 °C in summer, with a maximum recorded temperature of 42.4 °C (2002 - 2024)
- Minimum temperatures ranging from 4.3 °C in winter to 14 °C in summer, with a minimum recorded temperature of -6.0 °C (2002 - 2024).

Mean rainfall and mean minimum and maximum temperatures have been provided in Figure 3.

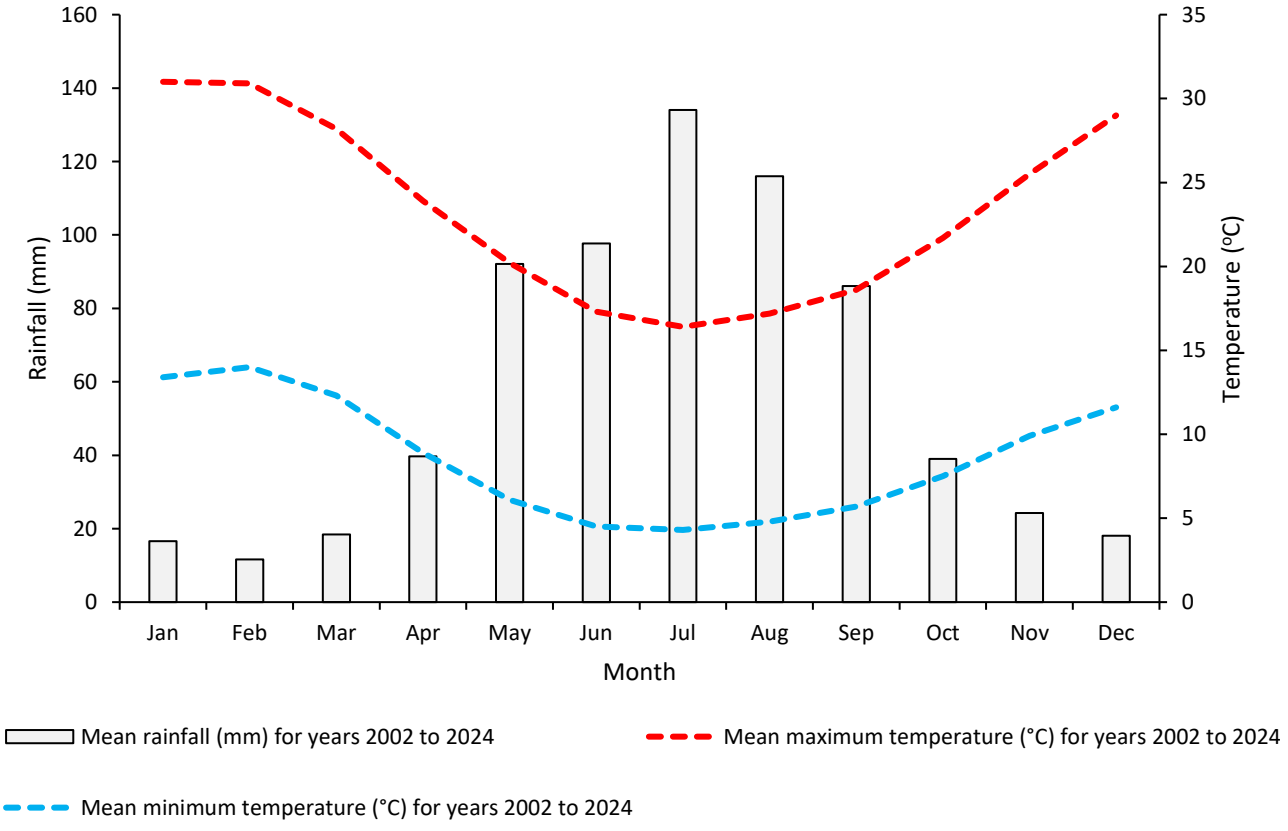

Figure 3: Mean temperature and rainfall for Collie. Source: BOM, 2024. Collie East WA, Site Number 009994.

2.3 Topography and Soils

Three soil types were identified on site, and have been outlined in Table 1 (DPIRD, 2022). The survey areas range greatly in topography with all survey areas containing some degree of slope. The lowest recorded Australian Height Datum (AHD) is in the Stones Brook Area which ranges from 84 AHD in the south rising to 170 AHD in the north. The highest recorded point is 226 AHD within the Suspended Walk and Tree Camping Area which slopes to a low of 164 AHD in the south (DPIRD, 2019). (Table 1 and Figures 4 & 5).

Table 1: Soil types within survey areas

Name	Symbol	Description
Balingup moderate slopes phase	255LvBL4	Moderate slope phase, slopes ranging from 15-35 %, with relief of 60-120 m.
Helena subsystem	255LvHL	A deeply incised valley (120-200 m) with steep slopes >25 %. Soils are stony with rocky outcrops present.
Lowden Valley wet, dam phase	255LvW_DAM	Dam.

Source: DPIRD, 2022

2.4 Vegetation Complex

Three vegetation complexes exist within the survey boundaries, the Dwellingup, Helena 1, and Murray 1 (DBCA, 2018a). Descriptions and locations of these complexes are provided in Table 2 and Figures 6 & 7. The pre-European extent of the Dwellingup vegetation complex remaining is (Government of Western Australia, 2019):

- 86.83 % within the South-West Forests
- 90.16 % within the Shire of Collie

The pre-European extent of the Helena 1 vegetation complex remaining is:

- 75.58 % within the South-West Forests
- 96.69 % within the Shire of Collie
- 97.46 % within the Shire of Dardanup

The pre-European extent of the Murray 1 vegetation complex remaining is:

- 76.13 % within the South-West Forests
- 63.23 % within the Shire of Collie
- 49.10 % within the Shire of Dardanup

Table 2: Vegetation Complexes

Name	Symbol	Description
Dwellingup	D1	*Eucalyptus marginata* subsp*. marginata-Corymbia calophylla* open forest on lateritic uplands in humid and subhumid areas
Helena 1	He1	*C. calophylla-E. patens-E. marginata* subsp. *marginata* open forest with *E. rudis* on deeper soils. Some closed heath and

Name	Symbol	Description
		lithic complex on granite associated shallow soils on steep valley slopes in humid and subhumid areas
Murray 1	My1	*E. marginata* subsp. *marginata-C. calophylla-E. patens* open forest on valley slopes to *E. rudis-Melaleuca rhaphiophylla* woodland on valley floors in humid and subhumid areas

Source: Heddle *et al.* 1980

2.5 Black Cockatoo Habitat

There is the potential for the three threatened black cockatoos and their habitat to occur on site, including the Carnaby's Cockatoo (*Zanda latirostris*) listed as Endangered under the EPBC Act 1999 (Cwlth), the Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksia naso*) and the Baudin's Black Cockatoo (*Zanda baudinii*) listed as Vulnerable. All are listed as Threatened under the *Biodiversity Conservation Act 2016* (WA). The survey site occurs within an area classified as Carnaby's Cockatoo Areas requiring investigation as feeding habitat in the Jarrah Forest IBRA Region (DBCA, 2018b) and within 4.5 km of an area classified as Black Cockatoo Roosting Sites – Buffered (DBCA-064) (DBCA, 2019a).

2.6 Other Site Characteristics

2.6.1 Old-growth Forest

The site occurs within an area mapped as *Eucalyptus marginata* (Jarrah) old-growth forest (Conservation and Parks Commission, 2023).

2.6.2 Hydrology

The site is located on the bank of the Wellington Reservoir and along the adjoining Collie River. It sits on the Karri Groundwater Area (DWER, 2024a). The survey site does not occur on any geomorphic or Ramsar wetlands (DBCA, 2017a; DBCA, 2018c).

2.6.3 Heritage Values

One registered site of Aboriginal heritage, under the *Aboriginal Heritage Act 1972*, occurs within the Stones Brook, Zipline Tour Area, and Suspended Walk and Tree Camping survey areas. This is listed as Collie River Waugal, Place ID: 16713. It is described as a place of Creation/Dreaming Narrative; Landscape/Seascape feature; Water source (Department of Planning, Lands and Heritage (DPLH), 2024).

One site of European heritage is recorded as occurring within the Zipline Tour, Suspended Walk and Tree Camping, Start Zipline, Finish Zipline, and Facilities survey areas. This area is registered under the *Heritage Act 2018* (WA) as Wellington Dam (Government of Western Australia, 2024a).

2.6.4 Fauna Habitat Zones

While the site falls within an 'Existing and proposed conservation reserve', no fauna habitat zones have been declared in any of the areas (DBCA, 2021).

2.6.5 Contaminated Sites

The survey site does not contain any listed contaminated sites within the site boundaries, and the nearest listed contaminated site is approximately 17 km from site (DWER, 2024b).

2.6.7 Informal Reserve

The Stones Brook and Zipline Tour areas intersect with the Collie River, and the Suspended Tree Walk area is directly adjacent to the Wellington Dam. Both water sources are classified as a level 1 (Mainstream) river, and are part of the Collie River system (DWER, 2018).

2.6.8 Dieback

All areas assessed fall under the Low confidence uninfested status (Project Dieback, n.d.a) and the Stones Brook, Zipline Tour, Zipline Finish, Zipline Start and the southern section of the Facilities areas are listed as Medium Confidence Susceptible vegetation (Project Dieback, n.d.b). The Zipline Finish area also falls under the Forest Dieback Risk Area (DBCA, 2019b).

A review of the Dieback History map for Wellington National Park (DBCA, 2024a) showed that the Suspended Walk and Tree Camping and Facilities, Start Zipline and Zipline Tour have areas classified as dieback infested. The Start Zipline and Stones Brook areas showed that areas within these boundaries have been classified as uninterpretable (DBCA, 2024a).

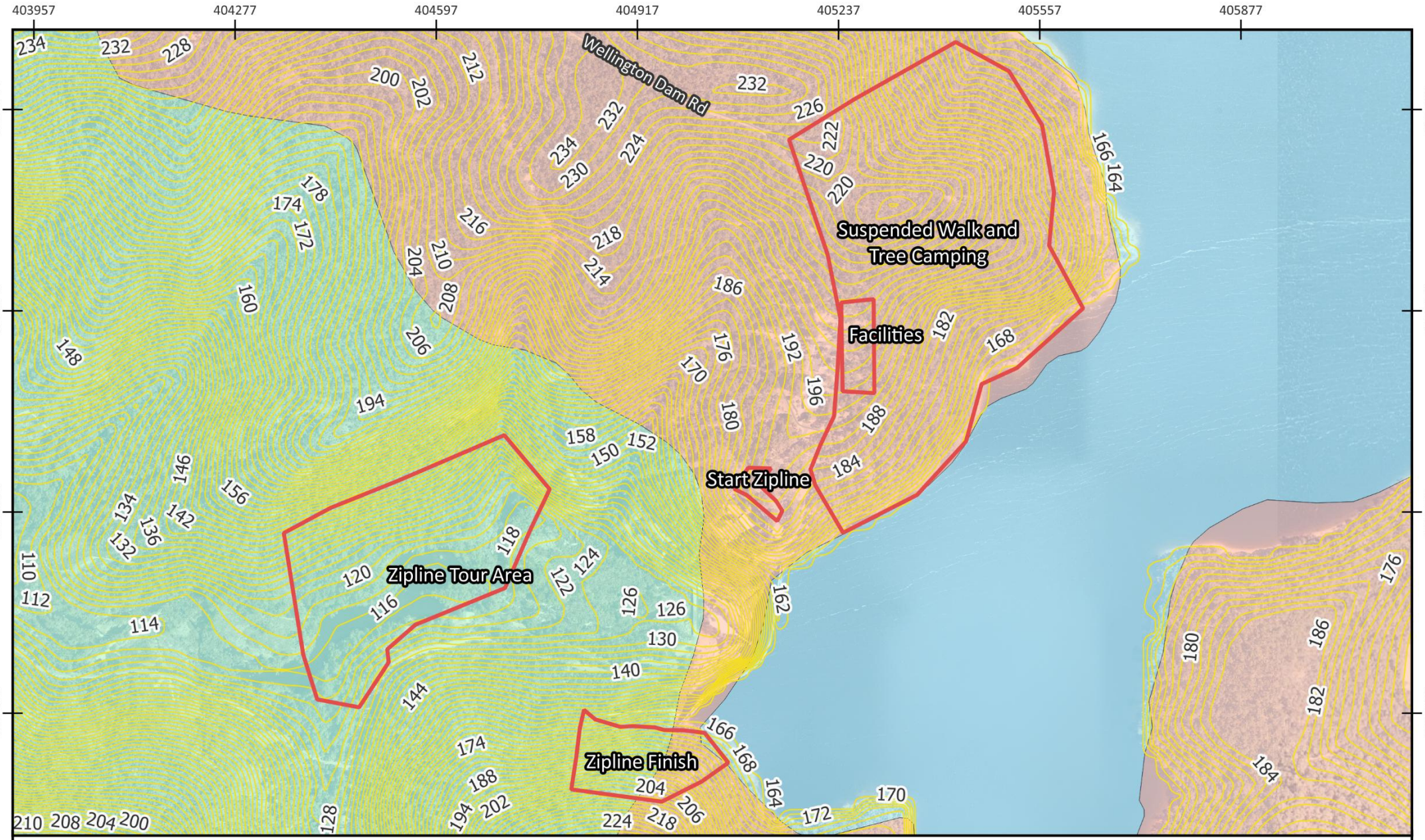

Figure 4:
Topography and Soils

Wellington National Park

Legend

- 2 m Contours
- Balingup moderate slopes phase
- Helena subsystem
- Lowden Valley wet, dam phase
- Survey Area

Client:	Beijaflore
Date:	11/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 8000

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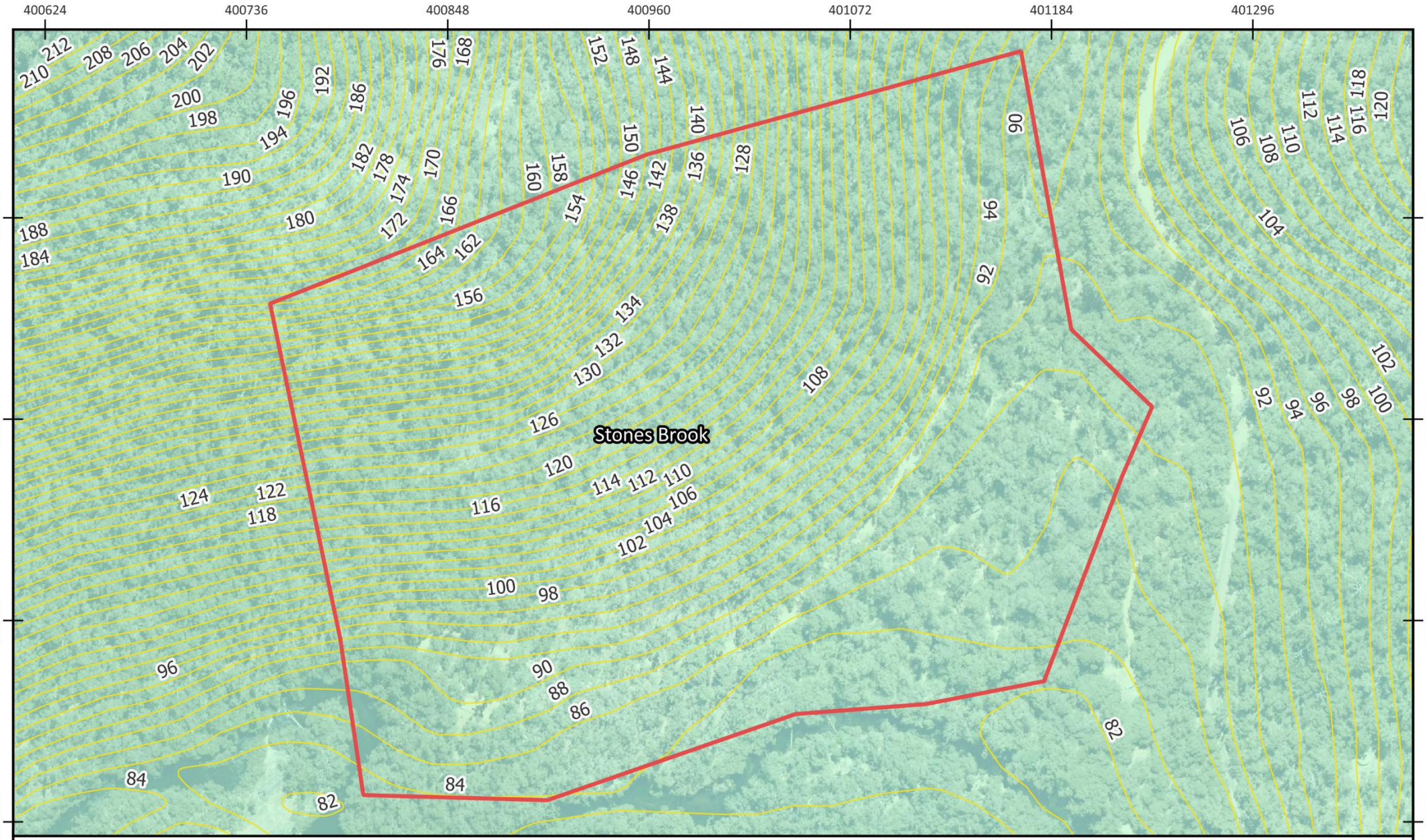

Figure 5:
Topography and Soils

Wellington National Park

Legend

- 2 m Contours
- Helena subsystem
- Survey Area

Client:	Beijaflore
Date:	11/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 2800

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0 50 100 m

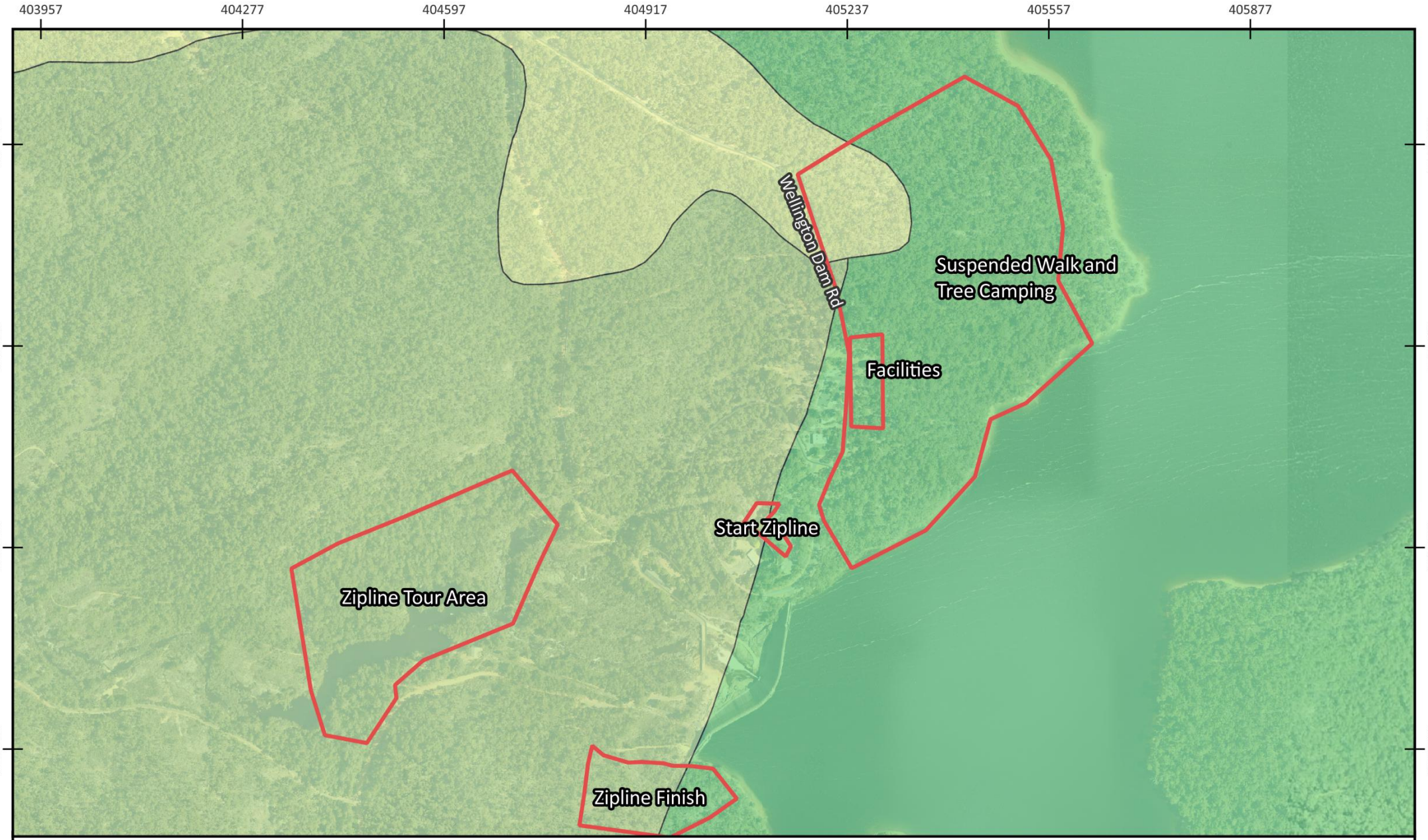

Figure 6:
Vegetation Complex

Wellington National Park

Legend

- Dwellingup
- Helena 1
- Murray 1
- Survey Area

Client:	Beijaflore
Date:	04/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 8000

0 100 200 m

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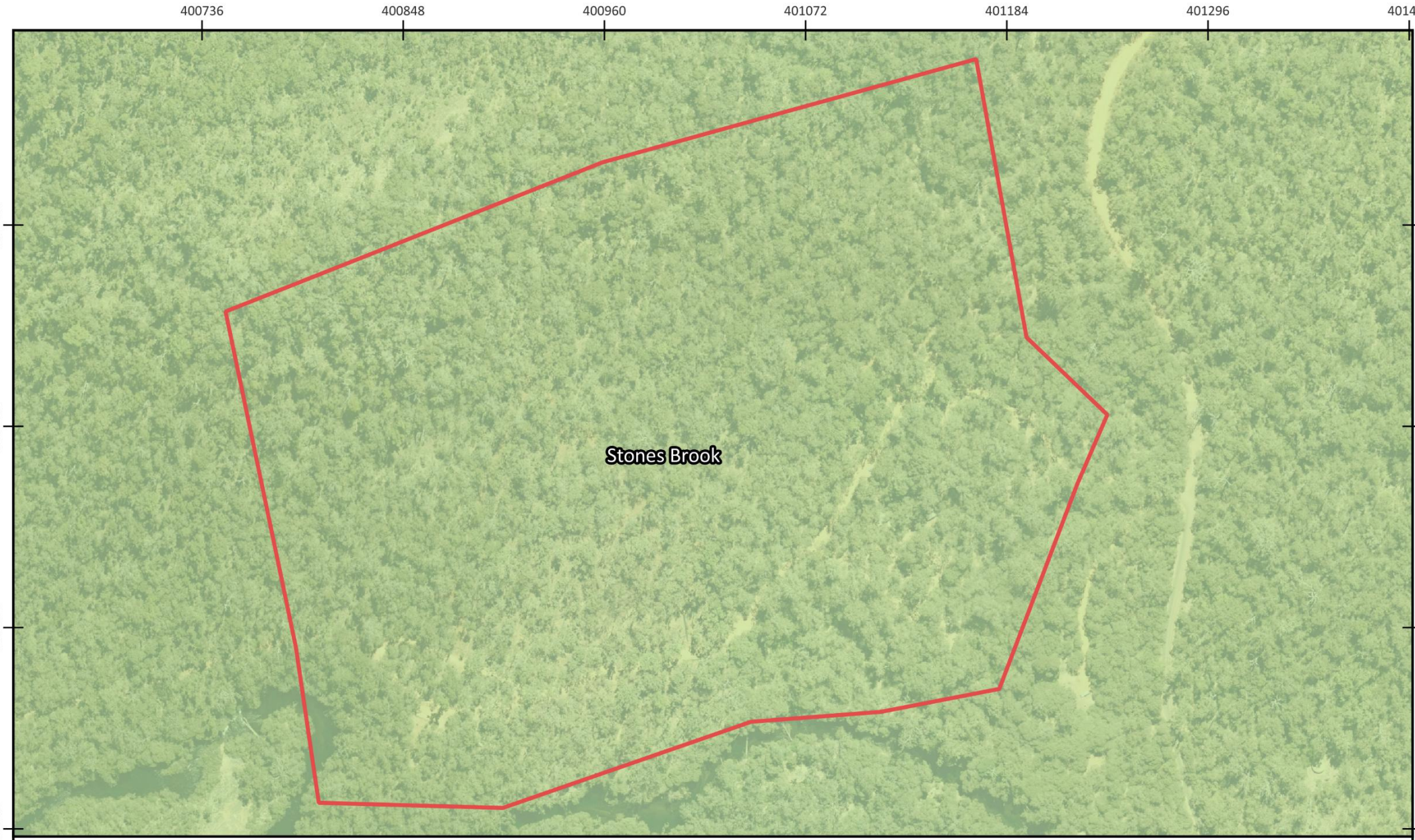

Figure 7:
Vegetation Complex

Wellington National Park

Legend

- Helena 1
- Survey Area

Client:	Beijaflore
Date:	04/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 2800

N

0 50 100 m

3.0 Methodology

3.1 Desktop and Literature Review

The desktop survey included reviewing online databases to gather contextual knowledge and determine preliminary site characteristics including:

- likely native and non-native flora and fauna species present
- current extent of native vegetation
- vegetation complex
- soil types
- likely presence of threatened or priority flora and fauna species
- likely presence of any threatened or priority ecological communities
- wetland values
- fauna habitat values
- landscape or geological features
- listed contaminated sites
- listed heritage sites.

The following databases were accessed to obtain relevant information:

- NatureMap (DBCA, 2024b)
- Protected Matters Search Tool (Department of Climate Change, Energy, the Environment and Water (DCCEEW), 2024) (Appendix 1)
- FloraBase (WA Herbarium, 2024)
- Threatened and priority flora (DBCA, 2024c) fauna (DBCA, 2024d) ecological community database searches (DBCA, 2024e)
- Data WA (Government of Western Australia, 2024b).

Conservation code definitions for the State and Commonwealth are provided in Appendix 2. Information relating to conservation significant species and locally significant species from database searches were summarised into field reference guides to aid with on-ground flora surveys which is provided in Appendices 3 and 4.

3.2 Reconnaissance Flora Survey

The flora and vegetation survey was conducted in accordance with *Technical Guidance-Flora and Vegetation Surveys for Environmental Impact Assessment* (Environmental Protection Authority (EPA), 2016). Samples were collected, or photographs taken of unfamiliar species to enable later identification. Natural Area environmental scientists undertook the survey between September 2 and 6, 2024, with key data recorded using QField software on a handheld tablet. Survey activities included:

- Traversing the entirety of the site and recording all species present, including native and invasive species.
- Undertaking a relevé per vegetation type in each of the survey areas, recording relevant site characteristics, all native and introduced species densities and heights (Figures 8 & 9; Appendix 5).
- Marking GPS locations of any declared pests (DP) and/or Weeds of National Significance (WoNS) identified.

- Recording vegetation type including dominant over, middle and understorey species (Executive Steering Committee for Australian Vegetation Information (ESCAVI), 2003).
- Recording vegetation condition using the scale attributed to Keighery (Table 3) (EPA, 2016).
- The use of GPS to map the boundaries of differing vegetation condition.
- Recording evidence of disturbance, such as fire.

3.2.1 Vegetation Type

The vegetation type was determined using the structural classes described in NVIS Level V (ESCAVI, 2003) and records dominant over, middle and understorey species.

3.2.2 Vegetation Condition

Vegetation condition was assessed using the rating scale attributed to Keighery in *Technical Guidance-Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016) (Table 3). Table 3 provides a description of the rating scale.

Table 3: Vegetation condition ratings

Category		Description
1	Pristine	Pristine or nearly so, no obvious signs of disturbance or damage caused by human activities since European settlement.
2	Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.
3	Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
4	Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds, partial clearing, dieback and grazing.
5	Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback and grazing.
6	Completely Degraded	The structure of the vegetation is no longer intact, and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Source: EPA, 2016

3.3 Targeted Flora Survey

The targeted flora survey was conducted in accordance with *Technical Guidance-Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016). Samples were collected, or photographs taken of unfamiliar species to enable later identification. Natural Area environmental scientists undertook the survey

between September 2 and 6, 2024, with key data recorded using QField software on a handheld tablet. Survey activities included:

- Traversing the entirety of the site and conducting a systematic search using parallel transects spaced 20 m apart for conservation significant flora species with the potential to occur in the area.
- Marking locations of any conservation significant flora identified and determining population size and extent.
- Utilising a track logger to record survey effort (Appendix 6).

3.4 Basic Fauna Survey

The fauna survey was completed in accordance with a Basic Fauna Survey as outlined in the *Technical Guidance, Terrestrial vertebrate fauna surveys for environmental impact assessment* (EPA, 2020). Natural Area environmental scientists traversed the site between September 2 and 6, 2024 and undertook this survey in conjunction with other survey activities. A basic survey is defined as a low-intensity survey, which gathers broad fauna and habitat information including opportunistic fauna observations (EPA, 2020). The fauna survey included recording opportunistic sightings of fauna species while traversing the survey area, along with recording evidence of their presence in the form of:

- scats
- tracks
- diggings
- burrows, dens and warrens
- runnels (vegetative tunnels)
- calls.

3.5 Black Cockatoo Habitat Assessment

A black cockatoo habitat assessment was conducted in accordance with *Referral guideline for 3 WA threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black-cockatoo* (Department of Agriculture, Water and the Environment (DAWE), 2022).

Natural Area environmental scientists undertook the survey between September 2 and 6, 2024, with key data recorded using QField software on a handheld tablet. Survey activities included:

- Traversing the whole site in a systematic grid search.
- Recording the location and evidence of breeding, roosting and foraging activities (e.g. chew marks, feathers, scats).
- Marking the GPS locations of each habitat tree with a diameter at breast height (DBH) ≥ 500 mm.
- Recording the height, DBH, health, and species of each habitat tree.
- Recording evidence of hollows, including size, type, and location within the tree.
- Recording foraging habitat, vegetation type, and condition.

3.6 Limitations

Limitations associated with the flora and fauna surveys and the black cockatoo habitat assessment are provided in Table 4 and Table 5 below.

Table 4: Flora survey limitations

Potential Limitation	Degree of Limitation	Comments
Availability of contextual information	None	Contextual information was readily available for the site. Data was downloaded from government databases (Data WA) and requested from DBCA through personal communication if required.
Competency/experience of team	None	Survey activities were led by an experienced consultant who has previous experience undertaking flora surveys in the Jarrah Forest bioregion.
Proportion of flora recorded/collected, any identification issues	Moderate	A total of 201 flora species (taxa) were recorded from 49 families during the field survey, comprised of 38 introduced (weeds), 2 dubious and 161 native species. Of these, 12 species (6 %) were unable to be identified to species level due to a lack of diagnostic characteristics present at the time of survey. Ten of these species were able to be identified to genus level: ▪ *Caladenia* sp. 1 ▪ *Caladenia* sp. 2 ▪ *Eucalyptus* sp. (Dead stag) ▪ *Lepidosperma* sp. 1 ▪ *Lepidosperma* sp. 2 ▪ *Lepidosperma* sp. 3 ▪ *Lepidosperma* sp. 4 ▪ *Pterostylis* sp. ▪ *Thelymitra* sp. 1 ▪ *Thelymitra* sp. 2 Two flora species were only able to be identified to family level: ▪ Fabaceae sp. ▪ Rutaceae sp. Of the 12 species identified to genus level, 5 were members of the Orchidaceae family (*Caladenia* spp., *Pterostylis* spp. and *Thelymitra* spp.). Many members of the Orchidaceae family require floral features to be present in order to identify them down to species level. While the survey was undertaken in spring, several orchid species had not yet flowered, resulting in no

Potential Limitation	Degree of Limitation	Comments
		positive identification being made. It was determined the *Caladenia* species found during the survey were not the conservation significant or locally significant species through previous location data and leaf features. No threatened, priority or locally significant species from the *Pterostylis* or *Thelymitra* genus were listed in the desktop assessment as likely to occur on site. The unidentified *Eucalyptus* species is a dead stag and as such, there are no longer any identifying features on the trunk. The W.A. Herbarium has noted that currently, the *Lepidosperma* genus is under review, and as such there is currently no formal documentation on distinguishing character differences between previously published and new species. Four *Lepidosperma* species were unable to be identified during the survey in the absence of published documentation for distinguishing characteristics. These species were not likely to be the locally significant *Lepidosperma* as these species had different features to *L. squamatum*. Two flora species unable to be identified past family level due to a lack of floral features present. The species were able to be identified down to family level by the stem and leaf features, however, will need floral features present to make a positive identification. Stem and leaf features were compared with the threatened, priority and locally significant species identified during the desktop assessment from the respective families. It was determined that both species are not likely to be a threatened, priority or locally significant species using the features present at the time of the survey.
Survey effort and extent	None	A reconnaissance and targeted flora survey was undertaken, with the entire site traversed in transect lines spaced 20 m apart. A minimum of one relevé was undertaken per vegetation type within each area. A running species list was recorded to ensure all flora seen within the survey boundaries were recorded. All areas within the site were traversed during the five-day flora survey period.

Potential Limitation	Degree of Limitation	Comments
Access restrictions	Minor	Minor access restrictions were encountered within the Zipline Tour area. The terrain was unable to be traversed in the southeastern part of the site as there were steep granite outcrops present. There was a non-traversable area behind a fence near a building on Falcon Road, in the southern section of the Zipline Tour area. An old, downed powerline was encountered in the southwestern section of the site and as such, the area was not traversed. All areas were able to be visually assessed from a safe distance, and as such restrictions were minor and vegetation type and condition mapping was still undertaken.
Survey timing	Minor	The survey was undertaken during spring which is the optimal season for flora surveys within the Southern Jarrah Forest subregion. Whilst the survey was undertaken during flowering season, some species may flower earlier or later in the season and therefore may not be able to be identified. It was found during the survey that some species had not yet flowered, resulting in 12 flora species not being identified down to species level. Of the 29 conservation significant flora species identified in the desktop survey as being likely to occur within the survey area, 11 have flowering periods outside of the survey period. None of the unidentified species listed above have matching stem or leaf features to those threatened and priority species outside of the flowering period therefore, it was determined that these species are likely not within the survey boundaries.
Disturbances	None	No recent disturbances which may have had an impact on survey results (e.g. fire, recent clearing or floods) were identified during the survey.

Table 5: Fauna survey limitations

Potential Limitation	Degree of Limitation	Comments
Availability of contextual information	None	Contextual information was readily available for the site. Data was downloaded from government databases (Data WA) and requested from DBCA through personal communication if required.
Competency/ experience of team	None	Survey activities were led by an experienced consultant who has previous experience undertaking fauna

Potential Limitation	Degree of Limitation	Comments
		surveys and black cockatoo habitat assessments in the Jarrah Forest bioregion.
Proportion of fauna recorded/collected, any identification issues	None	A total of 19 fauna species (taxa) were recorded from 15 families during the field survey, comprised of 2 introduced and 17 native species. Species consisted of 14 birds,4 mammals and a reptile. All species were able to be identified to genus level.
Survey effort and extent	None	The entire survey area was traversed in 20 m gridlines to ensure full coverage of the site. Any potential fauna habitat such space within and under fallen logs were inspected to find any potential fauna species that may be hiding out of sight. A basic survey was undertaken, meaning fauna evidence was recorded opportunistically. Cryptic and nocturnal fauna species are not as likely to be found during basic surveys and may require a detailed or targeted survey effort in order to detect. Only trees that were marked to be used in the tree village project were assessed for black cockatoo breeding habitat.
Access restrictions	Minor	Minor access restrictions were encountered within the Zipline Tour area. The terrain was unable to be traversed in the southeastern part of the area as there were steep granite outcrops present. There was a non-traversable area behind a fence near an old shed building on Falcon Road, in the southern section of the Zipline Tour area. An old, downed powerline was encountered in the southwestern section of the site and as such, the area was not traversed. All areas were able to be visually assessed from a safe distance, and as such restrictions were minor and vegetation type and condition mapping was still undertaken.
Survey timing	Minor	The survey was undertaken during spring which is the optimal season for bird and mammal surveys within the Southern Jarrah Forest subregion. The survey was undertaken during the day, and therefore any nocturnal species present were not recorded.

Potential Limitation	Degree of Limitation	Comments
		The black cockatoo habitat survey was undertaken during the foraging and breeding season for all three black cockatoo species within the Jarrah Forest bioregion. The survey was undertaken during the day, and therefore did not note any roosting activity for black cockatoos.
Disturbances	None	No recent disturbances which may have had an impact on survey results (e.g. fire, recent clearing or floods) were identified during the survey.

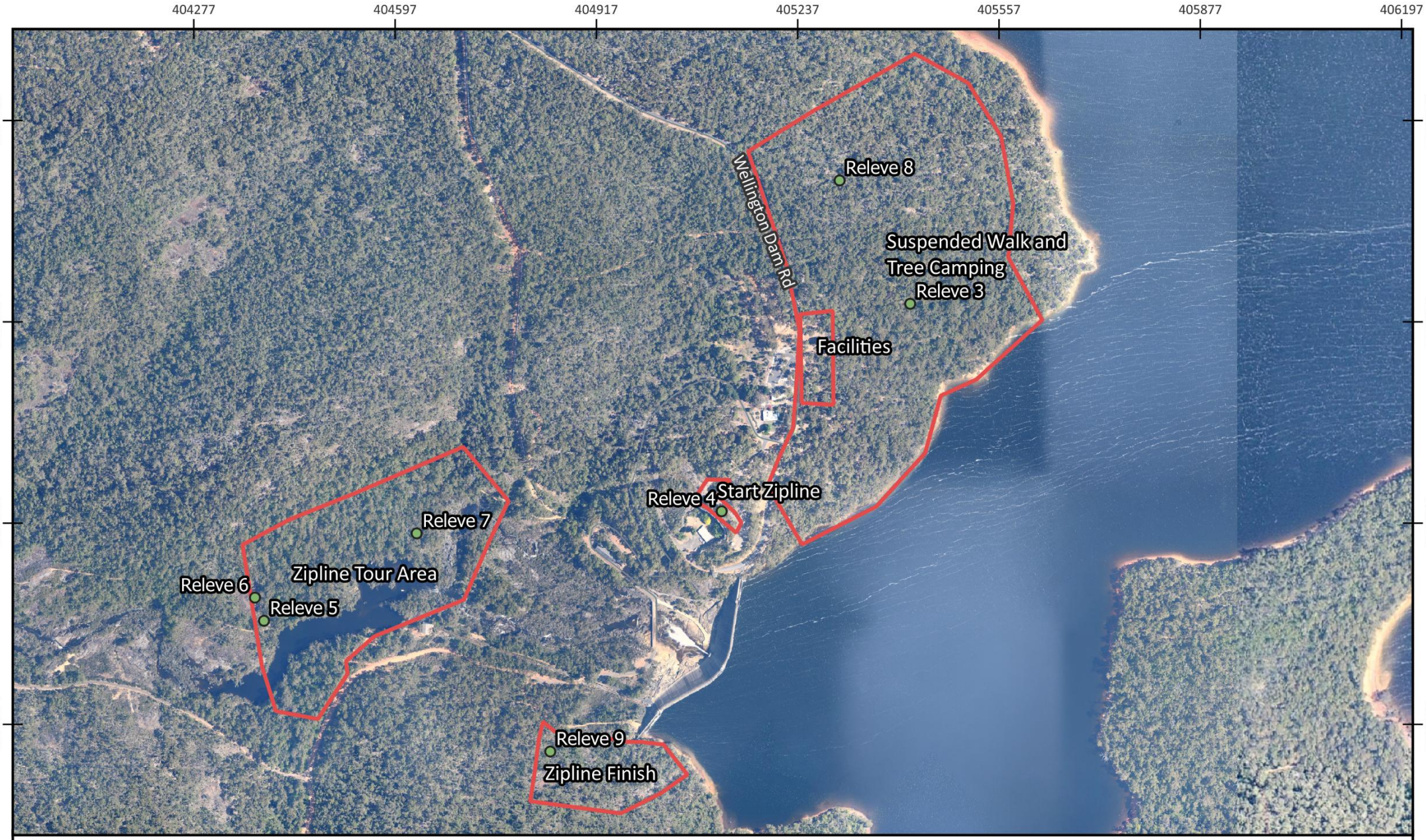

Figure 8:
Relevé Locations

Wellington National Park

Legend

- Relevé
- Survey Area

Client:	Beijaflore
Date:	04/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 8000

0 100 200 m

N

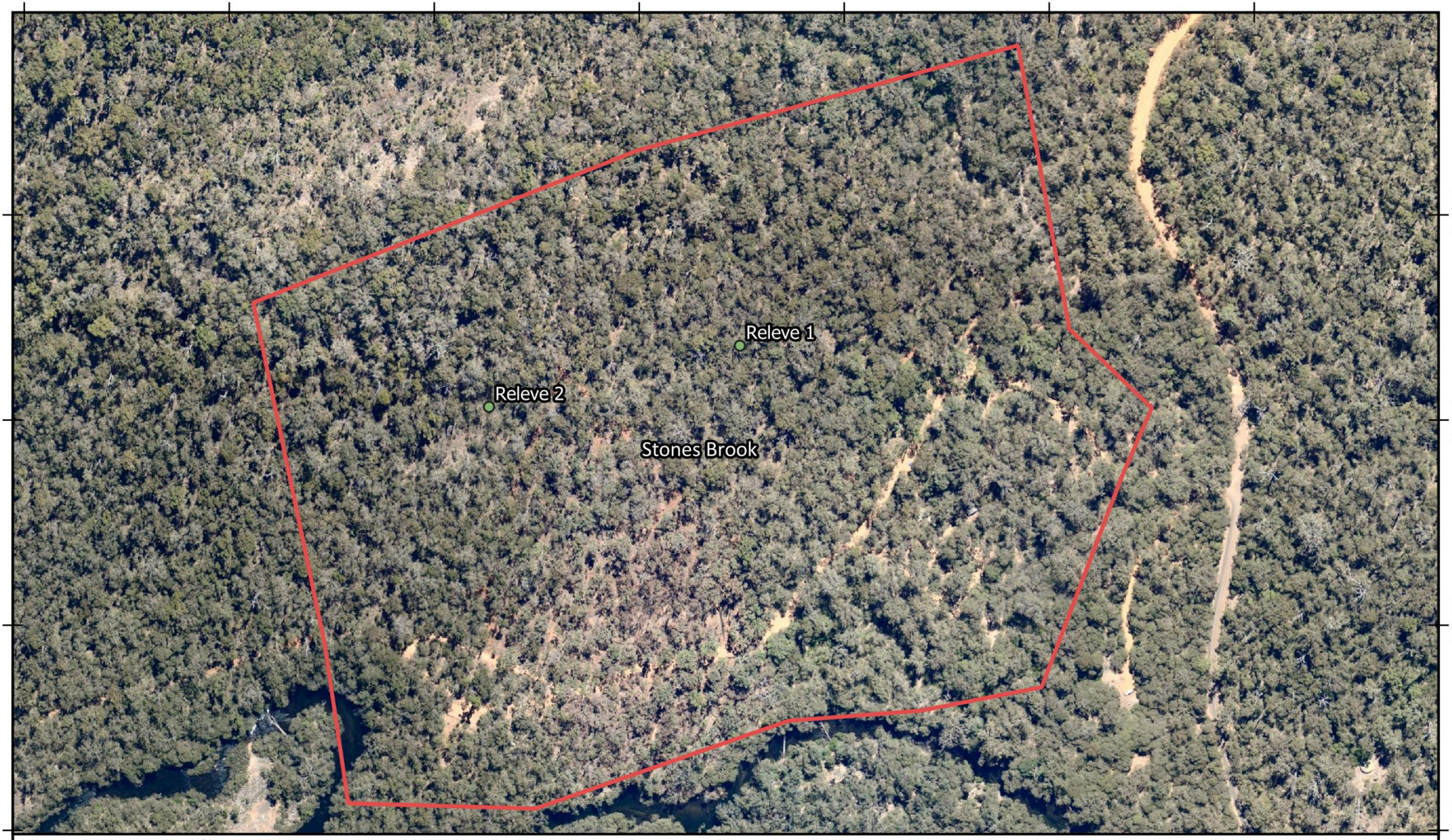

Figure 9:
Relevé Locations

Wellington National Park

Legend

- Relevé
- Survey Area

Client:	Beijaflore
Date:	04/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 2800

0 50 100 m

N

4.0 Flora Survey Results

4.1 Desktop Survey

A desktop survey of online databases indicated the potential for a total of 59 conservation significant species to occur within 10 km of the survey area (Table 5). NatureMap indicated 11 conservation significant flora species listed under the *Biodiversity Conservation Act 2016* (WA) or by the Western Australian Herbarium (2024), as potentially occurring within 10 km radius of the site (DBCA, 2024b). A review of the Protected Matters Search Tool (PMST) (DCCEEW, 2024) indicated 13 significant flora species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) as potentially occurring within a 10 km radius of the site (Appendix 1). A review of the DBCA (2024c) threatened and priority flora database indicated 45 threatened or priority species have been recorded within 10 km of the site.

Of the conservation significant species potentially found in the area, it was determined that the site conditions (soil type, drainage, location) may be suitable for 27 (highlighted green) of these species (Table 6). Conservation code descriptions are provided in Appendix 2. Additionally, 50 species that hold local significance and may be present within the survey areas were identified (DBCA, personal communication, August 16, 2024). These species have been provided in Table 7.

Table 6: Threatened and Priority flora species listed by NatureMap, PMST and DBCA

Species Name	Cons Code	NatureMap	PMST	DBCA
Acacia oncinophylla subsp. *oncinophylla*	P3	X		X
Acacia semitrullata	P4	X		X
Adenanthos cygnorum subsp. *chamaephyton*	P3			X
Aponogeton hexatepalus	P4			X
Banksia mimica	EN		X	
Banksia squarrosa subsp. argillacea	VU		X	
Caladenia hoffmanii	EN		X	
Caladenia procera	T/CR			X
Caladenia speciosa	P4			X
Caladenia uliginosa subsp. *patulens*	P1	X		X
Caladenia validinervia	P1			X
Calothamnus graniticus subsp. *leptophyllus*	P4			X
Carex tereticaulis	P3			X
Caustis sp. Boyanup	P3			X
Chamaescilla gibsonii	P3			X
Chamelaucium erythrochlorum	P4			X
Craspedia sp. Waterloo	P2			X

Species Name	Cons Code	NatureMap	PMST	DBCA
Cyanothamnus tenuis	P4	X		X
Darwinia whicherensis	T			X
Dillwynia sp. Capel	P3			
Diuris drummondii	VU		X	
Diuris micrantha	VU		X	
Diuris purdiei	EN		X	
Drakaea confluens	T/CR			X
Drakaea elastica	T/CR			
Drakaea micrantha	VU		X	
Eleocharis keigheryi	T/VU		X	
Gastrolobium sp. Yoongarillup	P1			X
Gastrolobium whicherense	P2			X
Gonocarpus keigheryi	P2	X		X
Grevillea prominens	P3			X
Grevillea ripicola	P4	X		X
Grevillea rosieri	P2			X
Hemiandra sp. Windy Harbour	P3	X		X
Hypolaena robusta	P4			X
Jacksonia gracillima	P3			X
Juncus meianthus	P3			X
Lasiopetalum laxiflorum	P3			X
Lomandra whicherensis	P3	X		X
Morelotia australiensis	VU		X	
Orianthera wendyae	P1			X
Pultenaea skinneri	P4			X
Rumex drummondii	P4			X
Rytidosperma racemosum var. *racemosum*	P2			X
Schoenus capillifolius	P3			X
Senecio leucoglossus	P4	X		X
Stylidium acuminatum subsp. *acuminatum*	P2	X		X
Stylidium paludicola	P3			X
Stylidium perplexum	P1	X		X

Species Name	Cons Code	NatureMap	PMST	DBCA
Synaphea hians	P3			X
Synaphea odocoileops	P1			X
Synaphea polypodioides	P3			X
Synaphea sp. Fairbridge Farm	T/VU		X	X
Synaphea sp. Pinjarra Plain	EN		X	
Synaphea sp. Serpentine	CR		X	
Synaphea stenoloba	EN		X	
Tetratheca parvifolia	P3			X
Thysanotus unicupensis	P3			X
Verticordia attenuata	P3			X

Table 7: Locally significant species potentially occurring within the survey area.

Species	Cons Code
Acacia oncinophylla subsp. *oncinophylla*	3
Actinotus leucocephalus	
Adiantum aethiopicum	
Andersonia aristata	
Andersonia lehmanniana	
Angianthus preissianus	
Anogramma leptophylla	
Anthosachne scabra	
Aphelia nutans	
Banksia seminuda	
Borya sphaerocephala	
Caladenia uliginosa subsp. *patulens*	1
Calothamnus graniticus subsp. *leptophyllus*	4
Calytrix tetragona	
Cheilanthes distans	
Chorilaena quercifolia	
Chorizema aciculare	
Comesperma ciliatum	
Commersonia corniculata	
Conospermum huegelii	

Species	Cons Code
Cyanothamnus defoliatus	
Cyanothamnus tenuis	4
Daviesia hakeoides subsp. *hakeoides*	
Diplolaena drummondii	
Drosera microphylla	
Eucalyptus drummondii	
Gonocarpus nodulosus	
Grevillea trifida	
Grevillea pilulifera	
Helichrysum leucopsideum	
Hemiandra sp. Windy Harbour	3
Hemigenia parviflora	
Hibbertia aurea	
Lepidosperma squamatum	
Lomandra pauciflora	
Marianthus bicolor	
Mirbelia spinosa	
Phylloglossum drummondii	
Pithocarpa ramosa	
Scaevola anchusifolia	
Schoenus unispiculatus	
Senecio leucoglossus	4
Spartochloa scirpoidea	
Stylidium acuminatum subsp. *acuminatum*	2
Stylidium bulbiferum	
Stypandra glauca	
Styphelia concinna	
Thomasia macrocarpa	
Verticordia pennigera	
Vittadinia gracilis	3

Source: DBCA, personal communication August 16, 2024

4.1.1 Threatened and Priority Ecological Communities

A review of the PMST and DBCA databases did not identify any Threatened Ecological Communities that could potentially occur within the sites; however, seven potential threatened or priority ecological communities were identified as having potential to occur within 20 km of the site (DBCA, 2024e; Table 8).

Table 8: Threatened and priority communities likely to occur near site

Name	Status
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered/ P3
Corymbia calophylla - *Xanthorrhoea preissii* woodlands and shrublands, Swan Coastal Plain (floristic community type 3c as originally described in Gibson et al. 1994)	Endangered/ BCA Endangered
Dardanup Jarrah and Mountain Marri woodland on laterite	P1
Dense shrublands on clay flats (floristic community type 9 as originally described in Gibson et al. 1994)	Critically Endangered/ BCA Endangered
Herb rich shrublands in clay pans (floristic community type 8 as originally described in Gibson et al. 1994)	Critically Endangered/ BCA Endangered
Southern *Banksia attenuata* woodlands	Endangered/ P3
Whicher Scarp Jarrah woodland of deep coloured sands	P1

4.2 Flora Species

A total of 202 flora species (taxa) were recorded from 49 families during the field survey, comprised of 38 introduced species (18.8 %), 2 dubious species (1 %) and 162 native species (80.2 %). Dubious species are species that are native to Western Australia; however, are not typical of the survey bioregion. The families with the greatest number of species recorded included Fabaceae, Orchidaceae and Myrtaceae with 24, 20 and 17 species respectively. Examples of native flora species are shown in Figure 10 and significant species in Figure 11. Examples of weed species have been provided in Figure 12. A complete flora species list is provided in Appendix 7.

One priority species, *Acacia oncinophylla* subsp. *oncinophylla* (P3) was found within the Start Zipline and Finish Zipline areas. Additional populations were found outside the survey areas near the Start Zipline, Finish Zipline and Zipline Tour area. The locations of the priority species have been provided in Appendix 8.

Eight species significant to the Wellington National Park were identified during the survey. These species were located through the Suspended Walk and Tree Camping, Start Zipline, Finish Zipline, Zipline Tour and Stones Brook areas. Locally significant species found included:

- *Acacia oncinophylla* subsp. *oncinophylla* (P3)
- *Adiantum aethiopicum* (Common Maidenhair)
- *Andersonia lehmanniana*
- *Borya sphaerocephala* (Pincushions)
- *Diplolaena drummondii*
- *Lepidosperma squamatum*
- *Stypandra glauca* (Blind Grass)

- *Verticordia pennigera*.

The locations of the locally significant species have been provided in Appendix 9.

One declared pest was identified within the survey site. Arum Lily (**Zantedeschia aethiopica*) was found within the Suspended Walk and Tree Camping and Zipline Tour area. Declared pests are listed on the Western Australian Organism List (WAOL) (DPIRD, 2024) under the *Biosecurity and Agriculture Management Act 2007* (WA). This classification requires the landowner/land manager to control the population to limit damage as a result of the presence of these species (DPIRD, 2019b). Approximate locations of declared pests have been provided in Figure 13.

Acacia browniana

Caladenia macrostylis (Leaping Spider Orchid)

Cyanicula sericea (Silky Blue Orchid)

Leucopogon verticillatus (Tassel Flower)

Figure 10: Examples of native flora species recorded.

Andersonia lehmanniana

Adiantum aethiopicum (Common Maidenhair)

Acacia oncinophylla subsp. *oncinophylla* (P3)

Diplolaena drummondii

Borya sphaerocephala (Pincushions)

Verticordia pennigera

Figure 11: Examples of significant species recorded during the survey.

Century Plant (*_Agave americana_)

*_Narcissus tazetta_ subsp. _aureus_

Black Flag (*_Ferraria crispa)_

Arum Lily (*_Zantedeschia aethiopica; DP_)

Figure 12: Examples of introduced flora species recorded.

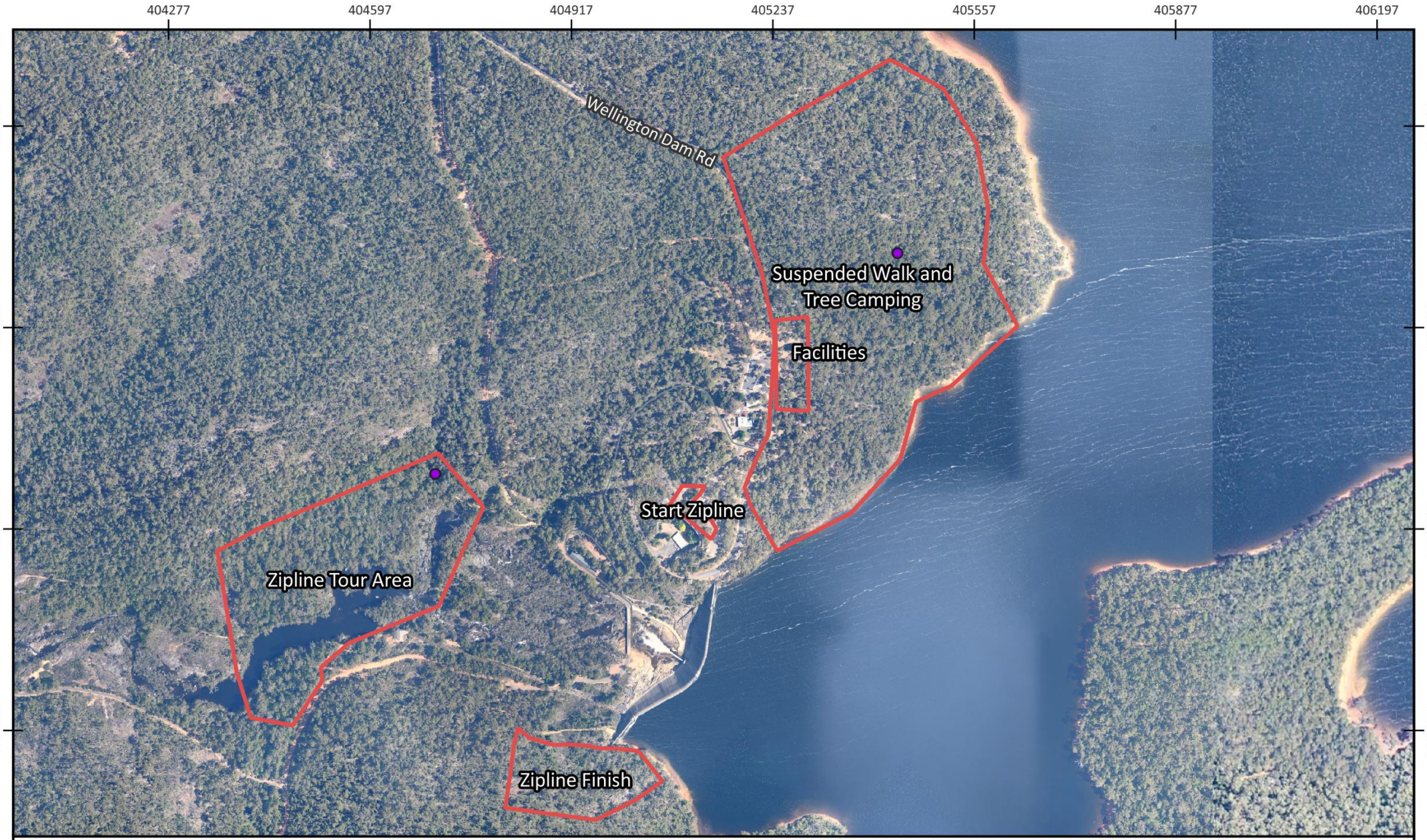

Figure 13:

Approximate Locations of Declared Pests

Wellington National Park

Legend

- Zantedeschia aethiopica
- Survey Area

Client:	Beijaflore
Date:	19/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 8000

0 100 200 m

N

4.2.1 Vegetation Types

Nine vegetation types were recorded, with the Facilities areas recording one vegetation type within the area boundary, the Suspended Walk and Tree Camping, Start Zipline, Finish Zipline and Stones Brook areas recording two vegetation types within each area boundary and the Zipline Tour area recording three vegetation types within the area boundary. Additional units consisting of areas of no vegetation were mapped; Cleared/ Developed and Water. Vegetation types have been defined in Table 9 and have been mapped and provided in Figures 14 and 15.

Table 9: Vegetation type within the survey areas.

Vegetation Type	Areas Present	Description	Photograph
C. calophylla and *E. marginata* closed forest (CcEmCF)	Stones Brook, Zipline Tour Area	A closed forest of *Corymbia calophylla* and *Eucalyptus marginata* over an open shrubland and fernland of *Bossiaea eriocarpa*, *Hakea amplexicaulis* and *Pteridium esculentum* over a mixed herbland.	
E. marginata and *A. flexuosa* closed forest (EmAfCF)	Stones Brook	A closed forest *of E. marginata* and *Agonis flexuosa* over a sparse shrubland of *Trymalium odoratissimum*, *Xanthorrhoea preissii* and *Hibbertia hypericoides* over a sparse herbland of *B. eriocarpa* and *Craspedia variabilis*.	
E. marginata open forest over *T. odoratissimum*, *P. longifolia* and *H. pilosa* closed shrubland (EmOF ToPlHpCS)	Suspended Walk and Tree Camping	An open forest of *E. marginata* over a closed shrubland of *T. odoratissimum*, *Persoonia longifolia* and *Hibbertia pilosa* over a sparse fernland of *P. esculentum*.	

Vegetation Type	Areas Present	Description	Photograph
E. marginata open forest over *H. hypericoides*, *X. gracilis* and *B. eriocarpa* heathland (EmOF HhXgBeH)	Suspended Walk and Tree Camping, Facilities	An open forest of *E. marginata* over a heathland of *H. hypericoides*, *Xanthorrhoea gracilis* and *B. eriocarpa* over mixed herbland.	
C. calophylla open woodland (CcOW)	Start Zipline	An open woodland of *C. calophylla* over a closed heathland of *Calothamnus quadrifidus*, *Darwinia citriodora* and *Dodonaea viscosa* over mixed sparse herbland.	
E. marginata and *C. calophylla* open forest (EmCcOF)	Zipline Finish	An open forest of *E. marginata* and *C. calophylla* over an open shrubland of *X. preissii* and *X. gracilis* and *H. hypericoides* over mixed herbland.	

Vegetation Type	Areas Present	Description	Photograph
E. marginata and *C. calophylla* open forest over exposed granite (EmCcOF - exposed granite)	Zipline Finish	An open forest of *E. marginata* and *C. calophylla* over an open shrubland of *X. preissii* and *X. gracilis* and *H. hypericoides* over mixed herbland over exposed granite.	
C. calophylla open forest (CcOF)	Zipline Tour Area	An open forest of *C. calophylla* over a shrubland of *X. preissii*, *X. gracilis* and *D. citriodora* over a sparse heathland of *Banksia nivea.*	
V. plumosa sparse shrubland (VpSS)	Zipline Tour Area, Start Zipline	A sparse shrubland of *Verticordia plumosa* over a sparse fernland of *Cheilanthes austrotenuifolia* over a sparse forbland of **Hypochaeris glabra*.	

4.2.2 Vegetation Condition

Vegetation condition on site ranged from completely degraded to excellent. Excellent condition vegetation showed very little disturbance, and intact vegetation strata layers. Weeds in these areas were not aggressive weeds. Very good vegetation showed minor effects of disturbances; however, most of the strata layers were intact. More aggressive weeds and some old minor anthropogenic disturbances were seen in these areas. Good vegetation was seen in areas near anthropogenic disturbances, with some breakdown in the strata layers. Weeds were more extensive in these areas. Degraded vegetation was recorded in areas of anthropogenic traffic, including near recreation and camping areas, and showed some clearing in some layers and a higher weed load. The completely degraded area showed a complete breakdown in all strata

layers, aggressive weeds, and looks to have been previously cleared for an old quarry. Additional units mapped included cleared/developed areas, encompassing roads, water and non- accessible areas that were unable to be assessed. A breakdown of vegetation condition has been provided in Table 10, and vegetation unit mapping has been provided in Figures 16 and 17.

Table 10: Vegetation condition within the survey boundaries

Vegetation Condition	Pristine	Excellent	Very Good	Good	Degraded	Completely Degraded	Total
Area (ha)	0	13.61	18.8	8.43	4.74	0.17	45.75
Area (%)	0	29.75	41.09	18.43	10.36	0.37	100

4.2.4 Threatened and Priority Communities

No potential threatened or priority ecological communities (TEC/ PEC) were found on site. The site is located within the Southern Jarrah Forest bioregion and is outside the range of the Swan Coastal Plain and Whicher Scarp. Further details of the likelihood of any TEC or PEC occurring within site has been provided in Table 11. Additionally, no known TEC or PEC has been mapped within 10 km of the site, with the closest mapped TEC being more than 10 km from the site (DBCA, 2024e).

Table 11: Likelihood of TEC/ PEC occurring within site.

Name	Status	Likely Occurrence Within Site	Justification
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered/ P3	No	The site is not located within the Swan Coastal Plain.
Corymbia calophylla - Xanthorrhoea preissii woodlands and shrublands, Swan Coastal Plain (floristic community type 3c as originally described in Gibson et al. 1994)	Endangered/ BCA Endangered	No	The site is not located within the Swan Coastal Plain.
Dardanup Jarrah and Mountain Marri woodland on laterite	P1	No	Mountain Marri (*Corymbia haematoxylon*) was not recorded within the site.
Dense shrublands on clay flats (floristic community type 9 as originally described in Gibson et al. 1994)	Critically Endangered/ BCA Endangered	No	The site is not located within the Swan Coastal Plain.
Herb rich shrublands in clay pans (floristic community type 8 as originally described in Gibson et al. 1994)	Critically Endangered/ BCA Endangered	No	The site is not located within the Swan Coastal Plain.
Southern *Banksia attenuata* woodlands	Endangered/ P3	No	The site is not located within the Swan Coastal Plain.

Name	Status	Likely Occurrence Within Site	Justification
Whicher Scarp Jarrah woodland of deep coloured sands	P1	No	The site is not located on the Whicher Scarp.

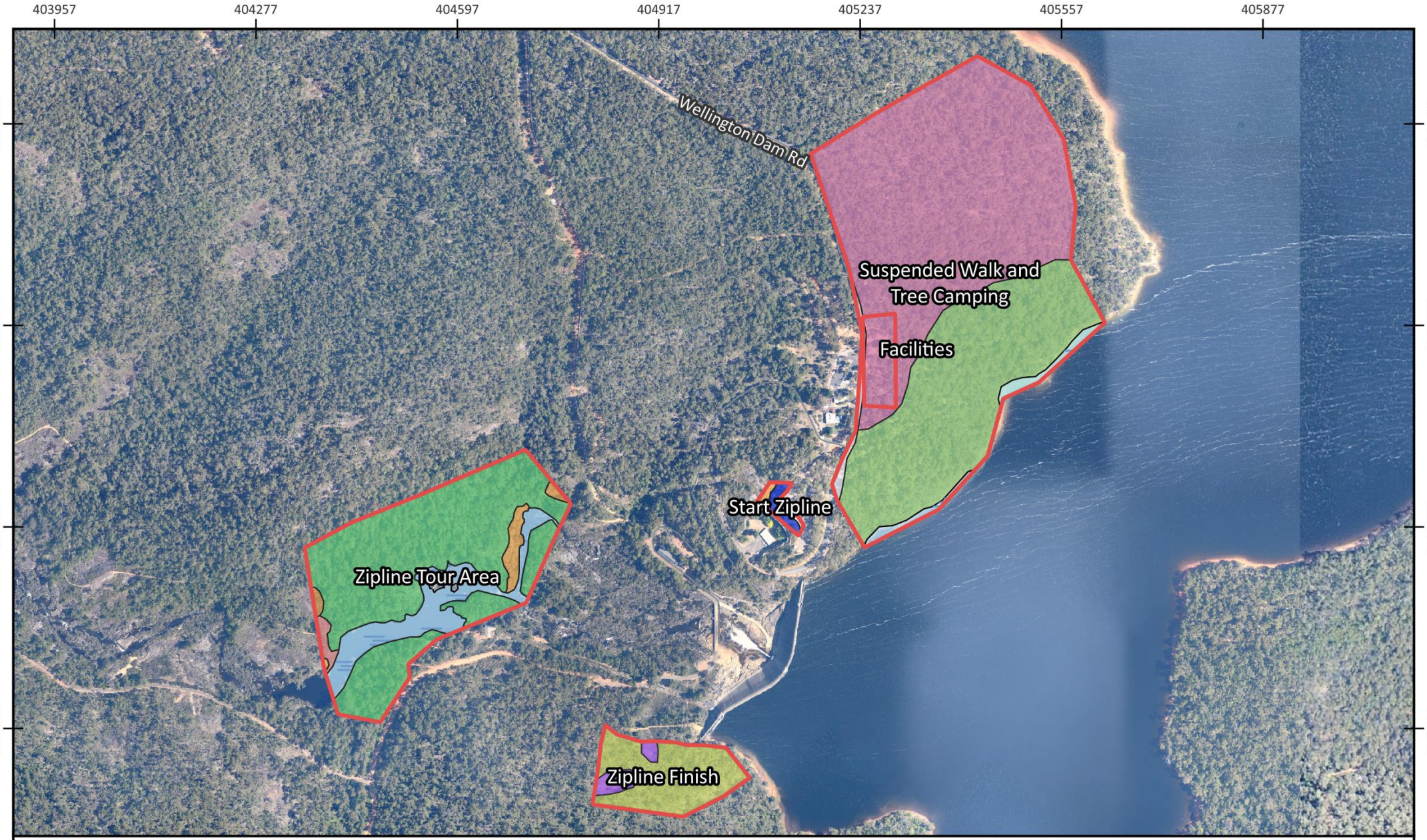

Figure 14:
Vegetation Type

Wellington National Park

Legend

- CcEmCF
- CcOF
- CcOW
- Cleared/ Developed
- EmCcOF
- EmCcOF - exposed granite
- EmOF HhXgBeH
- EmOF ToPlHpCS
- VpSS
- Water
- Inaccessible
- Survey Area

Client:	Beijaflore
Date:	16/05/2025
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 8000

0 100 200 m

N

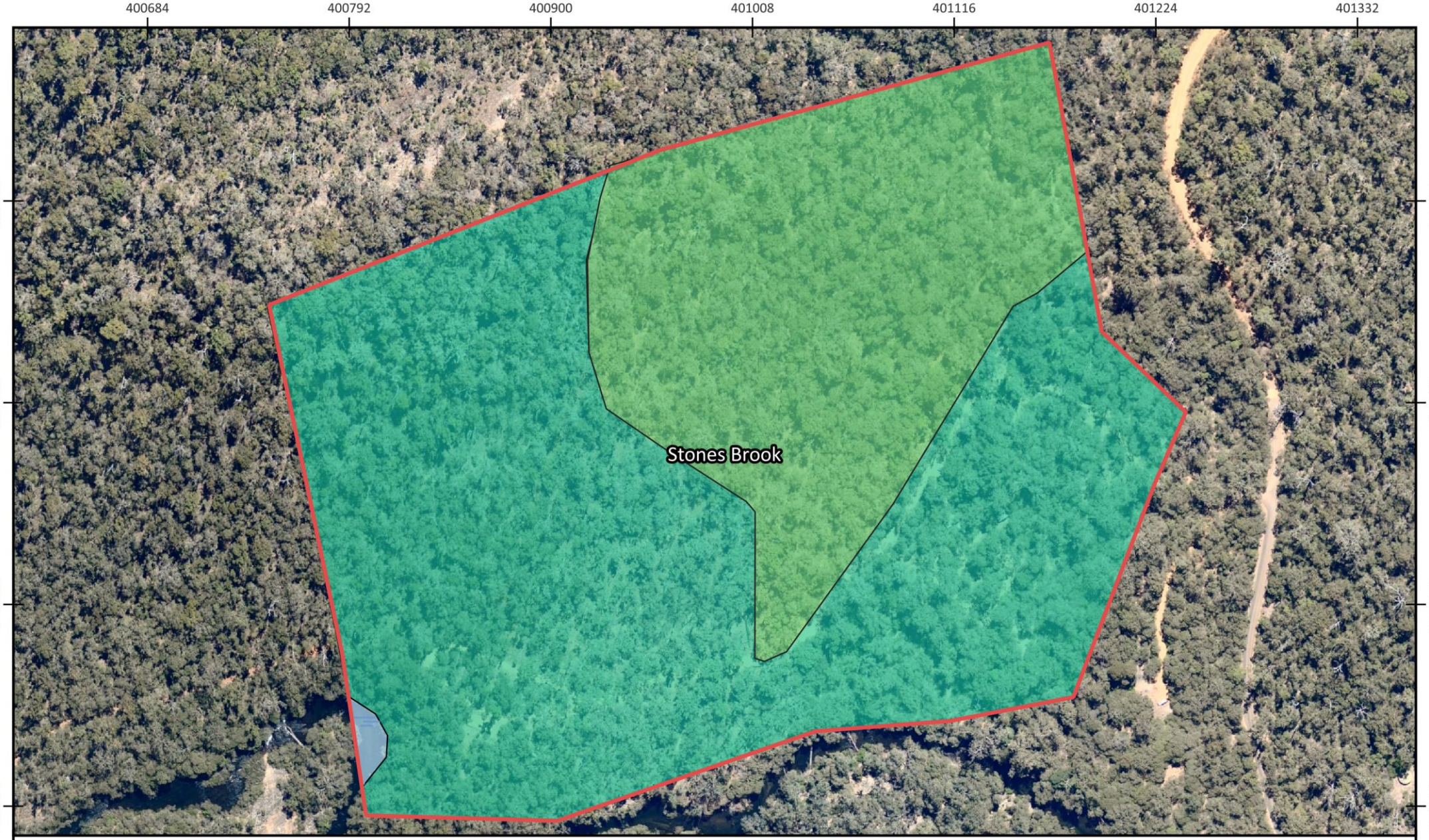

Figure 15:
Vegetation Type

Wellington National Park

Legend

- CcEmCF
- EmAfCF
- Water
- Survey Area

Client:	Beijaflore
Date:	04/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 2700

0 50 100 m

N

Figure 16:
Vegetation Condition

Wellington National Park

Legend

- Excellent
- Very good
- Good
- Degraded
- Completely degraded
- Water
- Cleared/ Developed
- Inaccessible
- Survey Area

Client:	Beijaflore
Date:	04/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 8000

0 100 200 m

N

Figure 17:
Vegetation Condition

Wellington National Park

Legend

- Very good
- Good
- Degraded
- Water
- Survey Area

Client:	Beijaflore
Date:	04/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 2700

0 50 100 m

N

5.0 Fauna Survey Results

5.1 Desktop Survey

A desktop survey of online databases indicated the potential for a total of 25 conservation significant fauna species to occur within 10 km of the survey area (Table 12). NatureMap indicated 18 conservation significant species listed under the *Biodiversity Conservation Act 2016* (WA) as potentially occurring within a 10 km radius of the site (DBCA, 2024b). The Protected Matters Search Tool (PMST) indicated 12 threatened species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) as potentially occurring within a 10 km radius of the site (DCCEEW, 2024) (Appendix 1). A review of the DBCA threatened and priority fauna species database indicated the potential for 18 conservation significant fauna species to occur within a 10 km radius of the site (DBCA, 2024d).

Both abiotic (soil, climate) as well as biotic (food resources, predator pressure) will determine the suitability of habitats for specific fauna assemblages, based on their ecological requirements. Evaluating the site locality, existing conditions and known home ranges, Natural Area determined that the following 14 species (highlighted green in Table 12) have the potential to be present within the survey site.

Table 12: Threatened and Priority fauna species listed by NatureMap, PMST and DBCA

Species Name	Lifeform	Cons Code	NatureMap	PMST	DBCA
Apus pacificus	Bird	MI	X		X
Bettongia penicillata ogilbyi	Mammal	CR/EN	X	X	X
Botaurus poiciloptilus	Bird	EN		X	
Calidris acuminata	Bird	VU		X	
Calidris ferruginea	Bird	CR		X	
Calyptorhynchus banksii naso	Bird	VU	X	X	X
Dasyurus geoffroii fortis	Mammal	VU	X	X	X
Falco hypoleucos	Bird	VU		X	
Falco peregrinus	Bird	OS	X		X
Falsistrellus mackenziei	Mammal	P4	X		X
Hydromys chrysogaster	Mammal	P4	X		X
Isoodon fusciventer	Mammal	P4	X		X
Leipoa ocellata	Bird	VU		X	
Myrmecobius fasciatus	Mammal	EN	X	X	X
Notamacropus irma	Mammal	P4	X		X
Numenius madagascariensis	Bird	CR		X	
Phascogale tapoatafa wambenger	Mammal	CD	X		X

Species Name	Lifeform	Cons Code	NatureMap	PMST	DBCA
Plegadis falcinellus	Bird	MI	X		X
Pseudocheirus occidentalis	Mammal	CR	X		X
Rostratula australis	Bird	EN			
Setonix brachyurus	Mammal	VU	X	X	X
Thalasseus bergii	Bird	MI	X		X
Westralunio carteri	Other	VU	X	X	X
Zanda baudinii	Bird	EN	X		X
Zanda latirostris	Bird	EN	X		X

5.2 Fauna Species

A total of 19 fauna species were recorded during the survey, from 15 families (Table 13). Species consisted of 13 native and 1 introduced bird, 3 native and 1 introduced mammal and 1 native reptile. The family with the highest number of species recorded was Cacatuidae (Cockatoos), with three species recorded. Additionally, evidence was seen in the form of scat and burrows within the survey area. Five threatened or priority fauna species were found on site:

- Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*, VU)
- Baudin's Cockatoo (*Zanda baudinii*, EN)
- Carnaby's Cockatoo (*Zanda latirostris*, EN)
- Western Brush Wallaby (*Notamacropus irma*, P4)
- Quenda (*Isoodon fusciventer*, P4).

The European Rabbit, Western Grey Kangaroo and Quenda were all seen through indirect evidence. Rabbit and kangaroo presence was noted through the presence of scat and Quenda presence was noted from diggings in the soil. All other species were observed directly within the site. The Western Australian Organism List (WAOL) (DPIRD, 2024) lists the European Rabbit (**Oryctolagus cuniculus*) as declared pests under the *Biosecurity and Agriculture Management Act 2007* (WA).

Examples of introduced and native fauna species have been provided in Figures 18 and 19.

Table 13: Fauna observations within the survey boundary. * denotes introduced species

Family	Species Name	Common Name
Bird		
Alcedinidae	**Dacelo novaeguineae*	Laughing Kookaburra
Anatidae	*Anas superciliosa*	Pacific Black Duck
Artamidae	*Strepera versicolor*	Grey Currawong
Cacatuidae	*Calyptorhynchus banksii naso*	Forest Red Tailed Black Cockatoo
Cacatuidae	*Zanda baudinii*	Baudin's Cockatoo

Family	Species Name	Common Name
Cacatuidae	*Zanda latirostris*	Carnaby's Cockatoo
Corvidae	*Corvus coronoides*	Australian Raven
Cuculidae	*Cacomantis flabelliformis*	Fan Tailed Cuckoo
Maluridae	*Malurus splendens*	Splendid Fairywren
Meliphagidae	*Anthochaera carunculata*	Red Wattlebird
Meliphagidae	*Phylidonyris novaehollandiae*	New Holland Honeyeater
Phalacrocoracidae	*Microcarbo melanoleucos*	Little Pied Cormorant
Psittacidae	*Barnardius zonarius*	Australian Ringneck
Rhipidurudae	*Rhipidura albiscapa*	Grey Fantail
Mammal		
Leporidae	**Oryctolagus cuniculus*	European Rabbit
Macropodidae	*Macropus fuliginosus*	Western Grey Kangaroo
Macropodidae	*Notamacropus irma*	Western Brush Wallaby
Peramelinae	*Isoodon fusciventer*	Quenda
Reptile		
Scincidae	*Hemiergis quadrilineatus*	

Laughing Kookaburra (**Dacelo novaeguineae)*

Rabbit (**Oryctolagus cuniculus*) scat

Figure 18: Introduced fauna species observed, including direct and indirect indication of presence. *denotes introduced species.

New Holland Honey Eater (*Phylidonyris novaehollandiae*)

Australian Ringneck (*Barnardius zonarius*)

Grey Currawong (*Strepera versicolor*)

Grey Fantail (*Rhipidura albiscapa*)

Little Pied Cormorant (*Microcarbo melanoleucos*)

Forest Red Tail Black Cockatoo (*Calyptorhynchus banksii naso;* VU)

Figure 19: Native fauna species observed.

5.3 Fauna Habitat

The site consists of native vegetation types and provides suitable habitat for fauna. Each survey area has native upper, middle and lower strata, with a continuous tree canopy with the surrounding forest. All areas with the exception of the Start Zipline area and the southwestern side of the Suspended Walk and Tree Camping area have minimal anthropogenic disturbance, and all areas are part of the continuous native forest in the surrounding area. All sites are proximal to permanent fresh water, the Wellington Dam or the Collie River. Large fallen trees were seen within the Suspended Walk and Tree Camping, Zipline Tour and Stones Brook areas. Evidence of fauna presence in the form of diggings, scratching, tracks were opportunistically observed throughout the survey areas (Figure 20). Leaf litter throughout the site was recorded between 40 – 95 % in the forest and woodland vegetation, and 5 % within the granite outcrop areas. High leaf litter coverage can provide habitat and shelter for smaller fossorial fauna and invertebrates, and in turn can provide a source of food for larger insectivores and carnivores. Granite outcrops provide suitable habitat for various species of reptiles, amphibians and mammals, as they are often used as a water source (Withers & Edward, 1997). The fringing vegetation around granite outcrops may also be used by these species as habitat.

Eight vegetation types were found within the survey area that may provide suitable habitat for fauna species:

- *C. calophylla* and *E. marginata* closed forest – consists of a dense, tall tree canopy over shrubland and herbland.
- *C. calophylla* open forest – consists of a tall tree canopy over heathland adjacent to granite outcrops.
- *C. calophylla* open woodland – consists of an open tree canopy over heathland and herbland, adjacent to developed areas.
- *E. marginata* and *A. flexuosa* closed forest – consists of a tall, dense tree canopy over shrublands and herbland.
- *E. marginata* and *C. calophylla* open forest – consists of a tall tree canopy over shrubland and herbland on a steep granite slope with areas of exposed granite.
- *E. marginata* open forest over *H. hypericoides*, *X. gracilis* and *B. eriocarpa* heathland – consists of an open tree canopy over heathland and herbland.
- *E. marginata* open forest over *T. odoratissimum*, *P. longifolia* and *H. pilosa* closed shrubland – consists of an open tree canopy over shrubland and fernland.
- *V. plumosa* sparse shrubland – consists of shrublands over forblands on rocky granite outcrops.

Space under a fallen logs with fauna tracks running through

Fallen log

Fauna diggings

Figure 20: Potential fauna habitat.

6.0 Black Cockatoo Habitat Assessment Results

6.1 Desktop Survey

A desktop search of NatureMap database (DBCA, 2024b) and the Protected Matters Search Tool (DCCEEW, 2024) indicated the potential for *Calyptorhynchus banksii naso*, *Zanda baudinii*, and *Zanda latirostris* to occur within the survey area (Table 14). The following databases were also consulted, and showed the known black cockatoo activity within or nearby (<6 km) the area:

- Carnaby's Cockatoo Areas Requiring Investigation as Feeding Habitat in the JF (DBCA-056) (DBCA, 2018b)
- Black Cockatoo Roosting Sites Buffer (DBCA-064) (DBCA, 2019a).

Table 14: Black Cockatoo species listed by NatureMap and PMST

Species Name	Cons Code	Nature Map	PMST	Presence
Calyptorhynchus banksii naso	VU	X	X	Species or species habitat known to occur within area
Zanda baudinii	EN	X	X	Breeding known to occur within area
Zanda latirostris	EN	X	X	Species or species habitat known to occur within area

6.2 Field Survey

6.2.1 Potential Breeding Habitat

Suitable breeding habitat for black cockatoos was present within the Tree Camping Area, the Zipline Tour Area and the Zipline Finish (Figures 21 - 23). Of the 90 trees that were recorded that have the potential to form breeding hollows (DBH > 500 mm), 16 trees were observed to contain hollows, with the total number of trees with suitable hollows for black cockatoo breeding purposes being 7 (Figures 24 - 26; Appendix 10). Hollows had entrance diameters ranging from 50 x 50 mm to 300 x 300 mm. Black cockatoos are known to utilise hollows that have an entrance diameter of at least 100 mm (Groom, 2010). No secondary evidence of hollow use, including rubbing and chew marks, was observed around the hollows. No other secondary evidence such as scats or feathers were observed within the survey areas; however, both Carnaby's and Forest Red Tail Black Cockatoos (FRTBC) were seen within the area during the survey. Examples of trees with suitable hollows have been provided in Figure 27.

6.2.2 Roosting Habitat

The site is located <6 km from the nearest confirmed roosting site (DBCA, 2019a), and contains tall eucalypt trees and a permanent water source (the Collie River and Wellington Dam). No evidence of roosting in the form of scats or feathers was observed within the survey area at the time of the survey; however, dusk surveys would be required to confirm whether any roost sites are present within proximity to the survey area.

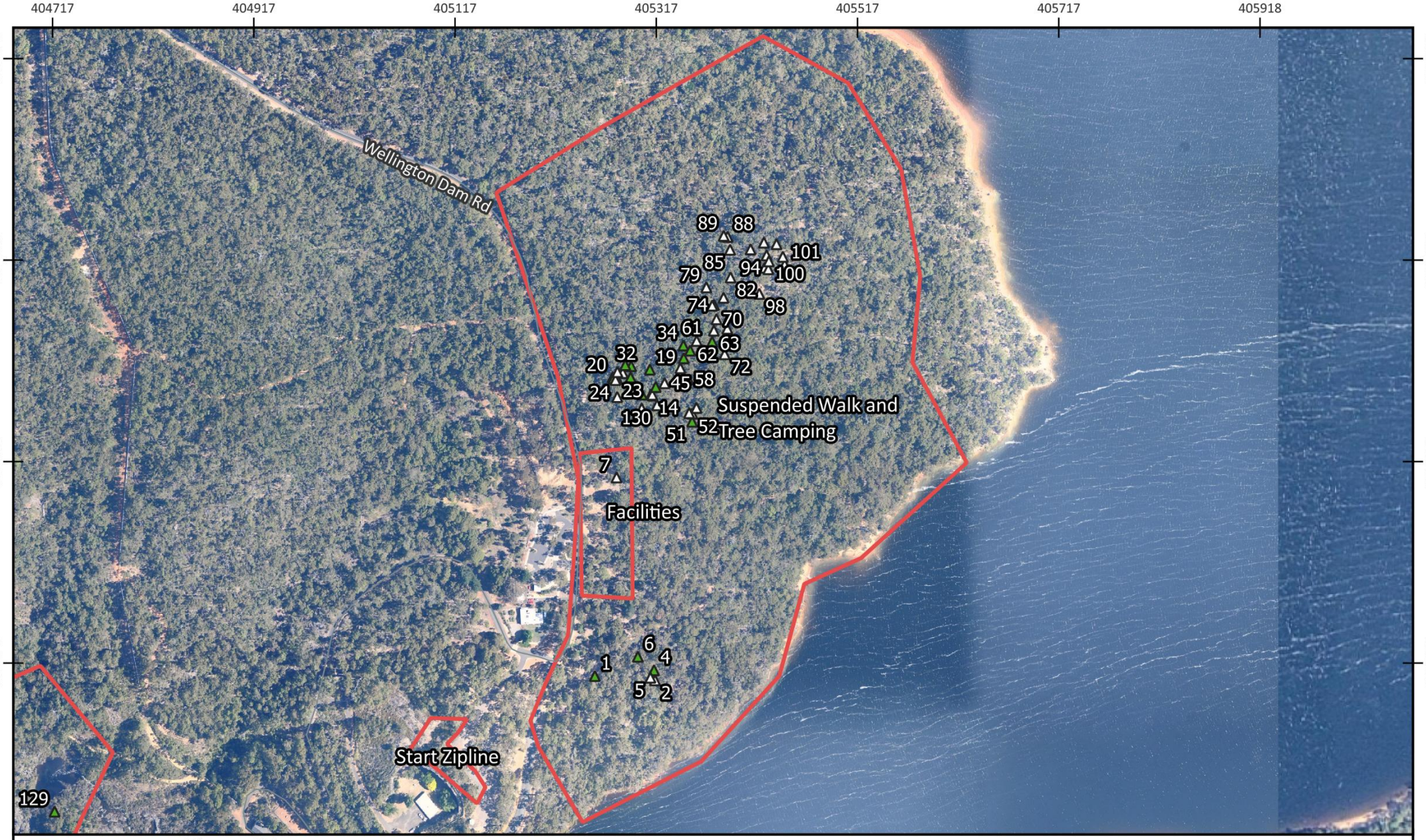

Figure 21:
Black Cockatoo Habitat Trees

Wellington National Park

Legend

- Jarrah
- Marri
- Survey Area

Client:	Beijaflore
Date:	04/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 5000

0 50 100 m

N

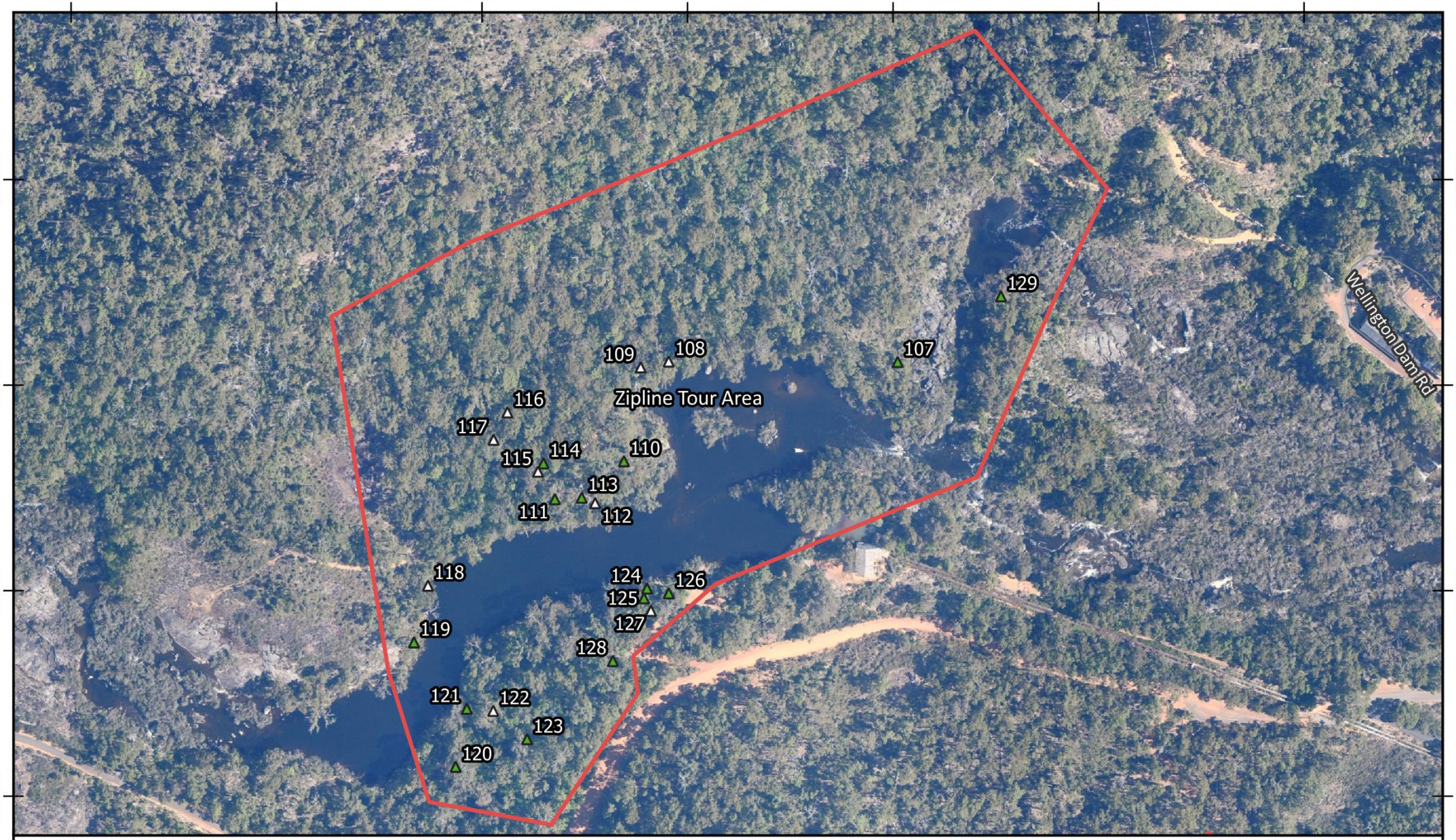

Figure 22:
Black Cockatoo Habitat Trees

Wellington National Park

Legend

- Jarrah
- Marri
- Survey Area

Client:	Beijaflore
Date:	04/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 2800

0 50 100 m

N

Figure 23:
Black Cockatoo Habitat Trees

Wellington National Park

Legend

- Dead
- Jarrah
- Marri
- Survey Area

Client:	Beijaflore
Date:	04/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 1000

N

0 20 40 m

Figure 24:
Black Cockatoo Hollows

Wellington National Park

Legend

- Jarrah (Suitable Hollows)
- Marri (Suitable Hollows)
- Survey Area

Client:	Beijaflore
Date:	04/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 5000

0 50 100 m

N

Figure 25:
Black Cockatoo Hollows

Wellington National Park

Legend

- Jarrah (Suitable Hollows)
- Marri (Suitable Hollows)
- Survey Area

Client:	Beijaflore
Date:	04/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 2800

0 50 100 m

N

Figure 26:
Black Cockatoo Hollows

Wellington National Park

Legend

- Marri (Suitable Hollows)
- Survey Area

Client:	Beijaflore
Date:	04/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 1000

0 20 40 m

N

Tree ID 20

Tree ID 50

Tree ID 62

Tree ID 88

Tree ID 110

Tree ID 115

Figure 27: Examples of trees with suitable hollows.

6.2.3 Foraging Habitat

Foraging habitat for black cockatoos was identified throughout the entire site. Both *Eucalyptus marginata* (Jarrah) and *Corymbia calophylla* (Marri) are known to be high quality foraging species for all three black cockatoo species (DAWE, 2022; Department of Environment and Conservation (DEC), 2011). *E. marginata* and *C. calophylla* were dominant within eight vegetation types throughout the site. Evidence of foraging by all three black cockatoo species on Marri nuts were recorded throughout the site (Figure 28). Total foraging area by suitable vegetation type has been calculated and provided in Table 13. It should be noted that while the Start Zipline area is less than 1 ha, it was included within the calculations as the vegetation is continuous with the larger areas of foraging habitat. Additional proteaceous species with foraging value to black cockatoos were found throughout the site, within all areas. These species have been provided in Table 14.

Foraging quality was calculated using the DAWE (2022) *Foraging Quality Scoring Tool*. Foraging quality was found to be high (score of 8) for all three species of black cockatoo. Vegetation throughout site consisted of appropriate species for foraging, and the site was within proximity to other known foraging and roosting sites. Further details and foraging quality calculations have been provided in Table 15.

Table 13: Foraging habitat areas per black cockatoo species

Baudin's Cockatoo	**Carnaby's Cockatoo**	**Forest Red- tailed Black Cockatoo**
Total Area of Foraging Habitat (ha)		
45.6	15.08	45.6
Habitat Types		
CcEmCF	CcEmCF	CcEmCF
CcOF	CcOF	CcOF
CcOW	CcOW	CcOW
EmAfCf	EmCcOF	EmAfCf
EmCcOF		EmCcOF
EmOF HhXgBeH		EmOF HhXgBeH
EmOF ToPlHpCS		EmOF ToPlHpCS

Table 14: Black cockatoo foraging species found throughout site

Species Name	**Common Name**	**Areas**
**Acacia baileyana*		Suspended Walk and Tree Camping
**Pinus radiata*	Radiata Pine	Suspended Walk and Tree Camping
#Callistemon viminalis		Suspended Walk and Tree Camping
#Eucalyptus caesia		Start Zipline
Agonis flexuosa	Peppermint	Stones Brook

Species Name	Common Name	Areas
Banksia dallanneyi	Couch Honeypot	Suspended Walk and Tree Camping, Zipline Finish, Stones Brook
Banksia grandis	Bull Banksia	Suspended Walk and Tree Camping, Zipline Tour and Stones Brook
Banksia littoralis	Swamp Banksia	Zipline Tour
Banksia nivea	Honeypot Dryandra	Zipline Tour
Corymbia calophylla	Marri	Suspended Walk and Tree Camping, Facilities, Start Zipline, Zipline Tour, Zipline Finish, Stones Brook
Darwinia citriodora	Lemon- scented Darwinia	Start Zipline, Zipline Tour, Finish Zipline
Eucalyptus marginata	Jarrah	Suspended Walk and Tree Camping, Facilities, Zipline Tour, Zipline Finish, Stones Brook
Grevillea bipinnatifida	Fuchsia Grevillea	Suspended Walk and Tree Camping, Start Zipline, Zipline Tour, Zipline Finish
Grevillea centristigma		Zipline Tour
Hakea lissocarpha	Honey Bush	Suspended Walk and Tree Camping, Start Zipline, Zipline Tour, Finish Zipline
Hakea amplexicaulis	Prickly Hakea	Suspended Walk and Tree Camping, Zipline Tour, Stones Brook
Jacksonia furcellata	Grey Stinkwood	Zipline Tour
Persoonia longifolia	Snottygobble	Suspended Walk and Tree Camping, Zipline Tour, Stones Brook
Xanthorrhoea preissii	Grass Tree	Suspended Walk and Tree Camping, Start Zipline, Zipline Tour, Zipline Finish, Stones Brook.

Sources: DEC, 2011 and DAWE, 2022

Table 15: Foraging quality scoring tool results

Starting score	Baudin's Cockatoo	Carnaby's Cockatoo	Forest Red-tailed Black-Cockatoo
10	Start at a score of 10 if your site is native eucalypt woodlands and forest, and proteaceous woodland and heath, particularly Marri, within the range of the species, including along roadsides and parkland cleared areas. Can include planted vegetation. This tool only applies to sites equal to or larger than 1 hectare in size.	Start at a score of 10 if your site is native shrubland, kwongan heathland or woodland, dominated by proteaceous plant species such as Banksia spp. (including Dryandra spp.), Hakea spp. and Grevillea spp., as well as native eucalypt woodland and forest that contains foraging species, within the range of the species, including along roadsides and parkland cleared areas. Also includes planted native vegetation. This tool only applies to sites equal to or larger than 1 hectare in size.	Start at a score of 10 if your site is Jarrah or Marri woodland and/or forest, or if it is on the edge of Karri forest, or if Wandoo and Blackbutt occur on the site, within the range of the subspecies, including along roadsides and parkland cleared areas. This tool only applies to sites equal to or larger than 1 hectare in size.

Attribute	Sub-tractions	Context adjustor (attributes reducing functionality of foraging habitat)		
Foraging potential	-2	10	10	10
Connectivity	-2	10	10	20
Proximity to breeding	-2	(-2) 8	(-2) 8	(-2) 8
Proximity to roosting	-1	8	8	8
Impact from significant plant disease	-1	8	8	8
Total score		**8: High Quality**	**8: High Quality**	**8: High Quality**
Appraisal	The sites are mostly dominated by Jarrah and Marri forests and woodlands of varying densities, with proteaceous heathlands dominating in the Suspended Walk and Tree Camping, Start Zipline and Zipline Tour Areas. Proteaceous and other nectar rich foraging species were found within all areas. Evidence was found of all three black cockatoo species currently or recently using the site as foraging grounds, in the form of chewed Marri nuts. The site is nearby other known foraging habitat (<12 km), however, is not near known breeding habitat (>12 km). The site is located near known roosting habitat (<20 km) and the trees showed no evidence of disease at the time of the survey.			

Source: DAWE, 2022

Carnaby's Black Cockatoo foraging evidence

Forest Red Tail Black Cockatoo foraging evidence

Baudin's Black Cockatoo foraging evidence

Figure 28: Foraging evidence found on site.

7.0 Implications of Results

7.1 Flora and Vegetation

A total of 201 flora species from 49 families were recorded on site during the survey. One species was a priority species, and eight species were locally significant species. There were 38 weed species, 2 dubious species and 162 native species. Weed species are defined as any species alien to Western Australia and dubious species are any species that are not typical of the bioregion and may be planted; however, are native to Western Australia. The survey areas consisted of nine vegetation types:

- *Corymbia calophylla* and *Eucalyptus marginata* closed forest.
- *Corymbia calophylla* open forest.
- *Corymbia calophylla* open woodland.
- *Eucalyptus marginata* and *Agonis flexuosa* closed forest.
- *Eucalyptus marginata* and *Corymbia calophylla* open forest.
- *Eucalyptus marginata* and *Corymbia calophylla* open forest - exposed granite.
- *Eucalyptus marginata* open forest over *Hibbertia hypericoides*, *Xanthorrhoea gracilis* and *Bossiaea eriocarpa* heathland.
- *Eucalyptus marginata* open forest over *Trymalium odoratissimum*, *Persoonia longifolia* and *Hibbertia pilosa* closed shrubland
- *Verticordia plumosa* sparse shrubland.

Vegetation condition ranged from degraded to excellent across the survey areas, with majority (40.09 %) of the site being classed as very good. Areas classed as very good showed little disturbance and very few weeds, with all three strata layers mostly intact. No threatened or priority communities were identified within the survey area.

One declared pest was identified in the survey area; Arum Lily (**Zantedeschia aethiopica*). Declared pests are listed under the *Biosecurity and Agriculture Management Act 2007* (WA), requiring the landowner or manager to control the population and limit the spread of these species (DPIRD, 2019).

7.2 Significant Flora

7.2.1 Priority Flora

One priority flora species, *Acacia oncinophylla* subsp. *oncinophylla* was found during the survey. This species is a Priority 3 species, meaning it is a poorly known species and is not under imminent threat (DBCA, 2023). This species was found within the Zipline Finish and Zipline Start areas, as well as in the area surrounding the Zipline Finish, Zipline Start and Zipline Tour areas on granite outcrops, consistent with its currently known range (WA Herbarium, 2024).

Of the 25 other threatened or priority species determined as likely to occur on site, 13 were shrubs and 6 were perennial herbs or sedges (Appendix 3). These species show plant matter above ground year-round, and can still be detected, despite the lack of flowering plant material. No species found during the survey aligned with the descriptions of any of the perennial species identified during the desktop assessment.

One species, *Senecio leucoglossus,* is an annual herb. This species has a flowering period between August and December (WA Herbarium, 2024), and therefore would have been detectable at the time of the survey. No *Senecio leucoglossus* were found during the surveys.

Four species identified during the desktop assessment were members of the Orchidaceae family and were part of the *Caladenia* genus (Fairy Orchids). Members of the *Caladenia* genus are unable to be identified to a species level without the presence of diagnostic floral features. *Caladenia hoffmanii* (Hoffman's Spider Orchid) has a flowering period between August and October (WA Herbarium, 2024). This species could have been flowering during the surveys, and therefore would have been detected had the species been present on site. The remaining three *Caladenia* spp. (*C. procera*; Carbunup King Spider Orchid, *C. uliginosa* subsp. *patulens*; Frail Spider Orchid and *C. validinervia*; Lake Muir Spider Orchid) all have flowering periods between September and October. The surveys were conducted at the beginning of the flowering period for these species. As there is some natural variation in plant flowering times, these species could have a delayed flowering time and thus gone undetected during the survey. *C. procera* and *C. validinervia* were not recorded within Wellington National Park previously and are therefore unlikely to occur within the survey boundaries (DBCA, 2024b; DBCA, 2024c). *C. uliginosa* subsp. *patulens* has been recorded within Wellington National Park; however, not within the survey boundary. This species has been known to occur on granite and laterite, in loamy soils (DBCA, 2024c). This species could potentially occur within several areas within the survey boundaries; however, were not identified during the survey.

Two species of *Stylidium* were identified as likely to occur within the survey boundaries. *S. acuminatum* subsp. *acuminatum* has a flowering period in December and *S. perplexum* has a flowering period between November and December therefore neither species would have been flowering during the time of the survey. All *Stylidium* species found were identified to genus level and none were identified as either *S. acuminatum subsp. acuminatum* or *S. perplexum*. *S. acuminatum* subsp. *acuminatum* have been previously recorded within Wellington National Park; however, have not been recorded within the survey boundary. *S. acuminatum* subsp. *acuminatum* occur on hillslopes in loamy soil within Jarrah Marri forests (DBCA, 2024b). Several areas within the site boundaries have suitable habitat for this species; however, none were recorded on site. *S. perplexum* has not been recorded within Wellington National Park previously and is therefore unlikely to occur within the survey boundary (DBCA, 2024b).

7.2.2 Locally Significant Flora

Of the 50 locally significant flora species listed by DBCA as significant for Wellington National Park (personal communication, August 16, 2024), 8 were found on site (Table 16):

- *Acacia oncinophylla* subsp. *oncinophylla*
- *Adiantum aethiopicum* (Common Maidenhair)
- *Andersonia lehmanniana*
- *Borya sphaerocephala* (Pincushions)
- *Diplolaena drummondii*
- *Lepidosperma squamatum*
- *Stypandra glauca* (Blind Grass)
- *Verticordia pennigera*.

Of the remaining 43 locally significant species, 35 were trees, shrubs or perennial herbs. These species are able to be detected outside their flowering seasons as the plant remains above the ground throughout the year. None of these species were found within the survey boundaries.

Six locally significant species were annual species, meaning the plant is only visible above ground for part of the year. Of these, one (*Angianthus preissianus*) has a flowering period outside the survey time. *A. preissianus* flowers between October and December and would not have been flowering at the time of the survey. However, it is likely that the plant would have been visible during the survey period, as it would have been in its growth stage, meaning it would have been detected had it been present within the survey boundary. *Anogramma leptophylla* (Annual Fern) does not flower; however, would have been detectable at the time of the survey as the survey was undertaken during the growing period for this fern. All other annual species have flowering periods at the time of the survey and as such would have been detected if they were present within the survey area.

Two locally significant species are members of the *Caladenia* and *Stylidium* genus (*Caladenia uliginosa* subsp. *patulens* and *Stylidium acuminatum* subsp. *acuminatum* and have been discussed in Section 7.2.1 above.

Table 16: Locally significant species found throughout the survey areas.

Species	Suspended Walk	Start Zipline	Finish Zipline	Zipline Tour	Stones Brook	Comments
Acacia oncinophylla subsp. *oncinophylla*		X	X			Priority 3 species. Discussed above in Section 7.2.1.
Adiantum aethiopicum				X	X	*A. aethiopicum* was found in areas with an open understorey near the Collie River, under a canopy of *Corymbia calophylla - Eucalyptus marginata* and *Eucalyptus marginata - Agonis flexuosa* and were not seen within the granite outcrops. Populations ranged from one individual to 300 - 400 individuals.
Andersonia lehmanniana				X		A single population of one individual on a granite outcrop.
Borya sphaerocephala			X	X		*Borya sphaerocephala* was found in seven populations within the Zipline Finish and Zipline tour area. Populations ranged from two individuals to more than 50 individuals. Populations were found on granite outcrops which is consistent with the species current known range within Wellington National Park.
Diplolaena drummondii	X		X	X	X	This species was found on granite outcrops and in low areas of site, consistent with the species current known habitat within Wellington National Park. The species was found in 189 populations, ranging from 1 to 100 individuals per population.

Species	Suspended Walk	Start Zipline	Finish Zipline	Zipline Tour	Stones Brook	Comments
Lepidosperma squamatum	X					*Lepidosperma squamatum* was found in one population. *L. squamatum* was located on the upper slope, within *Eucalyptus marginata* open forest within the heathland layer. This population was not present on a granite outcropping.
Stypandra glauca			X			*Stypandra glauca* was found in two isolated populations consisting of one individual per population. This species was found on a granite outcrop, which is consistent with the known range for Wellington National Park.
Verticordia pennigera			X			One population consisting of 21 individuals of *Verticordia pennigera* was recorded on a steep hillslope, on granite under a Jarrah Marri canopy.

7.3 Threatened Ecological Communities

No threatened or priority ecological communities were identified during the survey. Communities identified in the desktop survey were not associated with the survey region (Southern Jarrah Forest) and have only been recorded more than 10 km away from the survey site. Additionally, *Corymbia haematoxylon* (Mountain Marri) was not recorded within the survey area, thus disqualifying the survey area from being classified as a Dardanup Jarrah and Mountain Marri woodland on laterite (P1) community.

7.4 Fauna

A total of 19 fauna species were found on site through either direct observation or discovery of secondary evidence (tracks, scats and diggings). Of these, five species were conservation significant species. Three species were black cockatoos and have been discussed in Section 7.5. The remaining two priority species were the Quenda (P4) and the Western Brush Wallaby (P4).

Evidence of Quenda were seen throughout the site, in the form of diggings. Diggings were seen within areas of loamy clay soil with high leaf litter coverage. Quenda are known to inhabit areas with dense shrubs (DBCA, 2017b). All areas surveyed hold value as potential Quenda habitat; however, Quenda most likely do not occupy the small areas of vegetation associated with the granite outcrops (VpSS) within the Zipline Tour area, as the shrubs in these vegetation types were sparse.

A Western Brush Wallaby was recorded within the Suspended Walk and Tree Camping area. This area consisted of an open forest of *E. marginata*, with a closed shrubland of *T. odoratissimum*, *P. longifolia* and *H. pilosa*. Open forests and closed shrubland or heathlands are favoured by the Western Brush Wallaby (DEC, 2012a). The Suspended Walk and Tree Camping area is likely the only suitable habitat for the Western Brush Wallaby within the survey boundaries.

7.4.1 Fauna Habitat

Fauna habitat and evidence of fauna use was found throughout site. Suitable habitat includes dense tree canopies continuous with large areas of forest and woodlands, dense shrublands and heathlands, extensive leaf litter coverage, fallen logs and nearby permanent water. The site consists of vegetation suitable as habitat for the following conservation significant fauna, recorded within 10 km of the survey area in the past five years (DBCA, 2024d):

- Western Ringtail Possum (WRP; *Pseudocheirus occidentalis*)
- Woylie (*Bettongia penicillata ogilbyi*)
- Chuditch (*Dasyurus geoffrii*)
- Southwestern Brush Tailed Phascogale (*Phascogale tapoatafa wambenger*).

All surveyed areas recorded open - closed eucalypt woodlands and forests, with varying densities of shrubland and heathland understorey, suitable for all species listed above. Eucalypt trees with hollows were found within the Suspended Walk and Tree Camping, Zipline Tour and Zipline Finish areas, and may provide suitable habitat for the WRP and phascogale (Department of Parks and Wildlife (DPaW), 2017; DEC, 2012b). Many hollow logs were found within the Stones Brook and Suspended Walk and Tree Camping areas, which are particularly favoured by Chuditch (DEC, 2012c). The dense heathland areas of vegetation in the Suspended Walk and Tree Camping areas are suitable habitat for Woylies (Yeatman and Groom, 2012).

While no direct observation of these conservation significant mammals was recorded, the site represents suitable habitat for these species to be present. Nocturnal habits and low population densities will also affect detectability of these species.

7.5 Black Cockatoo Habitat

7.5.1 Potential Breeding Habitat

The Jarrah Forest region is known as a breeding region for all three black cockatoo species (DAWE, 2022). Of the 138 trees assessed, 90 had a DBH of more than 500 mm, meaning the trees could house, or have the potential to form suitable breeding hollows for black cockatoos. Of these 90 trees, 7 had hollows that can be considered suitable for black cockatoo breeding. Groom (2010) defines hollows as being suitable when they have an entrance diameter of 100 mm or more, and preference is made towards chimney-oriented hollows, as these are less likely to be occupied by competing species. The trees with suitable hollows were located within the Suspended Walk and Tree Camping, Zipline Finish and Zipline Tour areas. None of the hollows were being used by black cockatoos for breeding at the time of the survey; however, all suitable hollows have the potential to be utilised during future breeding seasons. Trees that recorded a DBH of more than 500 mm but did not have hollows still have the potential to form hollows, and therefore are considered potential breeding habitat.

7.5.2 Roosting Habitat

No evidence of black cockatoo roosting was found on site (scats and feathers). Black cockatoos roost in tall trees, usually consisting of eucalypt species (*Eucalyptus* spp. and *Corymbia* spp.) near permanent water sources (DAWE, 2022). Known black cockatoo roosting sites occur within <6 km of the site (DBCA, 2019a). The site may be suitable roosting habitat due to the tall Jarrah and Marri trees present, the nearby permanent water sources (the Collie River and the Wellington Dam) and the proximity to known roosting sites. However, a dusk survey would need to be undertaken to determine whether the site is currently being utilised as roosting habitat for black cockatoo species.

7.5.3 Foraging Habitat

Foraging habitat was found across the site, with eight vegetation types being dominant with high quality foraging species (Jarrah or Marri), and two vegetation types being dominated by proteaceous species (including but not limited to *Banksia* spp., *Hakea* spp., *Grevillea* spp. and various Myrtaceae spp.). While not dominant, other vegetation types had proteaceous species present, which still may present foraging value to black cockatoo species. The *Foraging Quality Scoring Tool* (DAWE, 2022) was used to determine the quality of foraging habitat across all sites. All sites had foraging species present, and were continuous with the surrounding native forest therefore, all sites were assessed as one. This resulted in a score of 8 for all three black cockatoo species, meaning the sites have high quality habitat present due to the flora species, tree health and connectivity to other known foraging and roosting habitat.

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Appendix 1: PMST Report 10 km

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 08-Aug-2024

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	30
Listed Migratory Species:	8

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	13
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	3
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	8
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community may occur within area	In buffer area only

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Rostratula australis			
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area	In buffer area only
Zanda baudinii listed as Calyptorhynchus baudinii			
Baudin's Cockatoo, Baudin's Black-Cockatoo, Long-billed Black-cockatoo [87736]	Endangered	Breeding known to occur within area	In feature area
Zanda latirostris listed as Calyptorhynchus latirostris			
Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Species or species habitat known to occur within area	In feature area
FISH			
Nannatherina balstoni			
Balston's Pygmy Perch [66698]	Vulnerable	Species or species habitat likely to occur within area	In feature area
MAMMAL			
Bettongia penicillata ogilbyi			
Woylie [66844]	Endangered	Species or species habitat known to occur within area	In feature area
Dasyurus geoffroii			
Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area	In feature area
Myrmecobius fasciatus			
Numbat [294]	Endangered	Species or species habitat may occur within area	In feature area
Pseudocheirus occidentalis			
Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Setonix brachyurus			
Quokka [229]	Vulnerable	Species or species habitat known to occur within area	In feature area
OTHER			
Westralunio carteri			
Carter's Freshwater Mussel, Freshwater Mussel [86266]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
PLANT			
Banksia mimica Summer Honeypot [82765]	Endangered	Species or species habitat may occur within area	In buffer area only
Banksia squarrosa subsp. argillacea Whicher Range Dryandra [82769]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Caladenia hoffmanii Hoffman's Spider-orchid [56719]	Endangered	Species or species habitat may occur within area	In buffer area only
Diuris drummondii Tall Donkey Orchid [4365]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat known to occur within area	In feature area
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat may occur within area	In buffer area only
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Eleocharis keigheryi Keighery's Eleocharis [64893]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Morelotia australiensis listed as Tetraria australiensis Southern Tetraria [92784]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Synaphea sp. Fairbridge Farm (D.Papenfus 696) Selena's Synaphea [82881]	Critically Endangered	Species or species habitat likely to occur within area	In buffer area only
Synaphea sp. Pinjarra Plain (A.S.George 17182) [86878]	Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Synaphea sp. Serpentine (G.R.Brand 103) [86879]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Synaphea stenoloba Dwellingup Synaphea [66311]	Endangered	Species or species habitat likely to occur within area	In buffer area only

Listed Migratory Species

[Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pandion haliaetus			
Osprey [952]		Species or species habitat likely to occur within area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area	In buffer area only
Thinornis cucullatus as Thinornis rubricollis			
Hooded Plover, Hooded Dotterel [87735]		Species or species habitat may occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State	Buffer Status
NTWA Bushland covenant (0030)	Conservation Covenant	WA	In buffer area only
Wellington	National Park	WA	In feature area
Wellington Discovery Forest	5(1)(h) Reserve	WA	In buffer area only

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State	Buffer Status
South West WA RFA	Western Australia	In feature area

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Bluewaters Power Station Expansion Phases 3 & 4	2008/4113	Controlled Action	Proposed Decision	In buffer area only
Hard Rock Quarry, Shenton Ridge, Wellington, WA	2017/8085	Controlled Action	Post-Approval	In buffer area only
Yarragadee Water Supply Development	2005/2073	Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Realignment and upgrade of Coalfields Hwy between 15.90-26.34 SLK, Western Australia	2013/6902	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
Construction of urea production plant and supporting infrastructure	2009/5067	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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Appendix 2: Conservation Codes

Western Australia

Conservation Code	Name	Description
T	Threatened	Flora or fauna that is rare or likely to become extinct, ranked according to their level of threat using IUCN Red List criteria (Schedules 1-3 of the Wildlife Conservation (Specially Protected Fauna) Notice or the Wildlife Conservation (Rare Flora) Notice)
CR	Critically endangered	Species considered to be facing an extremely high risk of extinction within the wild in the immediate future
EN	Endangered	Species considered to be facing a very high risk of extinction in the wild in the near future
VU	Vulnerable	Species considered to be facing a high risk of extinction in the wild in the medium-term future
EX	Extinct Species	Species where 'there is no reasonable doubt that the last member of the species has died (Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice or the Wildlife Conservation (Rare Flora) Notice)
EW	Extinct in the Wild	Species that are known to only survive in cultivation, in captivity, or as a naturalised population well outside its past range; and it has not been recorded in its known or expected habitat at appropriate seasons anywhere in its past range, despite surveys over a timeframe appropriate to its life cycle and form
MI	Migratory Species	Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth (Schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice)
CD	Conservation Dependent	Species of special conservation interest (conservation dependent fauna), being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened (Schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice)
OS	Specially Protected	Fauna otherwise in need of special protection to ensure their conservation (Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice)
P	Priority Species	Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or

Conservation Code	Name	Description
		flora. Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.
P1	Priority One	Poorly known species – Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either very small or on lands not managed for conservation, such as road verges, urban areas, farmland, active mineral lease and under threat of habitat destruction or degradation.
2	Priority Two	Poorly known species – Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, such as national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves and similar.
3	Priority Three	Poorly known species – Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat
4	Priority Four	Rare or near threatened and other species in need of monitoring.

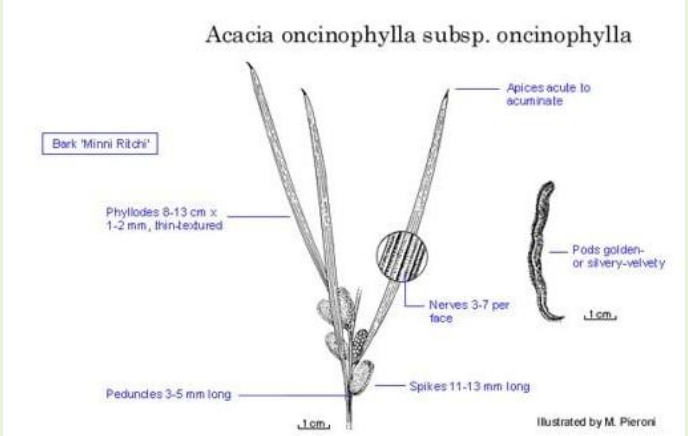
Source: DBCA, 2023

Commonwealth

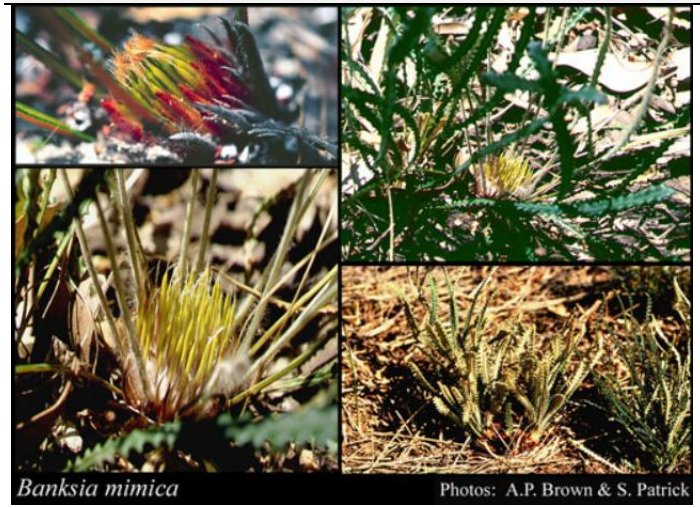
Category	Description
Critically Endangered	Species facing an extremely high risk of extinction in the wild in the immediate future
Endangered	Species facing a very high risk of extinction in the wild in the near future
Vulnerable	Species facing a high risk of extinction in the wild in the medium term

Source: DBCA, 2023

Appendix 3: Significant Species – State and Federal

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
	-	Shrub, 0.9-2.5 m high, 'minni-ritchi' bark, phyllodes mostly 8-13 cm long, 1-2 mm wide. Fl. Yellow.	Aug to Oct.	Granitic soils	P3	Y	DBCA database indicates presence near area.
	-	Slender, erect, pungent shrub, (0.1-)0.2-0.7(-1.5) m high. Fl. cream-white.	May to Oct.	White/grey sand, sometimes over laterite, clay. Sandplains, swampy areas.	P4	N	Habitat may not be suitable.

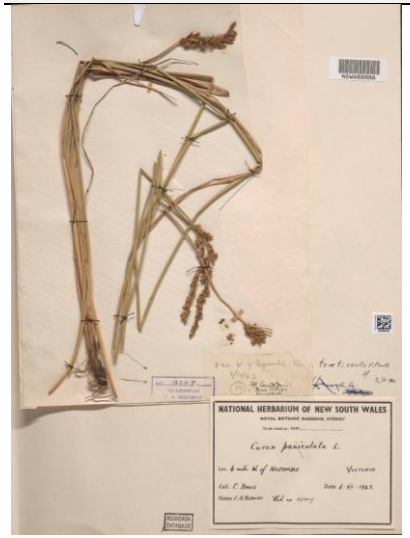
Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
	-	Prostrate, mat-forming, non-lignotuberous shrub, to 0.3 m high. Fl. white-cream-pink-green/green.	Jul or Sep to Dec or Jan.	Grey sand, lateritic gravel.	P3	N	Habitat may be suitable.
	Stalked Water Ribbons	Rhizomatous or cormous, aquatic perennial, herb, leaves floating. Fl. green-white.	Jul to Oct.	Mud. Freshwater: ponds, rivers, claypans.	P4	Y	Habitat may be suitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
	Summer Honeypot	Prostrate, lignotuberous shrub, 0.15-0.4 m high. Fl. yellow-brown.	Dec or Jan to Feb.	White or grey sand over laterite, sandy loam.	EN	N	Habitat may not be suitable.
	-	Erect, open, non-lignotuberous shrub, 1.2-4 m high. Fl. Yellow.	Jun to Nov.	White/grey sand, gravelly clay or loam. Winter-wet flats, clay flats.	VU	N	Habitat may not be suitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
	Hoffman's Spider Orchid	Tuberous, perennial, herb, 0.13-0.3 m high. Fl. green & yellow & red.	Aug to Oct.	Clay, loam, laterite, granite. Rocky outcrops and hillsides, ridges, swamps and gullies.	EN	Y	Habitat may be suitable.
 *Caladenia procera*	Carbunup King Spider Orchid	Tuberous, perennial, herb, 0.35-0.9 m high. Fl. yellow	Sep to Oct.	Rich clay loam,. Alluvial loamy flats, jarrah/marri/peppermint woodland, dense heath, sedges.	T/CR	Y	Habitat may be suitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
	Sandplain White Spider Orchid	Tuberous, perennial, herb, 0.35-0.6 m high. Fl. white-pink.	Sep to Oct.	White, grey or black sand.	P4	N	Habitat may not be suitable.
 *Caladenia uliginosa* subsp. *patulens*	Frail Spider Orchid	Tuberous, perennial, herb, 0.2-0.35 m high. Fl. green-cream.	Sep to Oct.	Clay loam and gravel. Well drained soils amongst dense shrubs.	P1	Y	DBCA database indicates presence near area.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
 *Caladenia validinervia*	Lake Muir Spider Orchid	Single erect leaf, 50–160 mm long, 3–6 mm wide. Pale green with reddish-purple blotches near its base. Up to three greenish to creamy white flowers 50–80 mm across are borne on a stalk 120–210 mm high.	Sep to Oct.	Gentle slope. Brown lateritic sandy loam. Jarrah/marri woodland and Marri woodland.	P1	Y	Habitat may be suitable.
	-	Tuberous, perennial, herb, 0.2-0.35 m high. Fl. green-cream.	Sep to Oct.	Clay loam and gravel. Well drained soils amongst dense shrubs.	P4	N	Habitat may be suitable.

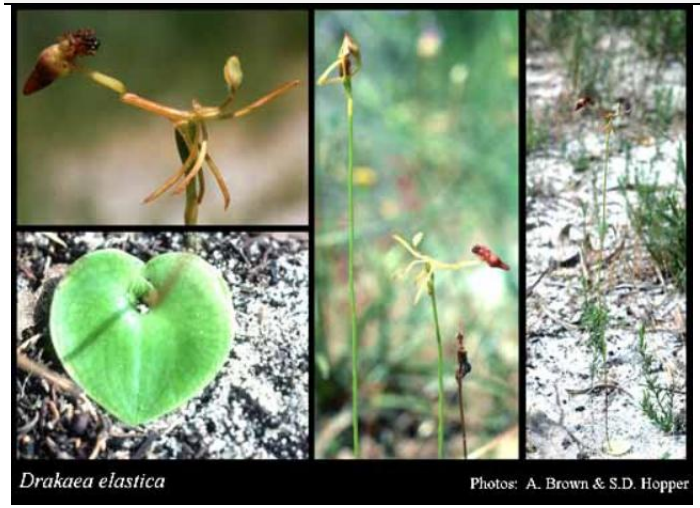
Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
 *Carex tereticaulis*	Monoecious, rhizomatous, tufted perennial, grass-like or herb (sedge), 0.7 m high. Fl. Brown.	Tuberous, perennial, herb, 0.2-0.35 m high. Fl. green-cream.	Sep to Oct.	Black peaty sand.	P3	N	Habitat may not be suitable.
Caustis sp. *Boyanup*	-	Rhizomatous, clumped perennial, grass-like or herb (sedge), 0.7-1 m high.	-	White or grey sand.	P3	N	Habitat may not be suitable.
Chamaescilla gibsonii	-	Clumped tuberous, herb. Fl. Blue.	Sep.	Clay to sandy clay. Winter-wet flats, shallow water-filled claypans.	P3	N	Habitat may not be suitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
 Chamelaucium erythrochlorum	-	Erect shrub, 0.6-1.5(-2) m high. Fl. pink-red.	Nov to Dec or Jan.	Gravelly lateritic soils, clay.	P4	N	Habitat may be suitable.
Craspedia sp. *Waterloo*	-	Low herb to 15 cm tall. Blue/green leaves. Flowering spike to 30 cm tall. Pale yellow flowers when in flower.	-	Seasonally wet plain. Brown clay/loam. Open wandoo with low sedgeland.	P2	N	Habitat may not be suitable.
 *Cyanothamnus tenuis*	Blue Boronia	Procumbent or erect & slender shrub, 0.1-0.5 m high. Fl. blue/pink-white.	Aug to Nov.	Jarrah forest in lateritic uplands. Eucalyptus marginata open forest with Allocasuarina fraseriana over Banksia grandis, understorey dominated by Bossiaea pulchella and sedges	P4	Yes	DBCA database indicates presence near area.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
 *Darwinia whicherensis*	-	Erect or spreading shrub, up 0.7 m tall x 0.4 m wide. Leaves linear, 3 - 5 mm long, triangular in cross-section, crowded at the end of branches, and bent backwards	Oct to Nov.	Winter-wet area of shrubland on shallow red clay over ironstone under a tall shrubland of Dryandra squarrosa	T	N	Habitat may not be suitable.
 *Dillwynia* sp. *Capel*		Erect, open, spreading shrub, to 2 m high. Fl. yellow & orange & red & pink.	Sep to Oct.	Littered grey loamy sand, rocky soils. Valleys, rangelands.	P3	N	Habitat may not be suitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
	Tall Donkey Orchid	Tuberous, perennial, herb, 0.5-1.05 m high. Fl. Yellow.	Nov to Dec or Jan.	Low-lying depressions, swamps.	VU	N	Habitat may not be suitable.
	Dwarf Bee Orchid	Tuberous, perennial, herb, 0.3-0.6 m high. Fl. yellow & brown.	Sep to Oct.	Brown loamy clay. Winter-wet swamps, in shallow water.	VU	N	Habitat may not be suitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
	Purdie's Donkey Orchid	Tuberous, perennial, herb, 0.15-0.35 m high. Fl. Yellow.	Sep to Oct.	Grey-black sand, moist. Winter-wet swamps.	EN	N	Habitat may not be suitable.
	Late Hammer Orchid	Tuberous, perennial, herb, 0.15-0.3 m high. Fl. red & brown & yellow.	Oct to Nov.	White-grey sand.	T/CR	N	Habitat may not be suitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
	Glossy-leaved Hammer Orchid	Tuberous, perennial, herb, 0.12-0.3 m high. Fl. red & green & yellow.	Oct to Nov.	White or grey sand. Low-lying situations adjoining winter-wet swamps.	T/CR	N	Habitat may not be suitable.
	Dwarf Hammer Orchid	Tuberous, perennial, herb, 0.15-0.3 m high. Fl. red & yellow.	Sep to Oct.	White-grey sand.	VU	N	Habitat may not be suitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
	-	Rhizomatous, clumped perennial, grass-like or herb (sedge), to 0.4 m high. Fl. Green.	Aug to Nov.	Clay, sandy loam. Emergent in freshwater: creeks, claypans.	T/VU	Y	Freshwaterhabitat may be suitable.
Gastrolobium sp. *Yoongarillup*	-	Erect compact perennial shrub.	-	Open forest over shrubs	P1	Y	Habitat may be suitable. Last recorded 2001
	-	Slender, open shrub, to 1.6 m high. Fl. orange/yellow/red.	Oct.	Red-grey sandy clay over quartzite. Steep westerly slopes.	P2	N	Habitat may not be suitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
Gonocarpus keigheryi	-	Decumbent, open dwarf shrub 0.2 m high x 0.2 m wide. Flowers green. Pink roots.	-	Slope. Laterite soil. Jarrah, Marri, Eucalyptus patens	P2	Y	Habitat suitable. Last recorded 2021.
 *Grevillea prominens*	-	Spreading shrub, 0.5-1.7 m high, 0.3-1 m wide. Fl. cream-white	Sep to Oct.	Gravelly loam. Along creeklines.	P3	Y	Habitat may be suitable, gravelly and along creeklines.
	Collie Grevillea	Spreading, much-branched, non-lignotuberous shrub, 0.6-2(-3) m high, to 4 m wide. Fl. red/red-orange.	Jan or Mar to Apr or Nov to Dec.	Sandy clay, clay or gravelly loam. Swampy flats, granite outcrops, along watercourses.	P4	Y	Habitat suitable along watercourses.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
	-	Shrub, 0.5 m high. branchlets hairy. Leaves alternate. Fl. Red.	Jul to Sep.	Sandy soils.	P2	N	Habitat may not be suitable.
 *Hemiandra* sp. *Windy Harbour*	-	Shrub, ca 0.8 m high. Fl. blue-purple.	Nov to Dec.	Grey sand. Sand dunes.	P3	Y	DBCA database indicates presence near area, however habitat may not be suitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
	-	Dioecious rhizomatous, perennial, herb, ca 0.5 m high.	Sep to Oct.	White sand. Sandplains.	P4	N	Habitat may not be suitable.
	-	Prostrate, spreading or scrambling. Habit shrub, spindly shrub (broom-like).	Oct or Nov.	Flat, coastal plain foothills, brown loam. Marri, Jarrah open forest, over mixed shrubs.	P3	Y	Habitat may be suitable.

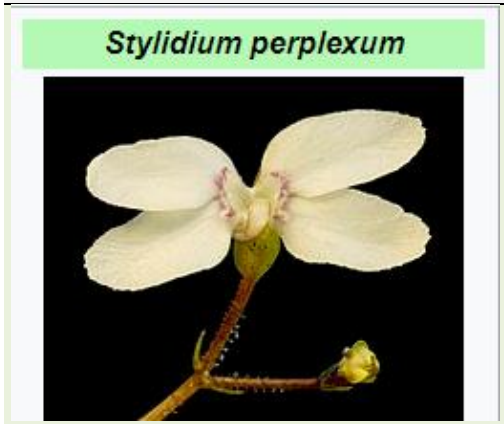
Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
 *Juncus meianthus*	-	Tufted perennial, herb, 0.05-0.2 m high, to 0.4 m wide. Fl. Brown.	Nov to Dec or Jan.	Black sand, sandy clay. Creeks, seepage areas.	P3	N	Habitat may be suitable.
 *Lasiopetalum laxiflorum*	-	Shrub, 0.25-0.45 m high. Fl. pink-purple	Oct to Nov.	Jarrah-Marri-Allocasuarina or Banksia grandis woodland or forest. Gravelly brown clay over laterite. Rarely in white sand.	P3	Y	Habitat may be suitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
Lomandra whicherensis	-	Perennial, rhizomatous tussock forming dioecious herb to 0.3 m across. 0.15 m high.	Dec	Lateritic or quartzite ridges under low woodlands of Corymbia haematoxylon.	P3	N	Habitat may be suitable. Last recorded 2011 near Harris State Forest.
 *Morelotia australiensis*	Southern Tetraria	Perennial, tufted herb, with stems to 1 m high. The stems are almost cylindrical with leaves that are up to 18 cm long and 6 mm wide.	It is not known to flower without a fire trigger.	Grey sand over clay	VU	N	Habitat may not be suitable.
Orianthera wendyae	-	Erect, compact dwarf shrub 5 cm high x 6 cm wide. Flowers white.	-	Valley. Dry, littered yellow clayey sand.	P1	N	Habitat may not be suitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
 *Pultenaea skinneri*	Skinner's Pea	Slender shrub, 1-2 m high. Fl. yellow/orange & red.	Jul to Sep.	Sandy or clayey soils. Winter-wet depressions.	P4	N	Habitat may not be suitable.
 *Rumex drummondii*		Erect perennial, herb, 0.6-0.9 m high.	-	Winter-wet disturbed areas.	P4	N	Habitat may not be suitable.

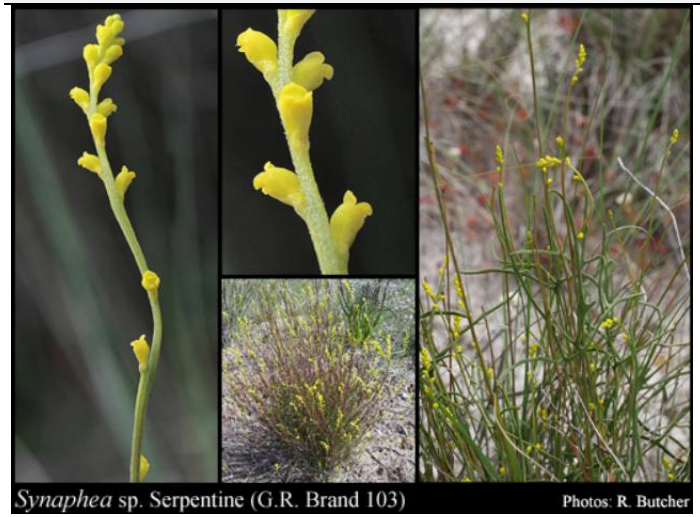
Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
Rytidosperma racemosum var. *racemosum*	-	Loosely tufted or shortly rhizomatous perennial. Culms to 0.8 m high. Leaves glabrous to sparsely hairy; blade flat, folded or inrolled, to 0.15 m long and c. 1 mm wide.	Sep to Jan	Granite and metamorphic rocks, and some alluvium. Vegetation of grassy eucalypt open woodlands and forests.	P2	Y	Habitat may be suitable. Last recorded in 1956.
Schoenus capillifolius		Semi-aquatic tufted annual, grass-like or herb (sedge), 0.05 m high. Fl. Green.	Oct to Nov.	Brown mud. Claypans.	P3	N	Habitat may not be suitable.
 *Senecio leucoglossus*		Erect annual, herb, to 1.3 m high. Fl. White.	Aug to Dec.	Gravelly lateritic or granitic soils. Granite outcrops, slopes.	P4	Y	DBCA database indicates presence near area. Habitat may be suitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
 *Stylidium acuminatum* subsp. *acuminatum*		-	Dec	Hillslope and roadside embankment; red-brown loam over laterite.	P2	Y	DBCA database indicates presence near area. Habitat may be suitable.
 *Stylidium paludicola*		Reed-like perennial, herb, 0.35-1 m high, Leaves tufted, linear or subulate or narrowly oblanceolate, 0.5-4 cm long, 0.5-1.5 mm wide, apex acute, margin entire, glabrous. Scape mostly glabrous, inflorescence axis glandular. Inflorescence racemose. Fl. pink	Oct to Dec.	Peaty sand over clay. Winter wet habitats. Marri and Melaleuca woodland, Melaleuca shrubland.	P3	N	Habitat may not be suitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
		Tuberous, multistemmed, somewhat shrubby habit. Leaves rosetted at stem apex, linear. Fl white, often blushed purple.	Nov to Dec,	Lateritic soils.	P1	Y	Habitat may be suitable.
		Prostrate or decumbent shrub, 0.15-0.6 m high, to 1 m wide. Fl. Yellow.	Jul or Sep to Nov.	Sandy soils. Rises.	P3	N	Habitat may not be suitable.

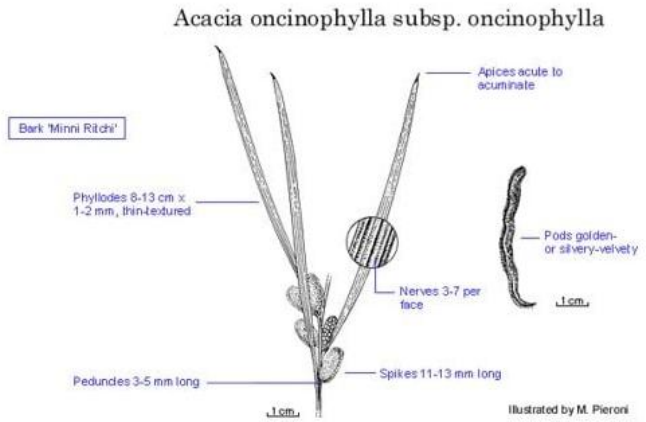
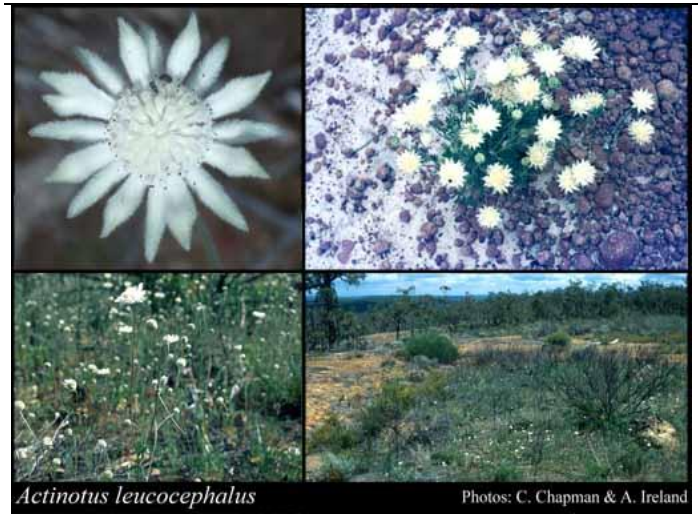
Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
	-	Tufted, compact shrub, 0.2-0.5 m high. Fl. Yellow.	Aug to Oct.	Brown-orange loam & sandy clay, granite. Swamps, winter-wet areas.	P1	Y	Habitat may be suitable.
	-	Clumped shrub (subshrub), 0.35-0.4 m high.	Sep-Oct	Light brown loam, red-brown sandy loam, gravelly, brown sandy clay over laterite. In undulating areas.	P3	Y	Habitat may be suitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
	-	Dense, clumped shrub, to 0.3 m high, to 0.4 m wide. Fl. Yellow.	Oct.	Sandy with lateritic pebbles. Near winter-wet flats, in low woodland with weedy grasses.	T/VU	Y	Habitat may be suitable.
	-	Erect, clumped shrub (sub-shrub), to 0.8 m high. Fl. Yellow.	Sep to Nov.	Grey sandy loam or clay, grey-brown clayey sand, brown clayey loam, laterite. Flats, seasonally wet areas, railroad reserves often with wet depressions or drains.	EN	Y	Habitat may not be suitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
	-	Perennial, erect, clumped shrub (sub-shrub), to 0.6 m high x to 0.5 m wide. Flowers are yellow and borne on long spikes, well above the leaves.	Aug to Nov.	Flat terrain. grey-brown sandy loams to clay in seasonally wet areas.	CR	N	Habitat may not be suitable.
	-	Caespitose shrub, 0.3-0.45 m high. Fl. Yellow.	Aug to Oct.	Sandy or sandy clay soils. Winter-wet flats, granite.	EN	N	Habitat may not be suitable.

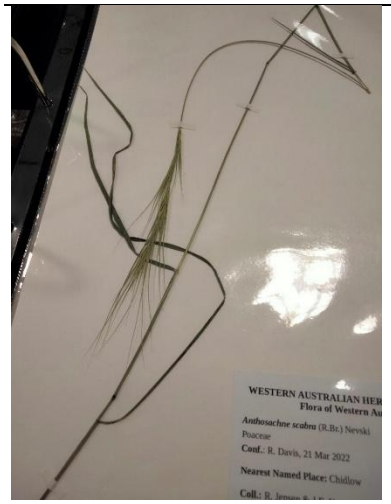
Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
	-	Small shrub, 0.2-0.3 m high. Fl. Pink.	Oct.	Granitic loam or outcrops.	P3	N	Habitat may not be suitable.
Thysanotus unicupensis	-	Perennial herb 0.3 m high. Fl. Purple	Oct to Dec.	Dry lateritic, grey sandy soils. Jarrah/Marri forests.	P3	Y	Habitat may be suitable.
 *Verticordia attenuata*	-	Shrub, 0.4-1 m high. Fl. Pink.	Dec or Jan to May.	White or grey sand. Winter-wet depressions.	P3	N	Habitat may not be suitable.

Appendix 4: Locally Significant Species

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	DBCA Comment
	-	Shrub, 0.9-2.5 m high, 'minni-ritchi' bark, phyllodes mostly 8-13 cm long, 1-2 mm wide. Fl. Yellow.	Aug to Oct.	Granitic soils	P3	Priority 3 listed, one of two disjunct southern populations (found on granites).
	Flannel Flower	Erect annual, herb, (0.05-)0.1-0.45 m high. Fl. white-cream,	Sep to Dec or Jan to Feb	Variety of soils.		disjunct southern population, other disjunct southern populations occur in Bridgetown area and Stirling/Porongorups (found on granites).

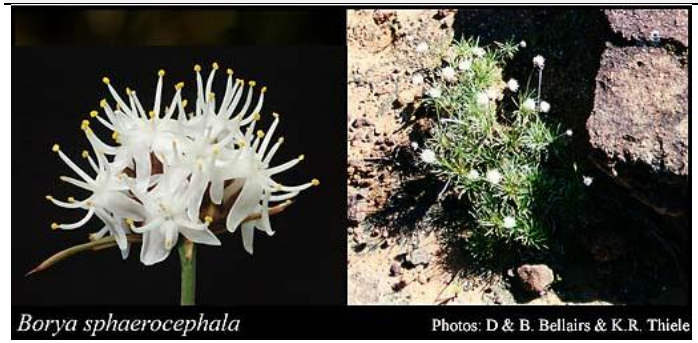
Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	DBCA Comment
 *Adiantum aethiopicum*	Common Maidenhair	Rhizomatous, perennial, herb or (fern), 0.1-0.35 m high, frond 2-4-pinnate; stipe reddish-brown, hard, glossy; sori marginal in notches, reniform.		Sandy clay, loam, lateritic clay gravel. Damp clay banks or among rocks in sclerophyll forests.		this species is typically of wet shaded creeklines, the location of it on a WEL NP granite outcrop crevice is the only known record of it in the SWR outside of a creekline
	Rice Flower	Slender erect or spreading shrub, 0.08-0.5 m high. Fl. white/white & pink,	Sep to Oct.	Gravelly soils, clay, granite, laterite. Rocky outcrops, low winter-wet areas, rocky hills.		Species is typically found in the Perth area with isolated disjunct records. Occurrences in WEL NP represent a disjunct area of occurrence (found on granites).

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	DBCA Comment
		Shrub, 0.15-0.6 m high. Fl. white-cream-pink-blue-purple,	May to Sep.	White, grey or yellow sand with laterite gravel, gravelly loam. Sandplains, hills.		First record for WEL NP, populations in NP are at/near the species range end, currently only know from one WEL NP granite outcrop.
 *Angianthus preissianus*		Erect or prostrate annual, herb, 0.03-0.16 m high. Fl. yellow	Oct to Dec.	Sand, clay. Favours saline habitats, winter-wet flats, claypans, granite rocks.		First record of species for the Darling Scarp, it is typically found on coastal plain claypans and south coast claypans/granites (found on granites).

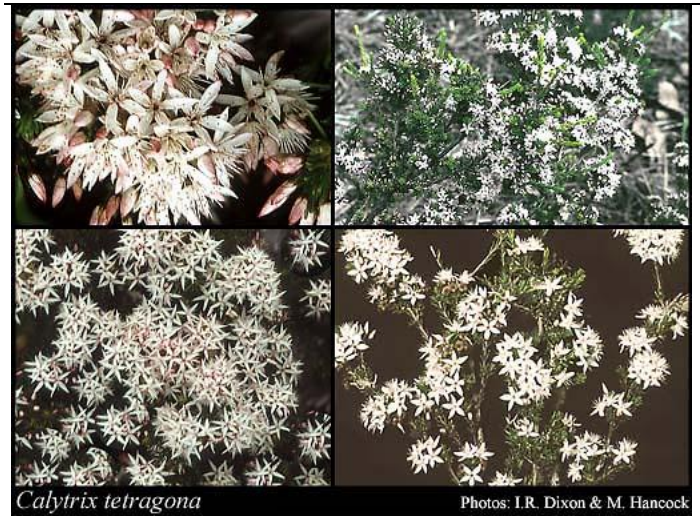
Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	DBCA Comment
 *Anogramma leptophylla*	Annual Fern	Rhizomatous, annual, herb or (fern), 0.03-0.15 m high, blade bipinnatifid; sori forking with the veins, oblong.		Protected rock crevices, or open banks among mosses and liverworts, near streams.		this tiny annual fern is only known from eleven isolated records from Geraldton to Albany, no collection are lodged for the WEL NP (found on granites).
 *Anthosachne scabra*		Loosely tufted perennial to 1.5 m tall. Leaves with blade flat or rolled the upper margins and surface scabrous, the lower smooth and shiny or hirsute. Inflorescence a slender, often curved spike	mainly late winter to summer.			South of Perth this species is only known from one collection within the Jarrah forest belt, it is typically a woolbelt/wheatbelt species (recorded on granites in the Collie River valley)

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	DBCA Comment
		Tufted annual, grass-like or herb, to 0.025 m high. Fl. green	Sep to Oct.	Grey sand, clay. Swamps, granite outcrops.		Poorly recorded species that outside WEL NP is currently only known from one record south of Perth and west of Darkan (found on granite).
	River Banksia	Non-lignotuberous shrub or tree, 1-25 m high. Fl. yellow/orange-yellow/red,	Mar to Aug.	Sand, loam. Coastal consolidated dunes near granite outcrops, along watercourses.		populations of WEL NP are very close to the species northern most extent (found in river valleys).

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	DBCA Comment
 *Cyanothamnus defoliatus*		Shrub, spines absent; branchlets smooth, without distinct raised glands. Leaves opposite, simple, Flowers in axillary, loose clusters (cymes or panicles) or in terminal, loose clusters (cymes or panicles); corolla blue, petals four.	SeptemberOctober and November			This species has nodes of occurrence, in the Collie-Busselton node populations in WEL NP represent the limits of extent (found on granites).
 *Cyanothamnus tenuis*	Blue Boronia	Procumbent or erect & slender shrub, 0.1-0.5 m high. Fl. blue/pink-white.	Aug to Nov.	Jarrah forest in lateritic uplands. Eucalyptus marginata open forest with Allocasuarina fraseriana over Banksia grandis, understorey dominated by Bossiaea pulchella and sedges	P4	Priority 4 listed granite endemic, from granites of the Darling Plateau and northern tip of the Leeuwin Block.

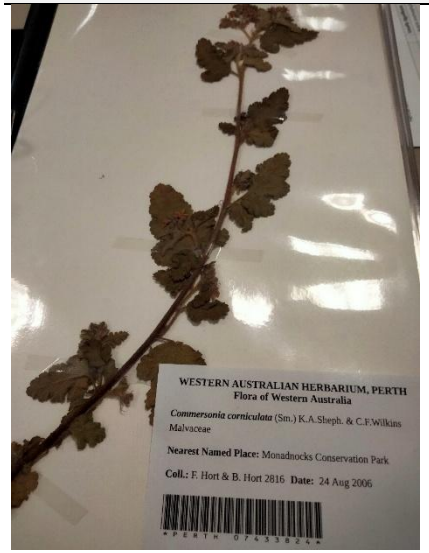
Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	DBCA Comment
	Pincushions	Tufted perennial, herb, 0.02-0.2 m high. Fl. white	Aug to Oct	Sand, clay, sandstone, granite. In rock depressions, edges of moss swards, around & on granite sheets & outcrops.		Occurrences in WEL NP are the first for the Collie area (found on granite)
	Frail Spider Orchid	Tuberous, perennial, herb, 0.2-0.35 m high. Fl. green-cream. A rare subspecies 200–350 mm high with a hairy leaf 120–180 mm long by 6–10 mm wide and up to three creamy-white flowers 40–60 mm across. It is distinguished from the other subspecies by its predominantly white more evenly curved labellum and westerly distribution on the Darling Scarp.	Sep to Oct.	Clay loam and gravel. Well drained soils amongst dense shrubs.	P1	Priority 1 listed, poorly recorded species currently known for WEL NP to fringe granite outcrops and/or be within rubbly outcrop occurrences

Caladenia uliginosa subsp. *patulens*

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	DBCA Comment
	-	Tuberous, perennial, herb, 0.2-0.35 m high. Fl. green-cream.	Sep to Oct.	Clay loam and gravel. Well drained soils amongst dense shrubs.	P4	Priority 4 listed, WEL NP pops represent one of three disjunct southern populations (found on granites).
	Common Fringe-myrtle	Shrub, 0.2-1.5 m high. Fl. white-pink	Jan to Dec (usually Aug-Oct)	Sandy soils over laterite, granite or limestone. Sandplains, dunes, depressions, outcrops.		this species is typically east of the Albany Hwy, occurrences on granites at Bridgetown and Collie area represent the only populations west of the Albany Hwy (found on granites)

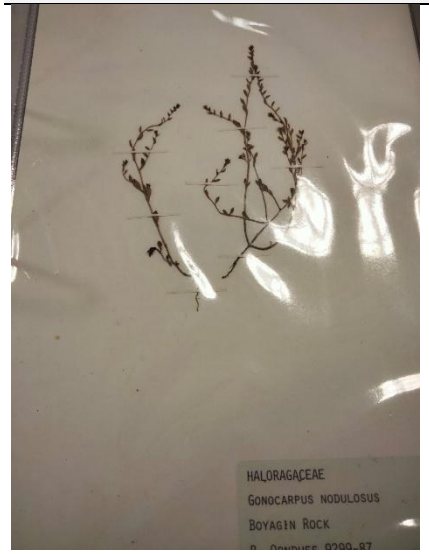
Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	DBCA Comment
 *Cheilanthes distans* Photo: I.R. Dixon	Bristly Cloak Fern	Rhizomatous, perennial, herb or (fern), 0.02-0.4 m high, blade 1-2-pinnate at the base, undersurface densely scaly, scales simple; sori forming marginal band.		Rock crevices.		With exception of a population on granites at Meelup, occurrences in WEL NP are the only other populations south of the Perth area and west of the wheatbelt (found on granites).
 *Chorilaena quercifolia* Photo: B.A. Fuhrer	Chorilaena	Shrub or tree, 0.5-5 m high. Fl. yellow-cream-white-green,	Apr to May or Jul or Sep to Dec or Jan.	Sandy & loamy soils. Rocky coast & hillsides, granite & limestone rocks.		Disjunct northern most populations are in the WEL NP (found in lateritic valleys).

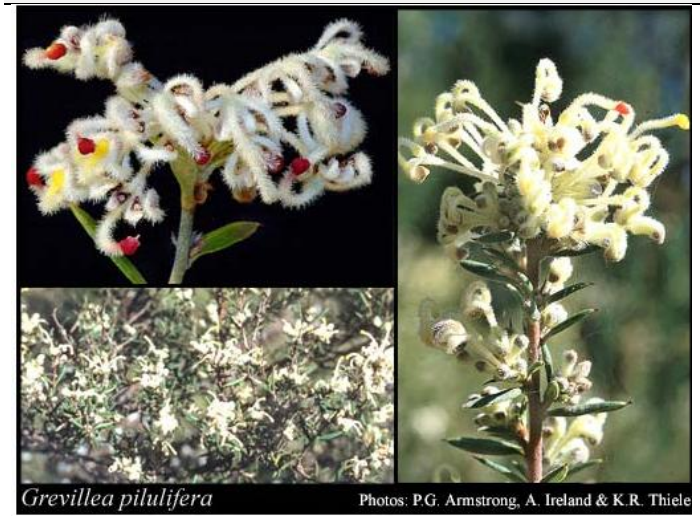
Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	DBCA Comment
	Needle-leaved Chorizema	Erect or spreading shrub, 0.15-0.5(-1) m high. Fl. yellow-orange-red-pink,	Jul to Oct.	Sandy, loamy soils, laterite, granite. Outcrops, undulating plains, ridges, coastal dunes, sometimes swampy areas.		This species within WEL NP is currently only known for granite outcrops.
		Twining shrub or climber. Fl. blue	Sep to Dec	Laterite, sandy soils, granite. Outcrops, creek beds, slopes.		This species within WEL NP is currently only known for granite outcrops.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	DBCA Comment
 *Commersonia corniculata*		Shrub, with hairy stems. Corolla pink,	August, September, October, November or December			Species is known from nodes of occurrence along the south coast, around Perth and Meelup. Records for the WEL NP represent a new area of occurrence where the taxa was not previously recorded (found on granite).
	Slender Smokebush	Clumped, non-lignotuberous shrub, 0.2-1 m high. Fl. blue-cream	Jul to Oct.	Sandy gravelly soils. Swampy areas, granite outcrops.		Occurrences in WEL NP are disjunct from typical areas of occurrence around Perth (found on granites).

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	DBCA Comment
 *Daveisia hakeoides* subsp. *hakeiodes*		Intricate, many-stemmed shrub, 0.3-1 m high. Fl. yellow/orange & red,	May to Jul.	Gravelly lateritic soils, sand. Stony hills, sandplains.		Occurrences in WEL NP are disjunct from typical areas of occurrence north of Perth and in wheatbelt (found on granites).
		Erect shrub, 0.5-1.5 m high, leaves oblong-elliptic, thin, mostly 2-6 cm long, involucral bracts with grey indumentum. Fl. yellow-orange-red	Jul to Nov.	Sand over granite. Rocky outcrops.		Poorly collected species that is centred on Darling Scarp around Collie and Perth (found on granites and valleys in the Collie area).

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	DBCA Comment
		Tuberous, perennial, herb, 0.1-0.4 m high. Fl. red/pink/white,	Jun to Sep	Sandy soils, laterite. Often on granite outcrops.		since being recorded the taxonomy for this group has been revised (Krueger et.al 2023), it is likely that records of this species in WEL NP are now D.calycina and would represent southern range end populations (found on granite)
	Drummond's Gum	(Mallee) or tree, to 8 m high, bark smooth. Fl. white-cream,	Jan to Feb or Apr to Dec.	Gritty loam, gravel, clay over laterite, granite. Sandplains, hills, road verges.		records of this species in WEL NP on granites are rare and represent western limit of distribution in the Collie area (found on granites).

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	DBCA Comment
 *Gonocarpus nodulosus*		Slender annual, herb, 0.02-0.2 m high. Fl. red	Aug to Dec	Shallow sandy soils. Granite outcrops.		Common species for inland and wheatbelt areas, WEL NP occurrences are first record for the Jarrah forest belt (found on granite)
		Spreading, spiny shrub, 0.3-1.7 m high. Fl. white-cream	Jul to Dec or Jan to Feb.	Sandy or gravelly soils, sometimes swampy.		A wide leaf, white flowered variant of the typical species is considered to be a new taxa (P.Olde pers.comms). It is currently only known for the Bowelling area and on WEL NP granites.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	DBCA Comment
	Woolly-flowered Grevillea	Much-branched, erect or spreading shrub, 0.2-1 m high. Fl. white	Apr to Dec (mainly Jul-Oct).	Lateritic or granitic gravels. Hillsides, ridges.		Not previously recorded for WEL NP (found on granites).
		Erect perennial, herb, (0.05-)0.1-0.5(-0.8) m high. Fl. white	Sep to Dec.	Sandy soils, gravelly loam, clay. Plains, lateritic breakaways.		WEL NP records are the first for the Jarrah forest belt between Bowelling and Bunbury (found on granite)

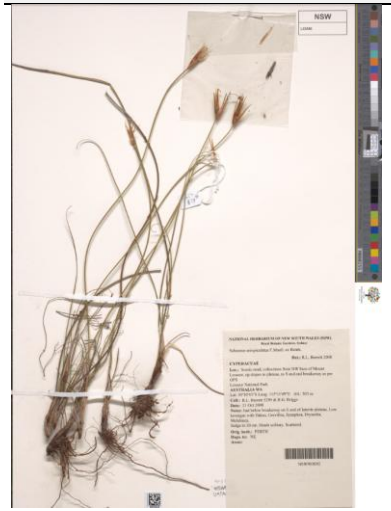
Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	DBCA Comment
 *Hemiandra* sp. Windy Harbour	-	Shrub, ca 0.8 m high. Fl. blue-purple.	Nov to Dec.	Grey sand. Sand dunes.	P3	Priority 3 listed, this typically south coast species has isolated disjunct range end populations on WEL NP granites
		Low-growing, mat-like, spreading shrub, to 0.9 m high.		Brown granitic loam, clay loam, gravel, granite. Rock outcrops, hillsides, breakaway slopes.		While expert identification is required, if confirmed occurrences of this species in WEL NP are disjunct populations of a typically Perth area taxa (found on granites).

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	DBCA Comment
		Erect, much-branched shrub, 0.25-1 m high. Fl. yellow	Jul to Oct.	Lateritic or granitic soils.		this taxon is in the process of being split into two separate taxa, one that occurs to the north of Mandurah and the other south of Bunbury. Plants of this species on granites in WEL NP are the north of Mandurah group and represent a disjunct range extension of that taxa (found on granite).
		Rhizomatous, tufted perennial, grass-like or herb (sedge), 0.15-1 m high. Fl. brown	Mar to Nov.	Calcareous, peaty or lateritic sand, sandy clay, gravel. Dunes, swamps.		In lieu of a taxonomic key, a large robust Lepidosperma on granites of WEL NP and the Leeuwin Block major landform is locally being called this name. The taxonomic and conservation status of this apparently restricted taxa requires clarification.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	DBCA Comment
		Dioecious rhizomatous, caespitose perennial, herb, to 0.5 m high, clumps to 0.2 m wide. Fl. yellow/cream,	Nov to Dec or Jan to Feb	Lateritic sand or loam, sandy clay, granite, often wet.		this typically moist area/drainage line taxa is uncharacteristically in granite outcrop crevices in Wellington NP
	Painted Marianthus	Low, erect, spreading shrub or climber, 0.45-3 m high, to 2.0 m wide. Fl. white-cream,	Dec or Jan to May.	Sand, clay, loam, gravel, sandstone, laterite, granite. Valleys, ridges, hills, flats, sandplains, roadsides.		Common species for inland and wheatbelt areas, WEL NP occurrences are first record for the Jarrah forest belt (found on granite)

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	DBCA Comment
		Erect or ascending, spiny shrub, 0.2-1.5 m high. Fl. yellow & orange & red/brown	Jun to Nov.	Sandy soils. Sandplains, sandhills, rocky hills, lateritic ridges, granite rocks.		First records of the taxa for the WEL NP and the only for the jarrah forest belt south of Mandurah (found on granite).
	Pigmy Clubmoss	Tuberous, perennial, herb or grass-like or (fern ally), 0.01-0.06 m high, sporophylls clustered in solitary strobilus on fleshy peduncle, leaves fleshy.	Fl. Jul to Oct.	Grey to black sands or brown loam over granite. Coastal plain and granitic outcrops.		This species within WEL NP is currently only known for granite outcrops.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	DBCA Comment
 *Pithocarpa ramosa*						this typically south coast species has disjunct range end populations on WEL NP granites
	Silky Scaevola	Erect or decumbent shrub, 0.3-1.5 m high. Fl. blue/blue-white,	Jun to Nov.	White/grey or red sand, clay loam. Limestone ridges, sand dunes, coastal plains.		a robust purple flowered variant of this taxa has been recorded on granite outcrops of WEL NP and Falls Brook NR after fire. The taxonomic and conservation status of this taxa requires clarification.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	DBCA Comment
 *Schoenus unispiculatus*		Tufted perennial, grass-like or herb (sedge), 0.1-0.45 m high. Fl. brown,	Aug to Oct.	Grey, black or lateritic sand, lateritic gravel, loam.		This species within WEL NP is currently only known for granite outcrops.
 *Senecio leucoglossus*		Erect annual, herb, to 1.3 m high. Fl. White.	Aug to Dec.	Gravelly lateritic or granitic soils. Granite outcrops, slopes.	P4	Priority 4 listed, only know from the western edge of the Darling scarp in granitic and lateritic soils

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	DBCA Comment
		Rhizomatous, tufted perennial, grass-like or herb, 0.3-1.5 m high. Fl. green/purple,	Sep to Oct or Feb	Lateritic sand, clay, granite, rarely quartzite. Granite outcrops.		Occurrences of this in WEL NP are of particular importance as the species has otherwise not been recorded west of a line from Perth to Bremer Bay.
Stylidium acuminatum subsp. *acuminatum*		-	Dec	Hillslope and roadside embankment; red-brown loam over laterite.	P2	Priority 2 listed, poorly known species known the Collie to Donnybrook area (found in valleys predominantly on lateritic soils).

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	DBCA Comment
	Circus Triggerplant	Creeping perennial, herb, to 0.15 m high, with many leafy stems arising from rosette nodes on the soil surface. Fl. pink,	Oct to Nov.	Sand, limestone, soils associated with sheet laterite, granite. Coastal dunes, winter-wet watercourses, aprons of rock outcrops.		Populations of this species in WEL NP represent a disjunct range extension (found on granite).
	Blind Grass	Rhizomatous, tufted perennial, grass-like or herb, 0.3-1 m high. Fl. blue/white,	Aug to Nov.	Laterite, granite, clay, limestone.		This species within WEL NP is currently only known for granite outcrops.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	DBCA Comment
 *Styphelia concinna*						Records in WEL NP are significantly disjunct western population of a wheatbelt centered taxa (found on granite)
	Large Fruited Thomasia	Erect, spreading shrub, 0.6-2 m high. Fl. pink-blue-purple/white,	Aug to Nov.	Loam. Granite or laterite slopes bordering creeks, hills.		Species is known from disjunct nodes of occurrence, with WEL NP forming one of those disjunct nodes (found on granite)

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	DBCA Comment
		Erect or prostrate shrub, 0.15-0.6 m high. Fl. pink,	Jan or Mar to Apr or Jul or Sep to Dec.	Sandy or clay, often gravelly soils. Often associated with granitic rocks.		This species is known from the wool/wheatbelt and scattered Swan Coastal Plain populations. Populations on WEL NP granites are the only known for the Jarrah forest belt south of Perth (found on granite)
		Erect, woody perennial, herb, 0.1-0.4 m high. Fl. purple & yellow,	Jan to Dec.	Variety of soils.		Records in WEL NP are the first for the Jarrah forest belt between Bowelling and Bunbury (found on granite).

Appendix 5: Relevé Data

Relevé No.:	Relevé 1
Survey Date:	02/09/2024
Personnel:	BD, ZS
Area:	Stones Brook
Easting:	401014.88873
Northing:	6306505.28024
Topography:	Mid Slope
Aspect:	SE
Slope:	Steep
Soil:	Brown Loamy clay
Gravel:	0 %
Rock:	0 %
Leaf Litter:	95 %
Bare Ground:	>5 %
Drainage:	Moderate
Condition:	Very Good

Notes: *C. calophylla* & *E. marginata* closed forest over *T. odoratissimum shrubland* over a mixed sparse herbland.

Species	Cover (%)	Height (m)
Austrostipa flavescens	0.5	0.1
Caladenia sp. 2	0.5	0.15
Clematis pubescens	1	0.2
Corymbia calophylla	10	11
Cyrtostylis huegelii	0.5	0.1
Eucalyptus marginata	80	12
Macrozamia riedlei	1	0.4
Pteridium esculentum	0.5	0.6
Pterostylis angulata	1	0.15
Pterostylis angulata	0.5	0.1
Stylidium caespitosum	0.5	0.01
Thysanotus patersonii	0.5	0.3

Species	Cover (%)	Height (m)
Trymalium odoratissimum	70	3

Note: *denotes introduced species, # denotes dubious species.

Relevé No.:	**Relevé 2**
Survey Date:	02/09/2024
Personnel:	BD, ZS
Area:	Stones Brook
Easting:	400877.79482
Northing:	6306471.88219
Topography:	Mid Slope
Aspect:	S
Slope:	Steep
Soil:	Bown Red Loamy Clay
Gravel:	0 %
Rock:	10 %
Leaf Litter:	75 %
Bare Ground:	>5 %
Drainage:	Well
Condition:	Very Good

Notes: *E. marginata* and *A. flexuosa* closed forest *over T. odoratissimum, X. preissii* and *H. hypericoides* sparse shrubland over *B. eriocarpa* and *C. variabilis* sparse herbland.

Species	**Cover (%)**	**Height (m)**
**Poa annua*	0.5	0.05
Agonis flexuosa	25	8
Banksia dallanneyi	2	0.25
Bossiaea eriocarpa	5	0.3
Caladenia flava	0.5	0.05
Craspedia variabilis	5	0.2
Cyrtostylis huegelii	0.5	0.5
Diplolaena microcephala	0.5	0.3
Eriochilus dilatatus	1	0.1
Eucalyptus marginata	75	12
Hibbertia hypericoides	5	0.4
Lagenophora huegelii	0.5	0.05
Leucopogon capitellatus	0.5	0.2
Oxalis exilis	0.5	0.05

Species	Cover (%)	Height (m)
Thelymitra sp. 1	0.5	0.1
Thysanotus patersonii	0.5	0.2
Trachymene pilosa	1	0.1
Trymalium odoratissimum	2	3
Xanthorrhoea preissii	5	1

Note: *denotes introduced species, # denotes dubious species.

Relevé No.:	**Relevé 3**
Survey Date:	02/09/2024
Personnel:	BD, ZS
Area:	Tree Camping/ Facilities
Easting:	405415.88082
Northing:	6304250.52540
Topography:	Mid Slope
Aspect:	S
Slope:	Steep
Soil:	Red Brown Loamy Clay
Gravel:	0 %
Rock:	0 %
Leaf Litter:	80 %
Bare Ground:	>5 %
Drainage:	Well
Condition:	Very Good

Notes: *E. marginata* open forest over *T. odoratissimum, P. longifolia* and *H. pilosa* closed shrubland over *P. esculentum* sparse fernland.

Species	**Cover (%)**	**Height (m)**
Acacia browniana	1	0.4
Austrostipa flavescens	0.5	0.2
Caladenia sp. 2	0.5	0.15
Clematis pubescens	0.5	0.5
Cyanicula sericea	0.5	0.15
Eucalyptus marginata	8	12
Hardenbergia comptoniana	0.5	0.6
Hibbertia amplexicaulis	0.5	0.3
Hibbertia pilosa	75	1.3
Lagenophora huegelii	0.5	0.05
Lepidosperma sp. 4	0.5	0.8
Leucopogon capitellatus	0.5	0.3
Leucopogon capitellatus	0.5	0.1

Species	Cover (%)	Height (m)
Lomandra caespitosa	0.5	0.1
Lomandra nigricans	0.5	0.25
Macrozamia riedlei	1	0.6
Persoonia longifolia	5	1.8
Pteridium esculentum	8	0.8
Stylidium caespitosum	0.5	0.05
Trachymene pilosa	0.5	0.1
Trymalium odoratissimum	5	2

Note: *denotes introduced species, # denotes dubious species.

Relevé No.:	**Relevé 4**
Survey Date:	02/09/2024
Personnel:	BD, ZS
Area:	Start Zipline
Easting:	405415.88082
Northing:	6303920.52916
Topography:	Upper Slope
Aspect:	NE
Slope:	Gentle
Soil:	Brown Sandy Loam
Gravel:	<5 %
Rock:	5 %
Leaf Litter:	60 %
Bare Ground:	25 %
Drainage:	Moderate
Condition:	Very Good

Notes: *C. calophylla* open woodland over *C. quadrifidus, D. citriodora* and *D. viscosa* closed heathland over a mixed sparse herbland. Area is landscaped.

Species	**Cover (%)**	**Height (m)**
#Eucalyptus caesia	2	3
**Arctotheca calendula*	0.5	0.05
**Cotula turbinata*	0.5	0.05
**Disa bracteata*	1	0.3
**Erigeron bonariensis*	0.5	0.1
**Ficinia marginata*	0.5	0.05
**Galium murale*	0.5	0.05
**Lysimachia arvensis*	2	0.15
**Poa annua*	0.5	0.05
**Romulea rosea*	0.5	0.7
**Stachys arvensis*	0.5	0.15
Acacia browniana	0.5	0.05
Acacia oncinophylla subsp. *oncinophylla*	1	1.4
Acacia stenoptera	0.5	1.2

Species	Cover (%)	Height (m)
Austrostipa flavescens	0.5	0.1
Caesia micrantha	0.5	0.4
Calothamnus quadrifidus	5	2
Corymbia calophylla	10	9
Darwinia citriodora	75	0.5
Dodonaea viscosa	5	1.2
Dodonaea viscosa	25	1
Drosera indumenta	0.5	1.2
Drosera menziesii	0.5	0.3
Drosera menziesii	5.5	0.8
Haemodorum simplex	0.5	0.8
Hibbertia hypericoides	1	0.8
Hypochaeris glabra	0.5	0.05
Oxalis exilis	0.5	0
Patersonia babianoides	0.5	0.2
Pauridia glabella	0.5	0.05
Thelymitra benthamiana	0.5	0.1
Thysanotus patersonii	0.5	0.5
Trachymene pilosa	0.5	0.05

Note: *denotes introduced species, # denotes dubious species

Relevé No.:	**Relevé 5**
Survey Date:	04/09/2024
Personnel:	BD, ZS
Area:	Zipline Tour
Easting:	404388.40844
Northing:	6303920.52916
Topography:	Lower Slope
Aspect:	E
Slope:	Slight - Moderate
Soil:	Brown Clay Loam
Gravel:	0 %
Rock:	10 %
Leaf Litter:	40 %
Bare Ground:	5 %
Drainage:	Well
Condition:	Excellent

Notes: *C. calophylla* open forest over *X. preissii, X. gracilis* and *D. citriodora* shrubland over *B. nivea* sparse heathland

Species	**Cover (%)**	**Height (m)**
Acacia browniana	4	0.8
Banksia nivea	4	0.3
Caladenia sp. 1	0.5	0.15
Calytrix flavescens	0.5	0.4
Corymbia calophylla	5	8
Cyanicula sericea	0.5	0.2
Darwinia citriodora	10	0.6
Drosera pallida	0.5	0.15
Grevillea bipinnatifida	2	0.8
Hakea lissocarpha	2	1.8
Hibbertia hypericoides	5	0.4
Hypocalymma angustifolium	2	0.6
Hypochaeris glabra	0.05	0.05

Species	Cover (%)	Height (m)
Lomandra hermaphrodita	0.5	0.2
Melaleuca parviceps	2	0.8
Olax benthamiana	2	1.6
Pterostylis recurva	0.5	0.15
Trachymene pilosa	0.5	0.05
Trymalium ledifolium	2	1.2
Xanthorrhoea gracilis	5	1.2
Xanthorrhoea preissii	20	1.8

Note: *denotes introduced species, # denotes dubious species.

Relevé No.:	Relevé 6
Survey Date:	04/09/2024
Personnel:	BD, ZS
Area:	Zipline Tour
Easting:	404374.04144
Northing:	6303746.37409
Topography:	Outcrop
Aspect:	E
Slope:	Moderate
Soil:	Granite
Gravel:	0 %
Rock:	100 %
Leaf Litter:	5 %
Bare Ground:	40 %
Drainage:	Poor
Condition:	Very Good

Notes: *V. plumosa* sparse shrubland over *C. austrotenuifolia* sparse fernland *over *H. glabra* sparse forbland

Species	Cover (%)	Height (m)
**Hypochaeris glabra*	2	0.05
**Lysimachia arvensis*	0.5	0.05
Borya sphaerocephala	0.5	0.1
Chamaescilla corymbosa	0.5	0.15
Cheilanthes austrotenuifolia	10	0.2
Drosera stolonifera	0.5	0.05
Verticordia plumosa	2	1

Note: *denotes introduced species, # denotes dubious species.

Relevé No.:	**Relevé 7**
Survey Date:	04/09/2024
Personnel:	BD, ZS
Area:	Zipline Tour
Easting:	404631.15297
Northing:	6303885.39854
Topography:	Mid Slope
Aspect:	E
Slope:	Moderate-Steep
Soil:	Brown Clay Loam
Gravel:	0 %
Rock:	0 %
Leaf Litter:	70 %
Bare Ground:	5 %
Drainage:	Well
Condition:	Excellent

Notes: *E. marginata* and *C. calophylla* closed forest over *B. eriocarpa, H. amplexicaulis* and *P. esculentum* open shrubland and fernland over a mixed herbland.

Species	**Cover (%)**	**Height (m)**
Acacia browniana	1	1.2
Agrostocrinum hirsutum	0.5	0.15
Bossiaea aquifolium	0.5	0.1
Bossiaea eriocarpa	20	2
Caladenia flava	0.05	0.15
Clematis pubescens	0.5	0.15
Corymbia calophylla	30	20
Darwinia citriodora	2	0.3
Diplolaena drummondii	4	1
Elythranthera emarginata	0.05	0.15
Eucalyptus marginata	40	18
Hakea amplexicaulis	4	2.2
Hibbertia amplexicaulis	0.5	0.2

Species	Cover (%)	Height (m)
Hibbertia hypericoides	2.05	0.5
Hibbertia pilosa	2	1.2
Lagenophora huegelii	0.05	0.05
Lepidosperma tetraquetrum	1	0.7
Macrozamia riedlei	1	0.8
Patersonia occidentalis	1	0.6
Persoonia longifolia	0.5	0.6
Pteridium esculentum	4	0.8
Styphelia erectifolia	1	0.25
Trymalium odoratissimum	2	1.8
Xanthorrhoea gracilis	2	0.6
Xanthorrhoea preissii	4	1.6

Note: *denotes introduced species, # denotes dubious species.

Relevé No.:	Relevé 8
Survey Date:	04/09/2024
Personnel:	BD, ZS
Area:	Tree Camping/ Facilities
Easting:	405303.62415
Northing:	6304446.66290
Topography:	Mid Slope
Aspect:	NE
Slope:	Moderate
Soil:	Red Brown Clay Loam
Gravel:	0 %
Rock:	5 %
Leaf Litter:	50 %
Bare Ground:	5 %
Drainage:	Well
Condition:	Excellent

Notes: *E. marginata* open forest over *H. hypericoides, X. gracilis* and *B. eriocarpa* heathland over a mixed herbland.

Species	Cover (%)	Height (m)
**Lathyrus latifolius*	0.3	0.25
Acacia browniana	2	0.2
Banksia dallanneyi	2	0.2
Bossiaea eriocarpa	5	0.3
Caladenia flava	0.5	0.15
Chamaescilla corymbosa	0.05	0.2
Clematis pubescens	0.5	0.2
Drosera macrantha	0.5	0.3
Eucalyptus marginata	80	23
Hakea amplexicaulis	1	1
Hibbertia amplexicaulis	1	0.3
Hibbertia hypericoides	50	0.4
Hibbertia pilosa	1	0.35

Species	Cover (%)	Height (m)
Hypocalymma angustifolium	1	0.4
Lagenophora huegelii	0.5	0.05
Lepidosperma squamatum	2	0.6
Leucopogon australis	0.05	0.6
Leucopogon capitellatus	0.05	0.3
Lomandra nigricans	0.5	0.3
Macrozamia riedlei	2	0.7
Microlaena stipoides	0.5	0.25
Opercularia apiciflora	0.5	0.15
Patersonia umbrosa	1	3
Persoonia longifolia	1	1.2
Thelymitra benthamiana	0.5	0.05
Xanthorrhoea gracilis	10	0.8
Xanthosia candida	0.5	0.1

Note: *denotes introduced species, # denotes dubious species.

Relevé No.:	**Relevé 9**
Survey Date:	04/09/2024
Personnel:	BD, ZS
Area:	Finish Zipline
Easting:	404843.60395
Northing:	6303538.43927
Topography:	Mid Slope
Aspect:	N
Slope:	Steep
Soil:	Brown Red Clay Loam
Gravel:	0 %
Rock:	65 %
Leaf Litter:	40 %
Bare Ground:	20 %
Drainage:	Well
Condition:	Excellent

Notes: *E. marginata* and *C. calophylla* open forest over *X. preissii, X. gracilis* and *H. hypericoides* open shrubland over a mixed herbland.

Species	**Cover (%)**	**Height (m)**
**Bromus hordeaceus*	0.5	0.05
**Lysimachia arvensis*	0.5	0.1
Acacia browniana	1	1.2
Acacia pulchella	2	1.8
Banksia dallanneyi	1	0.25
Bossiaea eriocarpa	1	0.1
Caesia micrantha	0.5	0.25
Caladenia reptans	0.05	0.1
Chamaescilla corymbosa	0.5	0.1
Corymbia calophylla	10	16
Darwinia citriodora	1	0.8
Eucalyptus marginata	45	20
Ficinia marginata	0.5	0.1
Grevillea bipinnatifida	2	1.2

Species	Cover (%)	Height (m)
Haemodorum simplex	1	0.3
Hibbertia hypericoides	35	0.4
Hypocalymma angustifolium	2	0.8
Hypochaeris radicata	0.5	0.1
Microlaena stipoides	0.5	0.15
Oxalis exilis	0.5	0.1
Phyllanthus calycinus	1	0.6
Poranthera microphylla	0.5	0.05
Pterostylis sp.	0.5	0.15
Senecio multicaulis subsp. *multicaulis*	0.5	0.05
Spergularia marina	0.5	0.05
Spergularia marina	0.5	0.15
Thelymitra benthamiana	0.5	0.05
Thysanotus patersonii	0.5	0.3
Trachymene pilosa	0.5	0.05
Trymalium ledifolium	1	0.2
Viminaria juncea	1	0.3
Xanthorrhoea gracilis	4	0.8
Xanthorrhoea preissii	5	2.2

Note: *denotes introduced species, # denotes dubious species.

Appendix 6: Survey Effort

Map 1:

Targeted Survey Effort

Wellington National Park

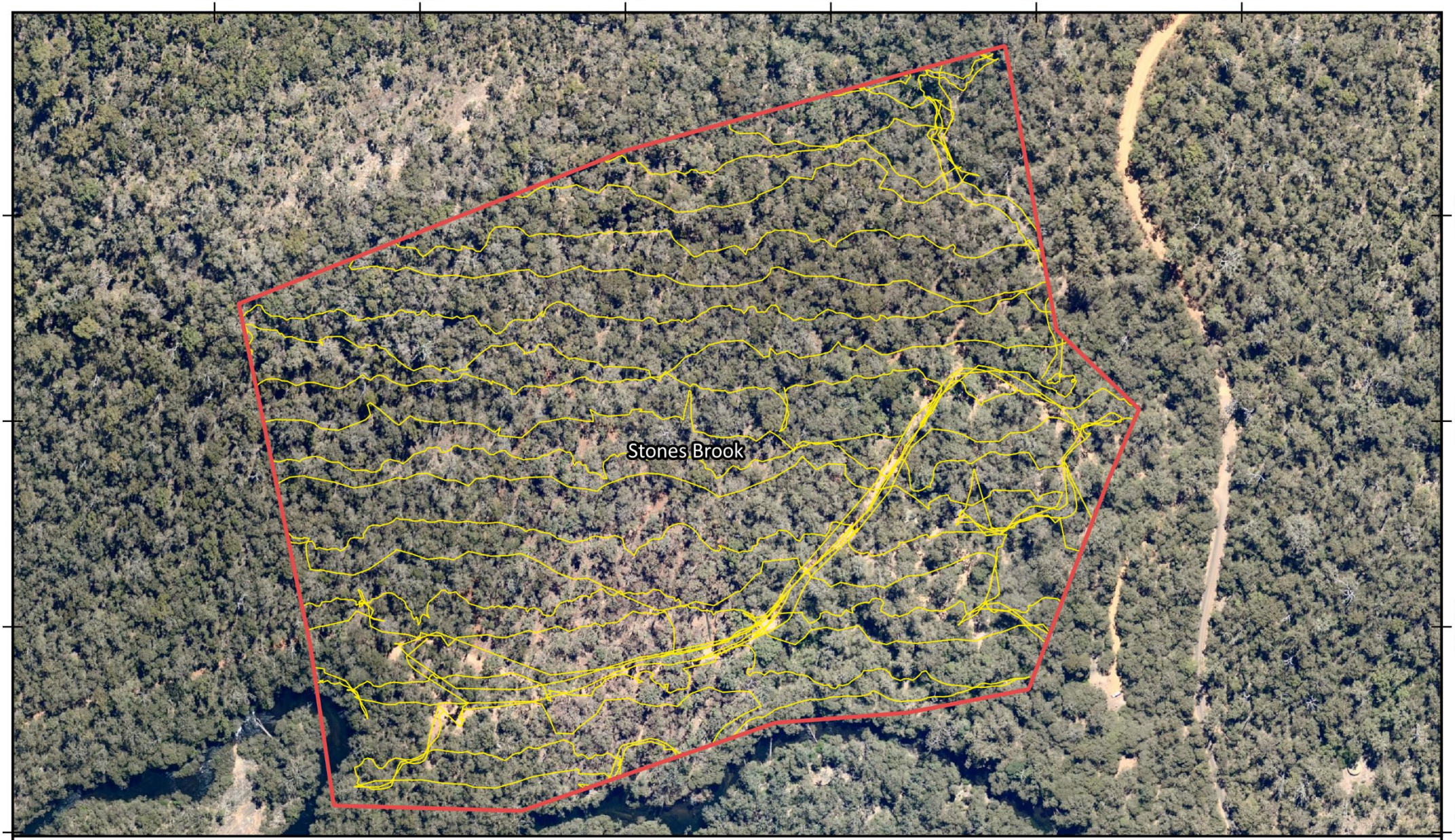
Legend

- Tracklogs
- Non-Traversible Areas
- Survey Area

Client:	Beijaflore
Date:	04/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 8000

0 100 200 m

N



Map 2:

Targeted Survey Effort

Wellington National Park, Worsely

Legend

- Tracklogs
- Survey Area

Client:	Beijaflore
Date:	04/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 2800

0 50 100 m

N

Appendix 7: Species List

The complete flora list for the site is provided in the table below with flora listed by family, and area they occurred within indicated by an 'X'. *Denotes introduced species and # denotes species that are native to Western Australia but not to this local region. Green highlight denotes priority species, and blue highlight denotes locally significant species.

Family	Species Name	Common Name	Tree Camping/ Facilities	Start Zipline	Zipline Finish	Zipline Tour Area	Stones Brook
Agapanthaceae	**Agapanthus praecox*		X				
Amaranthaceae	*Ptilotus manglesii*	Pom Poms				X	
Amaryllidaceae	**Narcissus tazetta subsp. aureus*		X				
Apiaceae	*Apium prostratum*	Sea Celery					X
Apiaceae	*Daucus glochidiatus*	Australian carrot					X
Apiaceae	*Homalosciadium homalocarpum*				X		
Apiaceae	*Xanthosia candida*		X				
Araceae	**Zantedeschia aethiopica*	Arum Lily	X			X	
Araliaceae	*Trachymene pilosa*	Native Parsnip	X	X	X	X	X
Asparagaceae	**Agave americana*	Century Plant	X				
Asparagaceae	*Acanthocarpus preissii*				X		
Asparagaceae	*Dichopogon capillipes*	Chocolate Lily					X
Asparagaceae	*Laxmannia minor*					X	
Asparagaceae	*Lomandra caespitosa*	Tufted Mat Rush	X				

Family	Species Name	Common Name	Tree Camping/ Facilities	Start Zipline	Zipline Finish	Zipline Tour Area	Stones Brook
Asparagaceae	*Lomandra drummondii*						X
Asparagaceae	*Lomandra hermaphrodita*					X	
Asparagaceae	*Lomandra nigricans*		X				
Asparagaceae	*Lomandra purpurea*	Purple Mat Rush	X				
Asparagaceae	*Thysanotus patersonii*	Paterson's Fringed Lily		X	X	X	X
Asteraceae	**Arctotheca calendula*	Cape Weed		X			
Asteraceae	**Cotula turbinata*	Funnel Weed		X			
Asteraceae	**Erigeron bonariensis*			X			
Asteraceae	**Hypochaeris glabra*	Smooth Cats-ear		X		X	X
Asteraceae	**Hypochaeris radicata*	Flat Weed	X		X		
Asteraceae	**Sonchus asper*	Rough Sowthistle	X		X		
Asteraceae	**Sonchus oleraceus*	Common Sowthistle	X			X	
Asteraceae	*Craspedia variabilis*						X
Asteraceae	*Lagenophora huegelii*		X			X	X
Asteraceae	*Millotia tenuifolia*	Soft Millotia			X	X	
Asteraceae	*Senecio multicaulis subsp. multicaulis*				X		
Boryaceae	*Borya sphaerocephala*	Pincushions			X	X	
Caryophyllaceae	**Stellaria media*	Chickweed					X
Caryophyllaceae	*Spergularia marina*				X		

Family	Species Name	Common Name	Tree Camping/ Facilities	Start Zipline	Zipline Finish	Zipline Tour Area	Stones Brook
Celastraceae	*Stackhousia pubescens*	Downy Stackhousia			X		
Colchicaceae	*Burchardia congesta*	Milkmaids			X	X	
Colchicaceae	*Burchardia multiflora*	Dwarf Burchardia				X	
Colchicaceae	*Wurmbea dioica subsp. alba*				X	X	
Crassulaceae	*Crassula decumbens*	Rufous Stonecrop				X	
Cyperaceae	**Ficinia marginata*			X	X		
Cyperaceae	*Lepidosperma persecans*				X		X
Cyperaceae	*Lepidosperma* sp. 1					X	
Cyperaceae	*Lepidosperma* sp. 2					X	
Cyperaceae	*Lepidosperma* sp. 3		X				
Cyperaceae	*Lepidosperma* sp. 4		X				
Cyperaceae	*Lepidosperma squamatum*		X				
Cyperaceae	*Lepidosperma tetraquetrum*					X	
Dilleniaceae	*Hibbertia amplexicaulis*		X			X	
Dilleniaceae	*Hibbertia cunninghamii*					X	
Dilleniaceae	*Hibbertia hypericoides*	Yellow Buttercups	X	X	X	X	X
Dilleniaceae	*Hibbertia pilosa*	Hairy Guinea Flower	X			X	X
Dilleniaceae	*Hibbertia silvestris*						X
Dilleniaceae	*Hibbertia glomerata*				X		

Family	Species Name	Common Name	Tree Camping/ Facilities	Start Zipline	Zipline Finish	Zipline Tour Area	Stones Brook
Droseraceae	*Drosera indumenta*			X			X
Droseraceae	*Drosera macrantha*		X				
Droseraceae	*Drosera pallida*	Pale Rainbow				X	
Droseraceae	*Drosera stolonifera*					X	
Droseraceae	*Drosera glanduligera*	Pimpernel Sundew		X			X
Droseraceae	*Drosera menziesii*	Pink Rainbow		X	X	X	
Ericaceae	*Andersonia lehmanniana*					X	
Ericaceae	*Leucopogon australis*	Spiked Beard-heath	X				
Ericaceae	*Leucopogon capitellatus*		X		X		X
Ericaceae	*Leucopogon verticillatus*	Tassel Flower				X	X
Ericaceae	*Styphelia propinqua*		X			X	
Ericaceae	*Styphelia erectifolia*					X	
Euphorbiaceae	**Euphorbia peplus*	Petty Spurge					X
Fabaceae	**Acacia baileyana*		X				
Fabaceae	**Acacia decurrens*		X				
Fabaceae	**Acacia podalyriifolia*		X		X		
Fabaceae	**Dipogon lignosus*	Dolichos Pea	X				
Fabaceae	**Lathyrus latifolius*	Perennial Pea	X				
Fabaceae	*Acacia applanata*					X	

Family	Species Name	Common Name	Tree Camping/ Facilities	Start Zipline	Zipline Finish	Zipline Tour Area	Stones Brook
Fabaceae	*Acacia browniana*		X	X	X	X	
Fabaceae	*Acacia oncinophylla* subsp. *oncinophylla*			X	X		
Fabaceae	*Acacia pulchella*				X		
Fabaceae	*Acacia stenoptera*			X			
Fabaceae	*Acacia alata*	Winged Wattle					X
Fabaceae	*Acacia alata* var. *alata*					X	
Fabaceae	*Acacia willdenowiana*	Grass Wattle					X
Fabaceae	*Bossiaea aquifolium*	Water Bush	X			X	X
Fabaceae	*Bossiaea eriocarpa*	Common Brown Pea	X		X	X	X
Fabaceae	*Fabaceae* sp.					X	
Fabaceae	*Gastrolobium ebracteolatum*					X	
Fabaceae	*Hardenbergia comptoniana*	Native Wisteria	X				
Fabaceae	*Hovea trisperma*	Common Hovea	X				
Fabaceae	*Jacksonia furcellata*	Grey Stinkwood				X	
Fabaceae	*Kennedia prostrata*	Running Postman	X				
Fabaceae	*Mirbelia dilatata*	Holly-leaved Mirbelia	X				
Fabaceae	*Paraserianthes lophantha*	Albizia				X	
Fabaceae	*Viminaria juncea*	Swishbush			X	X	
Haemodoraceae	*Anigozanthos bicolor*	Little Kangaroo Paw			X		

Family	Species Name	Common Name	Tree Camping/ Facilities	Start Zipline	Zipline Finish	Zipline Tour Area	Stones Brook
Haemodoraceae	*Conostylis pusilla*					X	
Haemodoraceae	*Haemodorum laxum*	Bloodroot			X	X	X
Haemodoraceae	*Haemodorum simplex*	Bloodroot		X	X		
Haemodoraceae	*Haemodorum simulans*						X
Haemodoraceae	*Haemodorum spicatum*	Bohn	X				
Hemerocallidaceae	*Agrostocrinum hirsutum*	Grass Lily				X	
Hemerocallidaceae	*Caesia micrantha*	Pale Grass-lily		X	X		
Hemerocallidaceae	*Chamaescilla corymbosa*	Blue Squill	X		X	X	
Hemerocallidaceae	*Stypandra glauca*	Blind Grass			X		
Hypoxidaceae	*Pauridia glabella*	Tiny Star		X			
Iridaceae	**Ferraria crispa*	Black Flag	X				
Iridaceae	**Freesia leichtlinii* subsp. *alba* × *leichtlinii* subsp. *leichtlinii*		X			X	
Iridaceae	**Romulea rosea*	Guildford Grass		X			
Iridaceae	**Watsonia meriana*	Bulbil Watsonia	X			X	
Iridaceae	*Patersonia umbrosa*	Yellow Flags	X				
Iridaceae	*Patersonia babianoides*			X			
Iridaceae	*Patersonia juncea*	Rush Leaved Patersonia				X	
Iridaceae	*Patersonia occidentalis*	Purple Flag				X	
Juncaceae	**Juncus usitatus*	Common Rush	X		X		

Family	Species Name	Common Name	Tree Camping/ Facilities	Start Zipline	Zipline Finish	Zipline Tour Area	Stones Brook
Lamiaceae	**Stachys arvensis*	Staggerweed	X	X			
Myrtaceae	*#Callistemon viminalis*		X				
Myrtaceae	*#Eucalyptus caesia*			X			
Myrtaceae	*Agonis flexuosa*	Peppermint					X
Myrtaceae	*Calothamnus quadrifidus*	One Sided Bottlebrush		X			
Myrtaceae	*Calytrix flavescens*	Summer Starflower				X	
Myrtaceae	*Corymbia calophylla*	Marri	X	X	X	X	X
Myrtaceae	*Darwinia citriodora*	Lemon-scented Darwinia		X	X	X	
Myrtaceae	*Eucalyptus marginata*	Jarrah	X		X	X	X
Myrtaceae	*Eucalyptus* sp. (Dead stag)		X				
Myrtaceae	*Hypocalymma angustifolium*	White Myrtle	X	X	X	X	
Myrtaceae	*Melaleuca cuticularis*	Salt Water Paperbark	X				
Myrtaceae	*Melaleuca parviceps*					X	
Myrtaceae	*Melaleuca subtrigona*					X	
Myrtaceae	*Melaleuca incana*	Grey Honeymyrtle	X		X		
Myrtaceae	*Taxandria linearifolia*					X	
Myrtaceae	*Verticordia pennigera*				X		
Myrtaceae	*Verticordia plumosa*	Plumed Featherflower				X	
Olacaceae	*Olax benthamiana*					X	

Family	Species Name	Common Name	Tree Camping/ Facilities	Start Zipline	Zipline Finish	Zipline Tour Area	Stones Brook
Orchidaceae	**Disa bracteata*	South African Orchid		X			
Orchidaceae	*Caladenia flava*	Cowslip Orchid	X			X	X
Orchidaceae	*Caladenia macrostylis*	Leaping Spider Orchid	X			X	
Orchidaceae	*Caladenia reptans*	Little Pink Fairy Orchid	X		X	X	
Orchidaceae	*Caladenia* sp. 1					X	
Orchidaceae	*Caladenia* sp. 2		X				X
Orchidaceae	*Cyanicula sericea*	Silky Blue Orchid	X		X	X	X
Orchidaceae	*Cyrtostylis huegelii*	Midge Orchid				X	X
Orchidaceae	*Diuris longifolia*	Purple Pansy Orchid			X		
Orchidaceae	*Elythranthera emarginata*	Pink Enamel Orchid	X			X	
Orchidaceae	*Elythranthera brunonis*	Purple Enamel Orchid	X				
Orchidaceae	*Eriochilus dilatatus*	White Bunny Orchid				X	X
Orchidaceae	*Pterostylis angulata*	Helena River Snail Orchid					X
Orchidaceae	*Pterostylis recurva*	Jug Orchid	X			X	
Orchidaceae	*Pterostylis* sp.				X		
Orchidaceae	*Pterostylis crispula*	Slender Snail Orchid			X		
Orchidaceae	*Pyrorchis nigricans*	Red Beaks	X				
Orchidaceae	*Thelymitra benthamiana*	Leopard Orchid	X	X	X		
Orchidaceae	*Thelymitra* sp. 1						X

Family	Species Name	Common Name	Tree Camping/ Facilities	Start Zipline	Zipline Finish	Zipline Tour Area	Stones Brook
Orchidaceae	*Thelymitra* sp. 2					X	
Oxalidaceae	**Oxalis purpurea*	Largeflower Wood Sorrel	X				
Oxalidaceae	**Oxalis glabra*		X				
Oxalidaceae	**Oxalis pes-caprae*	Soursob	X				
Oxalidaceae	*Oxalis exilis*			X	X	X	X
Phyllanthaceae	*Lysiandra calycina*	False Boronia			X	X	
Phyllanthaceae	*Poranthera microphylla*	Small Poranthera			X		
Phytolaccaceae	**Phytolacca octandra*	Red Ink Plant	X				
Pinaceae	**Pinus radiata*	Radiata Pine	X				
Poaceae	**Bromus hordeaceus*	Soft Brome			X		
Poaceae	**Ehrharta longiflora*	Annual Veldt Grass	X				
Poaceae	**Poa annua*			X			X
Poaceae	*Amphipogon laguroides* subsp. *laguroides*		X				
Poaceae	*Austrostipa flavescens*		X	X			X
Poaceae	*Austrostipa semibarbata*					X	
Poaceae	*Microlaena stipoides*	Weeping Grass	X		X		
Primulaceae	**Lysimachia arvensis*	Pimpernel	X	X	X	X	X
Proteaceae	*Banksia grandis*	Bull Banksia	X			X	X
Proteaceae	*Banksia nivea*	Honeypot Dryandra				X	

Family	Species Name	Common Name	Tree Camping/ Facilities	Start Zipline	Zipline Finish	Zipline Tour Area	Stones Brook
Proteaceae	*Banksia dallanneyi*	Couch Honeypot	X		X		X
Proteaceae	*Banksia littoralis*	Swamp Banksia				X	
Proteaceae	*Grevillea bipinnatifida*	Fuchsia Grevillea	X	X	X	X	
Proteaceae	*Grevillea centristigma*					X	
Proteaceae	*Hakea lissocarpha*	Honey Bush	X	X	X	X	
Proteaceae	*Hakea amplexicaulis*	Prickly Hakea	X			X	X
Proteaceae	*Persoonia longifolia*	Snottygobble	X			X	X
Proteaceae	*Stirlingia simplex*					X	
Proteaceae	*Synaphea petiolaris*				X		
Pteridaceae	*Adiantum aethiopicum*	Common Maidenhair				X	X
Pteridaceae	*Cheilanthes austrotenuifolia*			X	X	X	X
Pteridaceae	*Pteridium esculentum*	Bracken	X			X	X
Ranunculaceae	*Clematis pubescens*	Common Clematis	X			X	X
Ranunculaceae	*Ranunculus colonorum*	Common Buttercup	X				
Restionaceae	*Lepyrodia macra*	Large Scale Rush					X
Rhamnaceae	*Trymalium ledifolium*		X		X	X	
Rhamnaceae	*Trymalium odoratissimum*		X			X	X
Rosaceae	**Eriobotrya japonica*		X				
Rubiaceae	**Galium murale*	Small Goosegrass		X			

Family	Species Name	Common Name	Tree Camping/ Facilities	Start Zipline	Zipline Finish	Zipline Tour Area	Stones Brook
Rubiaceae	*Opercularia apiciflora*		X			X	
Rutaceae	*Boronia fastigiata*	Bushy Boronia				X	
Rutaceae	*Diplolaena drummondii*		X		X	X	X
Rutaceae	*Diplolaena microcephala*	Lesser Diplolaena					X
Rutaceae	*Rutaceae* sp.		X				
Santalaceae	*Leptomeria cunninghamii*		X				
Sapindaceae	*Dodonaea ceratocarpa*				X		
Sapindaceae	*Dodonaea viscosa*	Sticky Hopbush	X	X			
Solanaceae	**Solanum nigrum*	Black Berry Nightshade		X			
Stylidiaceae	*Stylidium caespitosum*	Fly-away Triggerplant	X				X
Stylidiaceae	*Stylidium amoenum*	Lovely Triggerplant				X	
Stylidiaceae	*Stylidium ciliatum*	Golden Triggerplant	X			X	
Thymelaeaceae	*Pimelea lanata*		X				
Xanthorrhoeaceae	*Xanthorrhoea brunonis*		X			X	
Xanthorrhoeaceae	*Xanthorrhoea gracilis*	Graceful Grass Tree	X		X	X	
Xanthorrhoeaceae	*Xanthorrhoea preissii*	Grass tree	X	X	X	X	X
Zamiaceae	*Macrozamia riedlei*	Zamia	X			X	X

Appendix 8: Priority Flora Maps

Map 3:
Priority Flora

Wellington National Park

Legend

- Acacia oncinophylla subsp. oncinophylla (P3)
- Survey Area

Client:	Beijaflore
Date:	17/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 700

0 10 20 m

N

Map 4:

Priority Flora

Wellington National Park

Legend

- Acacia oncinophylla subsp. oncinophylla (P3)
- Survey Area

Client:	Beijaflore
Date:	17/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 2800

0 50 100 m

N

Map 5:
Priority Flora

Wellington National Park

Legend

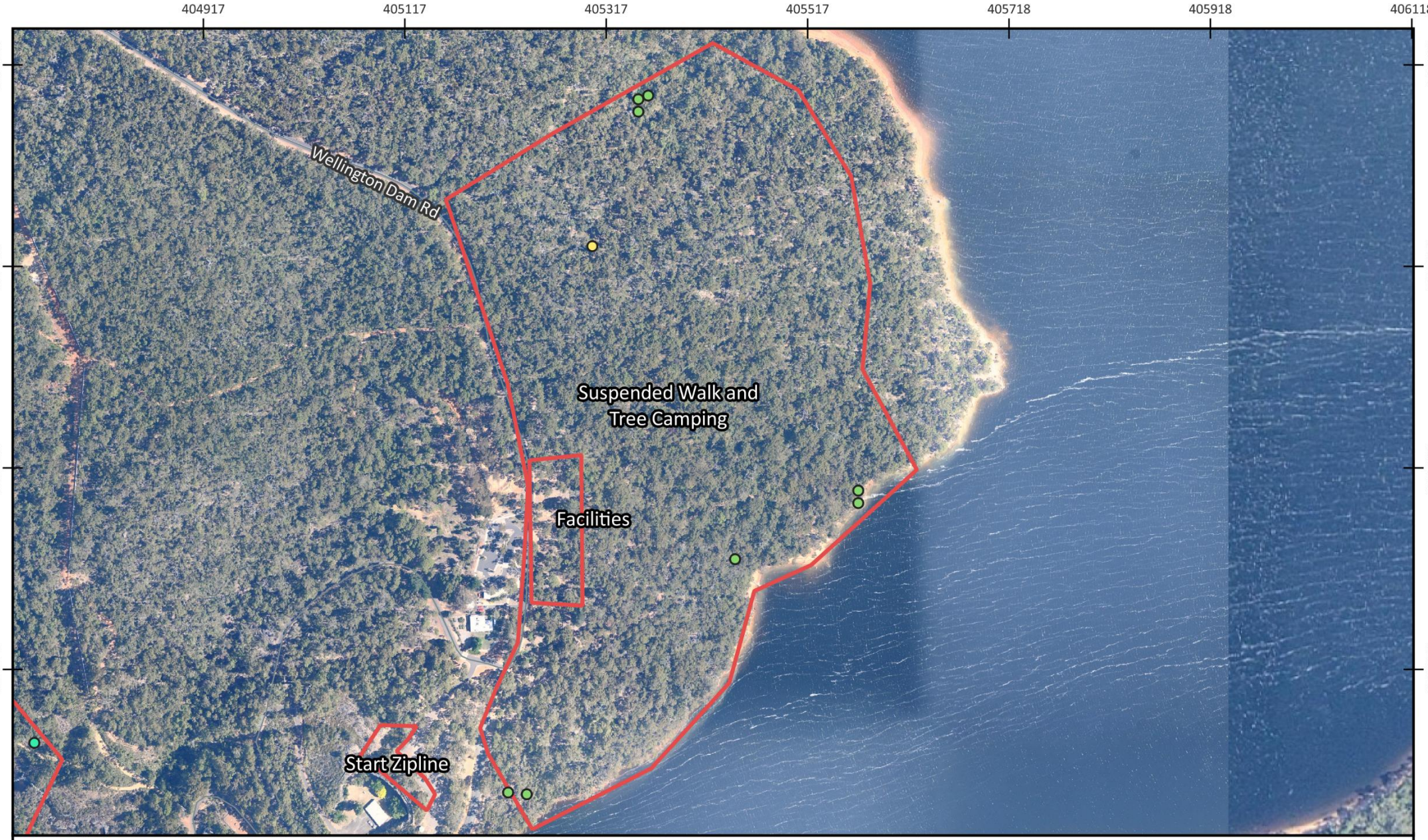
- Acacia oncinophylla subsp. oncinophylla (P3)
- Survey Area

Client:	Beijaflore
Date:	17/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 1000

0 20 40 m

N

Appendix 9: Locally Significant Flora Maps



Map 6:

Locally Significant Flora

Wellington National Park

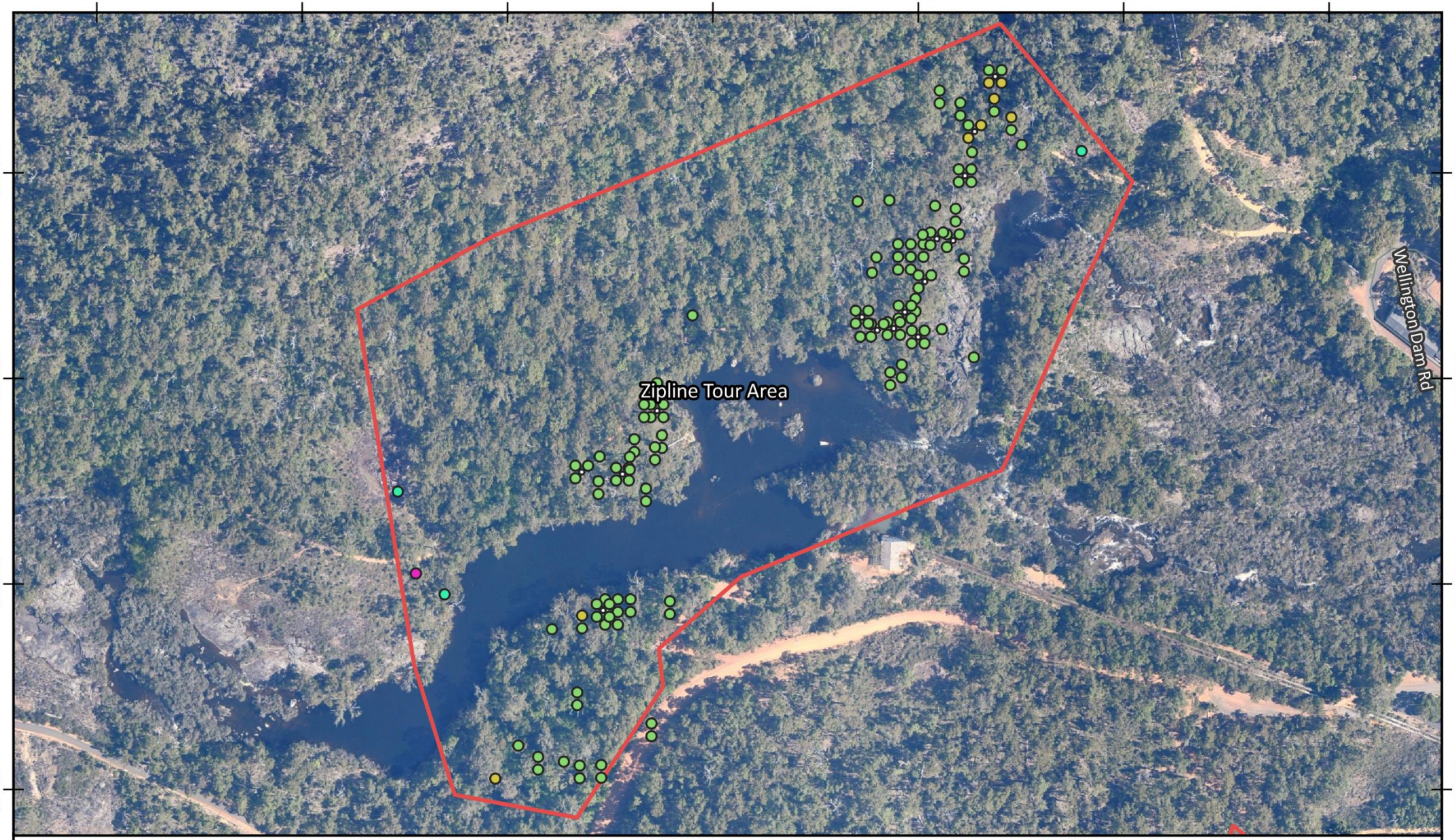
Legend

- Borya sphaerocephala
- Diplolaena drummondii
- Lepidosperma squamateum
- Survey Area

Client:	Beijaflore
Date:	17/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 5000

0 50 100 m

N



Map 7:

Locally Significant Flora

Wellington National Park

Legend

- Adiantum aethiopicum
- Andersonia lehmanniana
- Borya sphaerocephala
- Diplolaena drummondii
- Survey Area

Client:	Beijaflore
Date:	17/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 2800

0 50 100 m

N

Map 8:
Locally Significant Flora

Wellington National Park

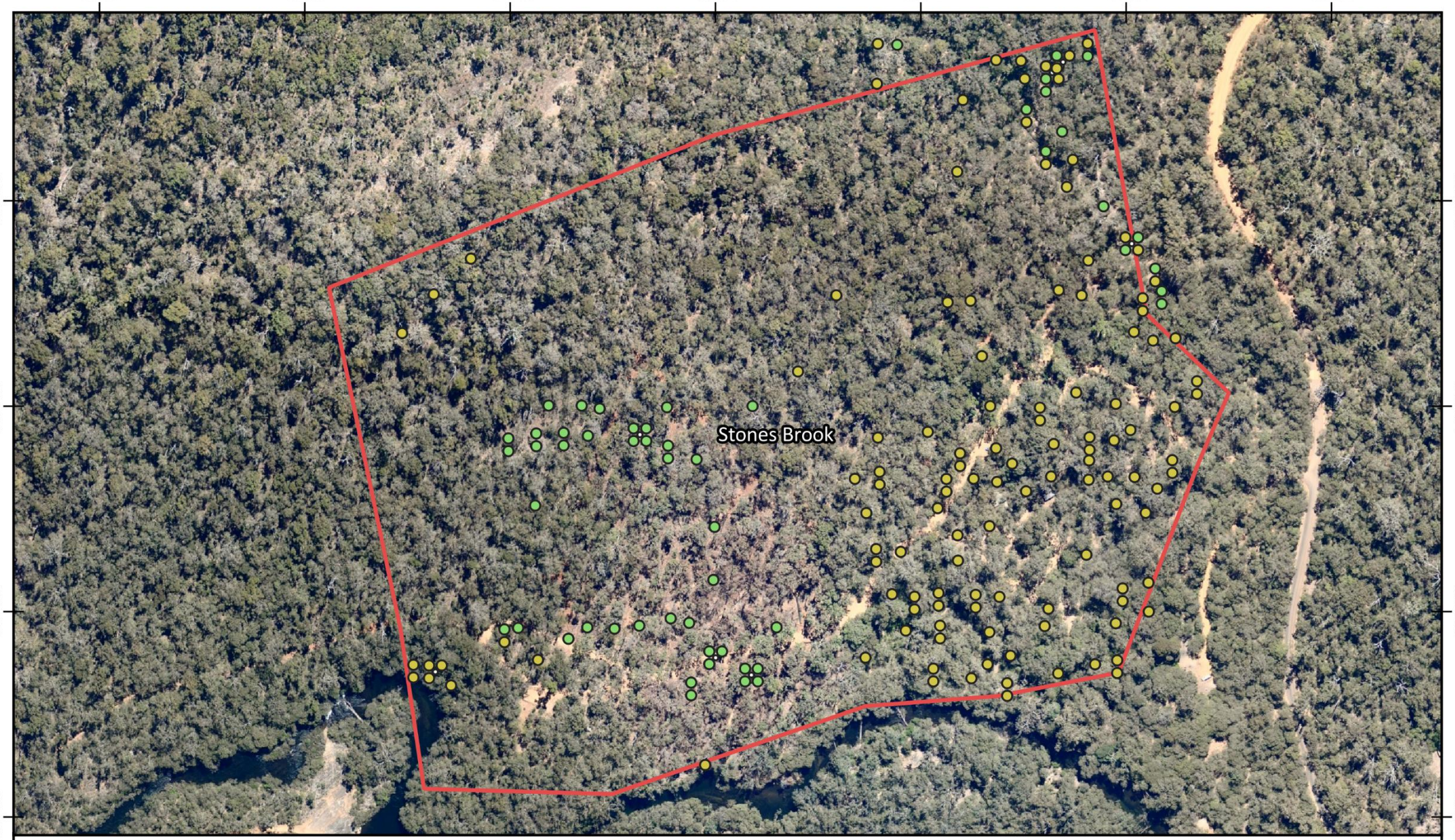
Legend

- Borya sphaerocephala
- Diplolaena drummondii
- Verticordia pennigera
- Stypandra glauca
- Survey Area

Client:	Beijaflore
Date:	17/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 1000

0 20 40 m

N



Map 9:

Locally Significant Flora

Wellington National Park

Legend

- Adiantum aethiopicum
- Diplolaena drummondii
- Survey Area

Client:	Beijaflore
Date:	17/12/2024
Created by:	B. Daniels
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 2800

0 50 100 m

N

Appendix 10: Black Cockatoo Habitat Tree Data

Tree ID	Tree Tag	Species Name	Common Name	Condition	DBH (mm)	Height (m)	No. of Hollows	Hollow Size (mm)	Hollow Orientation	Comments
1	635	*Corymbia calophylla*	Marri	Good	585	27	0			
2	639	*Eucalyptus marginata*	Jarrah	Good	680	25	0			
3	638	*Eucalyptus marginata*	Jarrah	Good	480	23	0			
4	637	*Corymbia calophylla*	Marri	Good	595	25	0			
5	636	*Eucalyptus marginata*	Jarrah	Good	865	25	0			
6	640	*Corymbia calophylla*	Marri	Good	525	28	0			
7	539	*Eucalyptus marginata*	Jarrah	Good	640	20	0			
8	537	*Eucalyptus marginata*	Jarrah	Good	360	20	0			
9	536	*Eucalyptus marginata*	Jarrah	Good	250	20	0			
10	538	*Eucalyptus marginata*	Jarrah	Good	430	20	0			
11	540	*Corymbia calophylla*	Marri	Poor	425	13	0			
12	541	*Eucalyptus marginata*	Jarrah	Good	705	23	0			
13	563	*Corymbia calophylla*	Marri	Good	600	23	0			
14	562	*Corymbia calophylla*	Marri	Good	865	25	1	150x150	Side	Entrance diameter suitable, orientation not preferable.
15	561	*Corymbia calophylla*	Marri	Average	545	18	0			
16	559	*Eucalyptus marginata*	Jarrah	Good	715	25	0			
17	560	*Corymbia calophylla*	Marri	Good	975	23	0			

Tree ID	Tree Tag	Species Name	Common Name	Condition	DBH (mm)	Height (m)	No. of Hollows	Hollow Size (mm)	Hollow Orientation	Comments
18	557	*Corymbia calophylla*	Marri	Good	420	22	0			
19	556	*Corymbia calophylla*	Marri	Good	650	22	0			
20	545	*Corymbia calophylla*	Marri	Poor	815	18	1	200x200	Chimney	Suitable breeding hollow. Not in use.
21	544	*Corymbia calophylla*	Marri	Good	655	25	1	50x50	Side	Hollow too small for black cockatoo use.
22	546	*Corymbia calophylla*	Marri	Good	425	20	0			
23	543	*Eucalyptus marginata*	Jarrah	Good	585	23	0			
24	542	*Eucalyptus marginata*	Jarrah	Good	735	25	0			
25	564	*Corymbia calophylla*	Marri	Average	400	18	0			
26	549	*Eucalyptus marginata*	Jarrah	Good	555	23	0			
27	565	*Corymbia calophylla*	Marri	Good	330	15	0			
28	550	*Corymbia calophylla*	Marri	Good	550	25	0			
29	553	*Corymbia calophylla*	Marri	Good	485	20	0			
30	554	*Corymbia calophylla*	Marri	Good	495	25	0			
31	555	*Eucalyptus marginata*	Jarrah	Good	445	20	0			
32	551	*Corymbia calophylla*	Marri	Good	610	25	0			
33	552	*Corymbia calophylla*	Marri	Good	500	25	0			
34	575	*Corymbia calophylla*	Marri	Good	1395	30	2	150x150, 300x300	Side	Not a true hollow, structurally unsuitable.
35	574	*Corymbia calophylla*	Marri	Good	550	28	0			

Tree ID	Tree Tag	Species Name	Common Name	Condition	DBH (mm)	Height (m)	No. of Hollows	Hollow Size (mm)	Hollow Orientation	Comments
36	573	*Corymbia calophylla*	Marri	Good	620	25	0			
37	123	*Eucalyptus marginata*	Jarrah	Dead stag	260	20	0			
38	106	*Corymbia calophylla*	Marri	Dead	210	15	0			
39	126	*Corymbia calophylla*	Marri	Dead	345	15	0			
40	127	*Corymbia calophylla*	Marri	Dead	325	15	0			
41	131	*Corymbia calophylla*	Marri	Dead	290	20	0			
42	130	*Corymbia calophylla*	Marri	Dead	240	12	0			
43	132	*Corymbia calophylla*	Marri	Dead	265	12	0			
44	566	*Eucalyptus marginata*	Jarrah	Good	900	25	0			
45	557	*Eucalyptus marginata*	Jarrah	Good	750	25	0			
46	558	*Corymbia calophylla*	Marri	Good	395	20	0			
47	116	*Eucalyptus marginata*	Jarrah	Dead	340	12	0			
48	547	*Eucalyptus marginata*	Jarrah	Good	470	18	0			
49	548	*Eucalyptus marginata*	Jarrah	Good	520	25	1	100x100	Side	Entrance diameter suitable, orientation not preferable.
50	115	*Corymbia calophylla*	Marri	Dead	375	12	0	200x200	Chimney	Hollow may be suitable. Not in use.
51	570	*Corymbia calophylla*	Marri	Average	845	23	0			
52	568	*Eucalyptus marginata*	Jarrah	Good	695	28	0			
53	569	*Eucalyptus marginata*	Jarrah	Good	595	25	0			

Tree ID	Tree Tag	Species Name	Common Name	Condition	DBH (mm)	Height (m)	No. of Hollows	Hollow Size (mm)	Hollow Orientation	Comments
54	541	*Eucalyptus marginata*	Jarrah	Average	960	25	0			
55	117	*Corymbia calophylla*	Marri	Dead	455	22	0			
56	109	*Corymbia calophylla*	Marri	Poor	165	10	0			
57	118	*Corymbia calophylla*	Marri	Dead	250	8	0			
58	572	*Eucalyptus marginata*	Jarrah	Dead	555	28	0			
59	119	*Eucalyptus marginata*	Jarrah	Dead	755	25	0			
60	120	N/A	N/A	Dead	355	15	0			
61	576	*Eucalyptus marginata*	Jarrah	Good	630	25	0			
62	121	*Corymbia calophylla*	Marri	Dead	710	15	1	300x300	Chimney	Suitable breeding hollow. Not in use.
63	578	*Eucalyptus marginata*	Jarrah	Good	640	25	0			
64	579	*Eucalyptus marginata*	Jarrah	Good	590	25	0			
65	583	*Eucalyptus marginata*	Jarrah	Good	410	25	0			
66	581	*Eucalyptus marginata*	Jarrah	Good	410	20	0			
67	582	*Eucalyptus marginata*	Jarrah	Good	580	20	0			
68	580	*Eucalyptus marginata*	Jarrah	Good	455	20	0			
69	122	N/A	N/A	Dead	230	12	0			
70	585	*Eucalyptus marginata*	Jarrah	Good	615	23	0			
71	584	*Corymbia calophylla*	Marri	Good	480	15	0			
72	577	*Eucalyptus marginata*	Jarrah	Good	740	25	0			

Tree ID	Tree Tag	Species Name	Common Name	Condition	DBH (mm)	Height (m)	No. of Hollows	Hollow Size (mm)	Hollow Orientation	Comments
73	N/A	*Eucalyptus marginata*	Jarrah	Poor	300	15	0			
74	587	*Eucalyptus marginata*	Jarrah	Good	515	25	0			
75	586	*Eucalyptus marginata*	Jarrah	Good	700	28	0			
76	588	*Eucalyptus marginata*	Jarrah	Poor	580	23	0			
77	N/A	*Corymbia calophylla*	Marri	Poor	340	15	0			
78	609	*Eucalyptus marginata*	Jarrah	Good	465	18	0			
79	589	*Eucalyptus marginata*	Jarrah	Average	505	25	0			
80	N/A	*Eucalyptus marginata*	Jarrah	Poor	195	12	0			
81	112	N/A	N/A	Dead	150	12	0			
82	590	*Eucalyptus marginata*	Jarrah	Good	550	28	0			
83	595	*Eucalyptus marginata*	Jarrah	Good	435	25	0			
84	596	*Eucalyptus marginata*	Jarrah	Good	450	23	0			
85	591	*Eucalyptus marginata*	Jarrah	Good	710	25	1	100x100	Side	Entrance diameter suitable, orientation not preferable.
86	113	N/A	N/A	Dead	410	15	0			
87	124	*Eucalyptus marginata*	Jarrah	Dead	410	18	0			
88	592	*Eucalyptus marginata*	Jarrah	Average	890	30	2	50x50, 100x100	Side, Near vertical	Larger hollow suitable size. Water in hollow at the time of the survey.
89	593	*Eucalyptus marginata*	Jarrah	Poor	960	25	0			
90	594	*Eucalyptus marginata*	Jarrah	Good	545	25	0			

Tree ID	Tree Tag	Species Name	Common Name	Condition	DBH (mm)	Height (m)	No. of Hollows	Hollow Size (mm)	Hollow Orientation	Comments
91	604	*Eucalyptus marginata*	Jarrah	Good	505	22	0			
92	602	*Eucalyptus marginata*	Jarrah	Good	540	25	0			
93	598	*Eucalyptus marginata*	Jarrah	Good	590	27	0			
94	599	*Eucalyptus marginata*	Jarrah	Good	510	22	0			
95	N/A	*Corymbia calophylla*	Marri	Poor	260	6	0			
96	114	*Corymbia calophylla*	Marri	Dead	320	12	0			
97	N/A	*Eucalyptus marginata*	Jarrah	Poor	545	27	0			
98	607	*Eucalyptus marginata*	Jarrah	Good	520	23	0			
99	608	*Eucalyptus marginata*	Jarrah	Good	460	20	0			
100	603	*Eucalyptus marginata*	Jarrah	Good	540	23	0			
101	601	*Eucalyptus marginata*	Jarrah	Good	540	20	0			
102	125	*Corymbia calophylla*	Marri	Dead	225	10	0			
103	600	*Eucalyptus marginata*	Jarrah	Good	570	20	0			
104	606	*Eucalyptus marginata*	Jarrah	Good	460	16	0			
105	605	*Eucalyptus marginata*	Jarrah	Good	475	20	0			
106	625	*Eucalyptus marginata*	Jarrah	Good	470	15	0			
107	622	*Corymbia calophylla*	Marri	Good	1025	25	0			
108	621	*Eucalyptus marginata*	Jarrah	Good	1120	35	0			
109	620	*Eucalyptus marginata*	Jarrah	Good	675	38	0			

Tree ID	Tree Tag	Species Name	Common Name	Condition	DBH (mm)	Height (m)	No. of Hollows	Hollow Size (mm)	Hollow Orientation	Comments
110	615	*Corymbia calophylla*	Marri	Good	1330	40	2	200x200	Side	Hollows may be suitable. Not in use.
111	N/A	*Corymbia calophylla*	Marri	Good	910	35	0			
112	614	*Eucalyptus marginata*	Jarrah	Good	740	40	0			
113	613	*Corymbia calophylla*	Marri	Good	880	38	0			
114	618	*Corymbia calophylla*	Marri	Good	790	40	0			
115	619	*Eucalyptus marginata*	Jarrah	Good	1005	40	2	350x300, 50x50	Side	Larger hollow may be suitable. Not in use.
116	616	*Eucalyptus marginata*	Jarrah	Good	1370	30	0			
117	647	*Eucalyptus marginata*	Jarrah	Good	620	35	0			
118	611	*Eucalyptus marginata*	Jarrah	Good	605	18	0			
119	610	*Corymbia calophylla*	Marri	Good	675	25	0			
120	632	*Corymbia calophylla*	Marri	Good	1570	35	0			
121	631	*Corymbia calophylla*	Marri	Good	1140	30	1	50x50	Side	Hollow too small for black cockatoo use.
122	634	*Eucalyptus marginata*	Jarrah	Good	985	30	0			
123	633	*Corymbia calophylla*	Marri	Good	850	30	0			
124	627	*Corymbia calophylla*	Marri	Good	1095	30	0			
125	628	*Corymbia calophylla*	Marri	Good	990	30	0			
126	626	*Corymbia calophylla*	Marri	Good	1075	35	0			
127	629	*Eucalyptus marginata*	Jarrah	Good	915	30	0			

Tree ID	Tree Tag	Species Name	Common Name	Condition	DBH (mm)	Height (m)	No. of Hollows	Hollow Size (mm)	Hollow Orientation	Comments
128	630	*Corymbia calophylla*	Marri	Good	1245	40	1	50x50	Side	Hollow too small for black cockatoo use.
129	624	*Corymbia calophylla*	Marri	Good	520	15	0			
130	567	*Eucalyptus marginata*	Jarrah	Good	760	30	0			
131	N/A	*Corymbia calophylla*	Marri	Healthy	625	14	1	100x100	Side	Entrance diameter suitable, orientation not preferable. Depth of hollow not suitable.
132	N/A	*Corymbia calophylla*	Marri	Healthy	604	16	0			
133	N/A	*Eucalyptus marginata*	Jarrah	Poor	671	19	0			
134	N/A	*Corymbia calophylla*	Marri	Healthy	962	25	3	100x100	Near vertical	Suitable breeding hollow. Not in use.
135	N/A	*Corymbia calophylla*	Marri	Average	531	26	0			
136	N/A	*Corymbia calophylla*	Marri	Average	650	13	2	100x100	Side	Entrance diameter suitable, orientation not preferable. Hollow depth unsuitable.
137	N/A	*Corymbia calophylla*	Marri	Healthy	765	22	0			
138	N/A	*N/A*	N/A	Dead	670	16	0			