



Eneabba Mineral Sands Mine

Native Vegetation Clearing Permit Application
Supporting Document

Eneabba Mine Access Road
15 June 2023

Iluka Rare Earths Pty Ltd

Mining Lease 267SA, M70/821 and Crown Road Reserve (PIN: 1288439)

Contact:
Ben Kraft
Principal Advisor – Approvals WA
T: +61 8 9360 4652 | M: 0439 688 624
E: Ben.Kraft@iluka.com

Authorisation

Version	Reason for Issue	Prepared	Checked	Authorised	Date
0	Final Report	B Kraft	A Bishop	W Moffat	15 June 2023

Table of Contents

1. PURPOSE	4
2. INTRODUCTION	4
2.1 LOCATION	4
2.2 BACKGROUND	4
2.3 EXISTING APPROVALS	5
2.4 PURPOSE OF VEGETATION CLEARING	5
2.5 APPLICANT DETAILS	6
3. EXISTING ENVIRONMENT & POTENTIAL IMPACTS	9
3.1 REGIONAL VEGETATION AND FLORA	9
3.2 LOCAL VEGETATION	10
3.3 LOCAL FLORA	13
3.4 FAUNA	13
3.5 HYDROLOGY	16
3.5.1 Surface Water	16
3.5.2 Groundwater	16
3.6 CONSERVATION FEATURES	16
4. CLEARING PERMIT ASSESSMENT METHODOLOGY	17
4.1 SELECTION OF THE CLEARING AREA	17
5. IMPACTS AND MANAGEMENT MEASURES	17
5.1 LAND CLEARING	18
5.2 LOSS OF HABITAT AND BIODIVERSITY	18
5.3 INTRODUCTION AND SPREAD OF <i>PHYTOPHTHORA</i> DIEBACK AND WEEDS	19
6. ASSESSMENT AGAINST THE 10 CLEARING PRINCIPLES	22
7. CONCLUSION	25
8. REFERENCES	26

List of Tables

Table 1: Floristic Community Types within the Mine Access Road Clearing Permit Area	11
Table 2: Significant Flora Taxa Recorded	13
Table 3: Fauna Habitats within the Survey and Mine Access Road Clearing Permit Areas	14
Table 4: Mitigation and Management Measures for Impacts from Land Clearing	18
Table 5: Mitigation and Management Measures for Impacts from Loss of Habitat and Biodiversity	19
Table 6: Mitigation and Management Measures for Impacts from Spread of Weeds	19
Table 7: Assessment against 10 Clearing Principles	22

List of Figures

Figure 1: Eneabba Project Location	7
Figure 2: Mine Access Road and Brand Hwy Proposed Clearing Area	8
Figure 3: Flora and Vegetation	12
Figure 4: Fauna Habitat	15
Figure 5: Dieback occurrence within the Eneabba mine site	21

List of Appendices

Appendix 1: NVCP Amendment Application Form and Fee

Appendix 2: Reconnaissance and Targeted Flora and Vegetation Assessment – Umwelt 2023

Appendix 3: Basic Vertebrate Fauna Survey and Cockatoo Habitat Survey – Western Wildlife 2023

Appendix 4: Main Roads WA - Letter of Authority

Abbreviations

Acronym	Meaning
DAWE	Department of Agricultural, Water and the Environment
DBCA	Department of Biodiversity, Conservation and Attractions
DER	Department of Environment Regulation (now DWER)
DMIRS	Department of Mines, Industry Regulation and Safety
DWER	Department of Water and Environmental Regulation
DPIRD	Department of Primary Industries and Regional Development
EP Act	<i>Environmental Protection Act 1986</i>
EPA	Environmental Protection Authority
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
ERER	Eneabba Rare Earth Refinery
ERMP	Environmental Review and Management Programme
ESA	Environmentally Sensitive Area
FCT	Floristic Community Types
GWL	Groundwater Licence
IBRA	Interim Biogeographical Regionalisation for Australia
Iluka	Iluka Rare Earths Pty Ltd (a wholly owned subsidiary of Iluka Resources Ltd)
km	kilometre
NVCP	Native Vegetation Clearing Permit
PEC	Priority Ecological Community
SRE	Short Range Endemics
TEC	Threatened Ecological Community

1. PURPOSE

The purpose of this document is to provide an assessment of environmental impacts in accordance with the ten clearing principles as outlined in 'A guide to the assessment of applications to clear native vegetation' (DER 2014) to support a native vegetation clearing permit (NVCP) application.

This application is proposing for a clearing permit (Purpose Permit) to clear up to 7.1 hectares (ha) of vegetation comprising remnant native vegetation (6.22 ha) and rehabilitated native vegetation (0.88 ha) within Iluka Rare Earths Pty Ltd (Iluka) Eneabba Mining Operations on M267SA, M70/821 and the Brand Highway Road Reserve. The vegetation to be cleared is to allow the extension of existing Eneabba Mine Access Road to link to an adjacent haul road and allow safe access when turning from Brand Highway into the Mine Access Road.

Referral of this application to the Department of Mines, Industry Regulation and Safety's (DMIRS) Native Vegetation Assessment Branch is required to enable assessment under Section 51 (Part V) of the *Environment Protection Act 1986* (EP Act). This information is provided with reference to the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* as well as the (then) Department of Environmental Regulation's (DER) guideline to assessing the clearing of native vegetation (under Part V Division 2 of the EP Act) (DER 2014). The application form and fee for the NVCP application is provided in Appendix 1.

The flora and vegetation survey report supporting this clearing permit is provided in Appendix 2. The fauna survey report supporting this clearing permit is provided in Appendix 3.

2. INTRODUCTION

2.1 Location

The Iluka Eneabba mine site is located to the south-east of the town of Eneabba on the Brand Highway, approximately 280 kilometres (km) north of Perth and 150 km southeast of Geraldton, within the Shire of Carnamah (see Figure 1). Mining and processing of mineral sands has been undertaken by several companies at Eneabba for over 40 years. Mining ceased at Eneabba in March 2013, and the site is currently processing mineral sands and undertaking active rehabilitation.

The area subject to this application is located within the *Iluka Mineral Sands (Eneabba) Agreement Act 1975* Mining Lease 267SA, M70/821 and the Brand Highway Crown Road Reserve (PIN: 1288439).

2.2 Background

Since the 1970s Iluka has carried out mineral sands mining at the Eneabba mine site. Mining and rehabilitation activities have occurred on the area of Mining Lease 267SA, granted under the *Mineral Sands (Eneabba) Agreement Act 1975* (WA) (Figure 1).

Mineral sands processing has occurred at Iluka's Narngulu Mineral Separation Plant located 10 km from Geraldton, since 1975. By-product from processing at the Narngulu MSP is transported 150 km by road from Narngulu to Eneabba for storage. The by-product stockpile at Eneabba has been characterised as an ore reserve of 827,000 tonnes grading 83.5% Heavy Mineral of which 21.5% is the rare-earth bearing mineral monazite.

In 2019, Iluka initiated the Eneabba Project to process stockpiled monazite material. Implementation of the Eneabba Project has been staged with processing of the monazite ore split into three salable product phases:

- Phase 1 - Wet Screening Plant: Physical processing (washing and screening) of stockpiled monazite material to remove sand and clay and produce a Mineral Sands Concentrate with about 20% monazite content.
- Phase 2 - Concentrator: Concentrating of the Mineral Sands Concentrate from Phase 1 to produce two upgraded products using flotation and wet gravity separation methods. The majority of the Phase 2 plant output (80%) will be a heavy mineral concentrate product containing primarily zircon and ilmenite which is recovered for further processing at Iluka's other Western Australian processing plants or for direct sale. The remaining 20% will be a monazite rich heavy mineral containing about 90% monazite which is suitable as feed stock for rare earth refineries.
- Phase 3 - Refinery: Refining of the rare earth concentrate from the Phase 2 plant and other third-party rare earth concentrates to produce rare earth oxides and carbonates (Eneabba Rare Earth Refinery [ERER]).

2.3 Existing Approvals

The Eneabba Phase 1 Phase 2 Projects are currently operating under Department of Water and Environmental Regulation (DWER) Operating Licence L9369/2023/1. The greater Eneabba Mine site operates under Operating Licence L5646/1994/10.

Phase 3 of the Project (ERER) was referred to the Environmental Protection Authority (EPA) under Section 38 of the EP Act on 26 October 2021. The EPA determined on 5 January 2022 that Proposal would not to be assessed under Part IV of the EP Act (Decision: s. 38G(1) – Not Assess).

The ERER Project was referred to the Commonwealth Department of Agriculture, Water and the Environment (DAWE) under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 16 November 2021. The delegate of the Commonwealth Minister for the Environment determined on the 12 January 2022, that the proposed action is Not a Controlled Action for the purposes of the EPBC Act.

A Works Approval (W6641/2022/1) was approved, under Part V of the EP Act by the Department of Water and Environmental Regulation (DWER) for construction and commissioning of the ERER, on 14 June 2022.

Various NVCPs have been approved by DMIRS for the Eneabba Mine Site, with the latest approval for CPS 6915/5 on 29 June 2022.

2.4 Purpose of Vegetation Clearing

The purpose of the clearing is to allow safe vehicle transport from Brand Highway, along the existing Eneabba Mine Access Road to an adjacent haul road. Works include:

- widening of the existing road pavement at the Brand Hwy intersection;
- extending the Mine Access Road pavement 500m east to join with an existing haul road;
- establishing a new turning lane at the eastern end of the haul road;
- realign power line corridors to support the new Mine Access Road and associated infrastructure (boom gates, weight bridge); and
- laydown and construction areas associated with the works.

Clearing of the proposed Mine Access Road Clearing Permit Area consists of a total of 7.1 ha of remnant native vegetation (6.22 ha) and rehabilitated land supporting native vegetation (shrubland and heathlands) (0.88 ha). The proposed Mine Access Road Clearing Permit Area is shown in Figure 2. The clearing is proposed to be undertaken in Q4 2023, subject to environmental approvals and operational requirements.

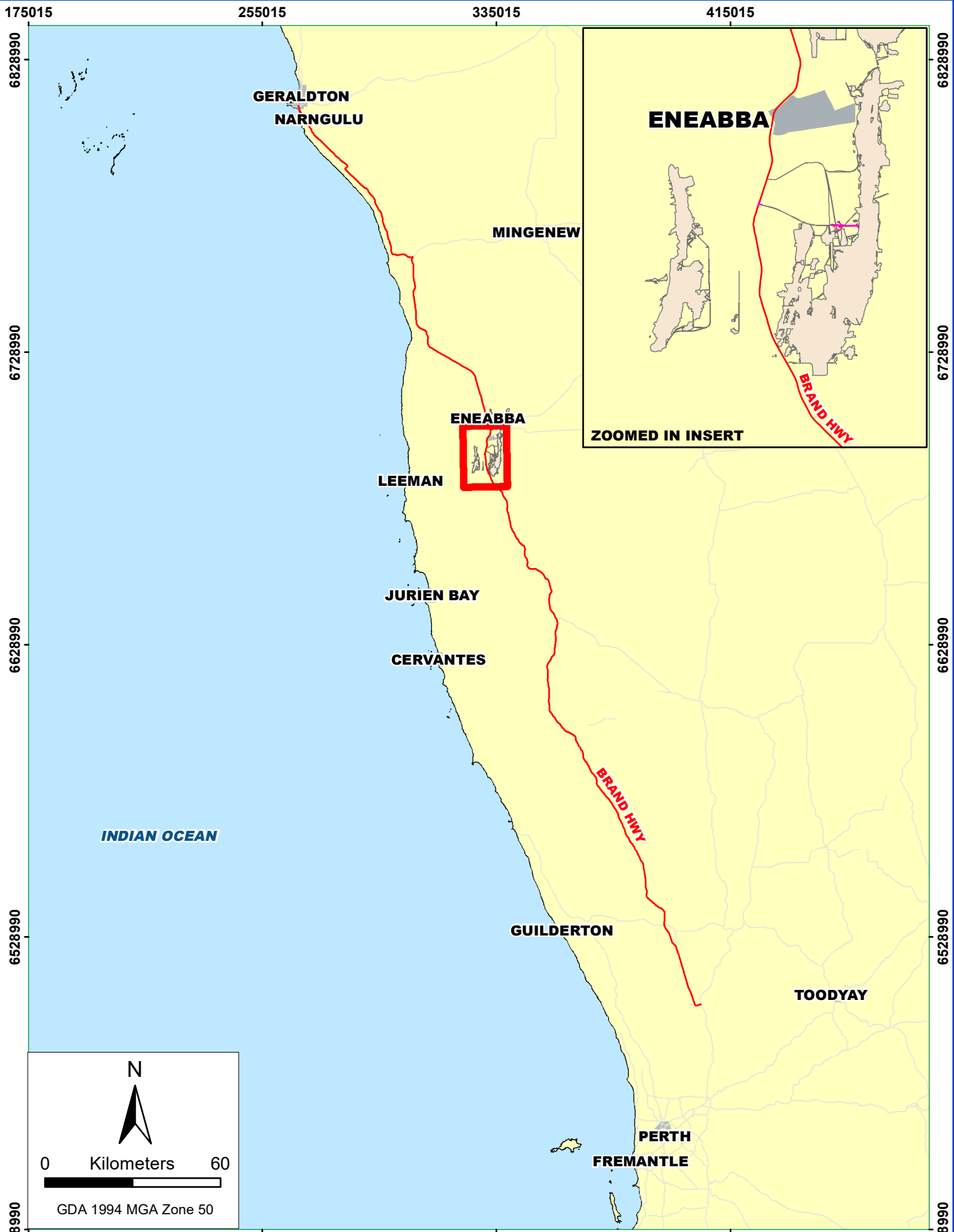
2.5 Applicant Details

Iluka Rare Earths Pty Ltd is responsible for the implementation of the clearing described within this document. Iluka Rare Earths Pty Ltd holds a sublease of Mining Lease M267SA from Iluka Eneabba Pty Ltd and M70/821 from Iluka Midwest Pty Ltd. Iluka Rare Earths Pty Ltd, Iluka Eneabba Pty Ltd and Iluka Midwest Pty Ltd are wholly owned subsidiaries of Iluka Resources Limited.

Access to the Brand Highway Road Reserve (Crown Road Reserve [PIN: 1288439] has been granted by Main Roads WA. The Main Roads WA Letter of Authority is included in Appendix 4.

Correspondence relating to this NVCP application should be addressed to:

Ben Kraft
Principal Advisor – Approvals WA
T: +61 8 9360 4652 | M: 0439 688 624
E: Ben.Kraft@iluka.com



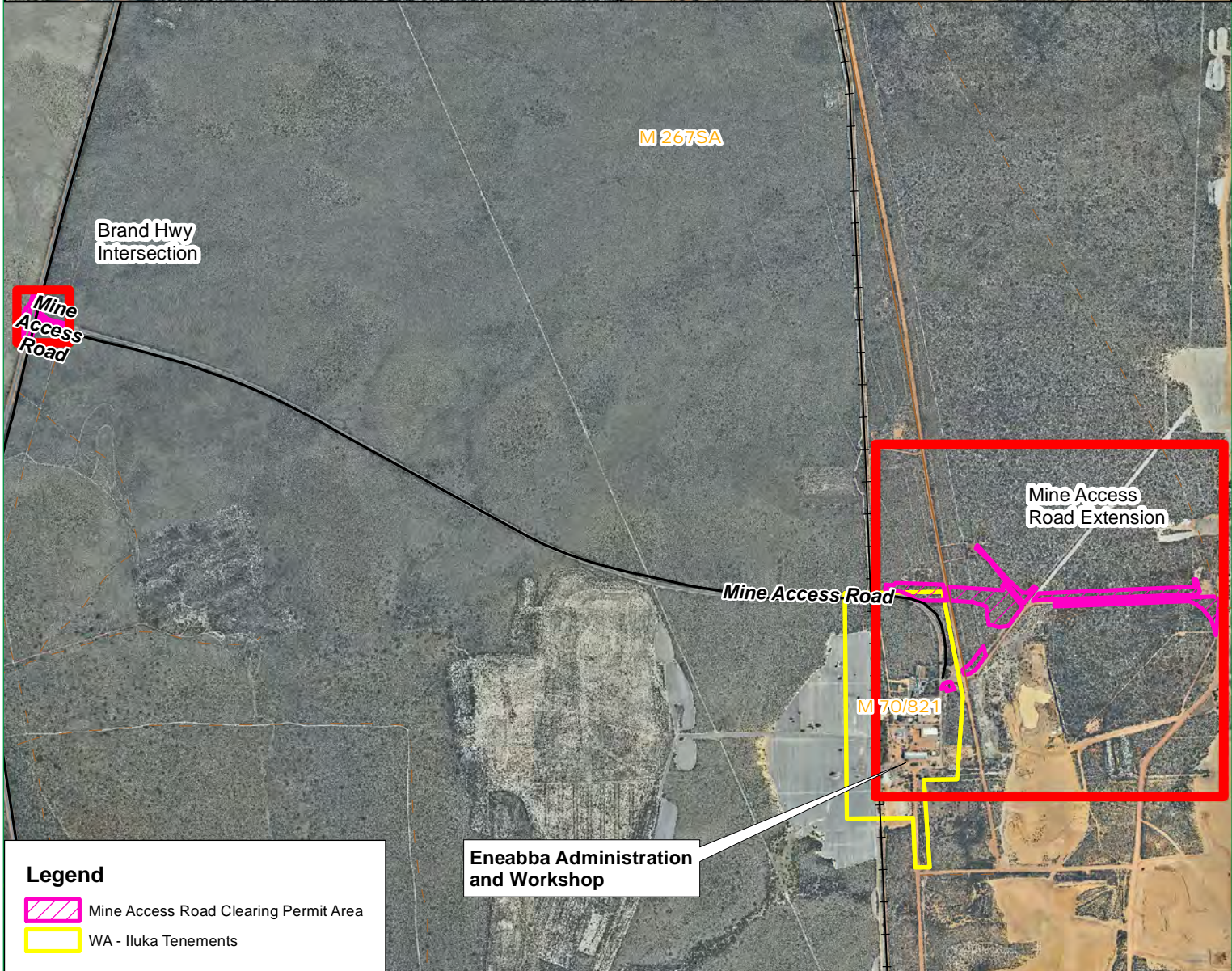
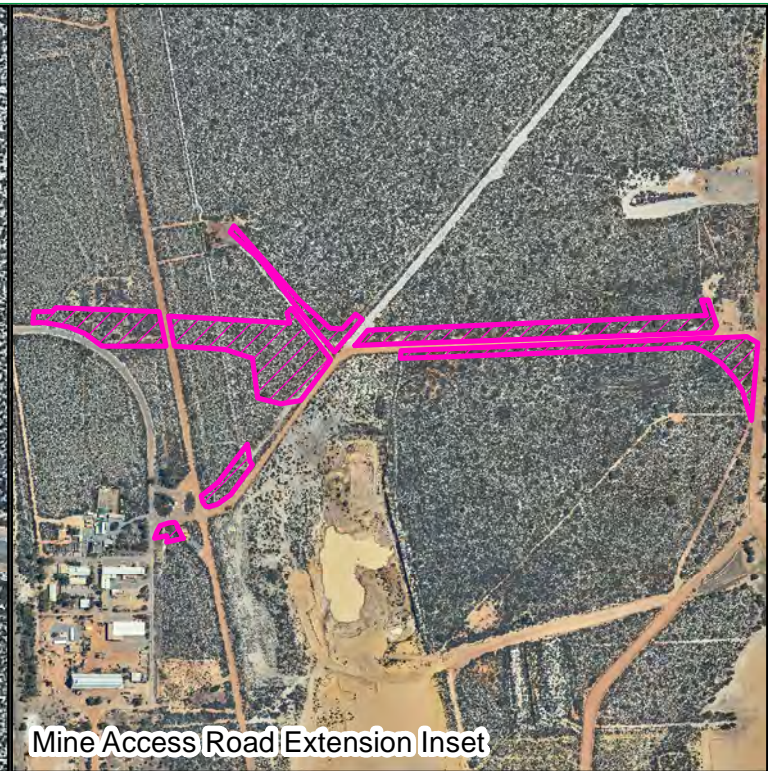
Legend

- Freeway / Highway
- Built-up Areas
- Eneabba Mine Site
- Mine Access Road Clearing Permit Area



ENEABBA MINERAL SANDS MINE
Project Location

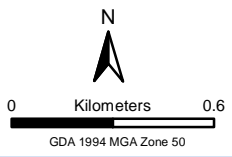


ILUKA



Legend

-  Mine Access Road Clearing Permit Area
-  WA - Iluka Tenements



ENEABBA MINERAL SANDS MINE
Mine Access Road and Brand Hwy
Proposed Clearing Area



3. EXISTING ENVIRONMENT & POTENTIAL IMPACTS

3.1 Regional Vegetation and Flora

A large number of flora and vegetation surveys have been undertaken within the Iluka Eneabba mine site, during the course of mining activity. Woodman Environmental (2011) undertook a floristic community type (FCT) rescore assessment for Iluka in 2009. The assessment involved surveying a total of 226 quadrats throughout the Iluka Environmental Review and Management Programme (ERMP) project area that runs from near Arrowsmith in the north to near Warradarge in the south. However, the floristic analysis utilised a total of 541 quadrats established in the ERMP Study Area and the wider Northern Sandplains Study Area (including the 226 quadrats surveyed as part of the FCT rescore assessment and additional quadrats previously established by Woodman Environmental (2009, 2011)). The ERMP Study Area is approximately 47,495.4 ha in size, and is entirely contained within southern part of the Northern Sandplains Study Area, the latter of which is approximately 81,486.5 ha in size and provides a regional assessment of the conservation significance of flora and vegetation on the Eneabba sandplain area.

A total of 31 FCTs were described and mapped by the survey within the ERMP Study Area and 41 FCTs within the wider Northern Sandplains Study Area, as well as cleared areas, and burnt and degraded vegetation.

The Umwelt desktop study identified a total of 116 listed significant flora taxa are known from, or potentially occur within, the Desktop Study Area. Of the 116 taxa identified by the desktop assessment, 24 are currently listed as Threatened under the EPBC Act and/or *Biodiversity Conservation Act 2016*, and 92 are DBCA-classified Priority flora. A total of 16 significant flora taxa have known records within the Survey Area; these taxa are listed below:

- *Banksia chamaephyton* (P4)
- *Calytrix chrysantha* (P4)
- *Calytrix superba* (P4)
- *Desmocladius elongatus* (P4)
- *Eucalyptus macrocarpa* subsp. *elachantha* (P4)
- *Haemodorum loratum* (P3)
- *Hemiandra* sp. *Eneabba* (H. Demarz 3687) (P3)
- *Hypocalymma gardneri* (P3)
- *Paracaleana dixonii* (T)
- *Persoonia filiformis* (P3)
- *Schoenus griffinianus* (P4)
- *Stylidium carnosum* subsp. *Narrow leaves* (J.A. Wege 490) (P1)
- *Thelymitra pulcherrima* (P2)
- *Verticordia argentea* (P2)
- *Verticordia aurea* (P4)
- *Verticordia fragrans* (P3)

3.2 Local Vegetation

The vegetation of the Mine Access Road Clearing Permit Area comprises remnant native vegetation and rehabilitated native vegetation.

The Mine Access Road Clearing Permit Area covers 7.1 ha, and occurs within 10 separate polygons as shown in Figure 2. Umwelt completed spring surveys in 2022 over a Survey Area of 100.4 ha, which included the Mine Access Road Clearing Permit Area. The Umwelt report 'Reconnaissance and Targeted Flora and Vegetation Assessment, Eneabba Mine Access Road, May 2023' is included as Appendix 2.

The vegetation of the Mine Access Road Clearing Permit Area is detailed in Table 1 and Figure 3.

Remnant native vegetation within the Mine Access Road Clearing Permit Area as mapped by Umwelt (2023) covers 6.22 ha or 88% of the Mine Access Road Clearing Permit Area. The native vegetation in the Umwelt Survey Area comprises four FCTs as outlined below:

- **FCT 1a:** Open Low Woodland to Open Low Scrub of *Eucalyptus pleurocarpa* and/or *Eucalyptus todtiana* over mixed shrubs dominated by *Banksia spp.* and *Hakea spp.* over sedges on grey to brown sands with very occasional laterite influence on lower to mid slopes.
- **FCT 2a:** Low woodland of *Banksia attenuata* and occasional *Banksia menziesii* and *Xylomelum angustifolium*, over Low Scrub of mixed species including *Banksia leptophylla* var. *leptophylla*, *Banksia candolleana*, *Melaleuca leuropoma* and *Hibbertia hypercoides* on brown or grey sand on upper slopes.
- **FCT 2b:** Scrub of *Banksia attenuata*, with emergent *Eucalyptus todtiana* or *Eucalyptus pleurocarpa*, over Low Scrub dominated by *Banksia spp.* on predominantly yellow sands on mid and upper slopes.
- **FCT 6b:** Shrublands and Heaths, with occasional Low Woodland of *Eucalyptus pleurocarpa*. Common species include *Allocasuarina microstachya*, *Melaleuca leuropoma*, *Melaleuca trichophylla*, and *Verticordia spp.* over sedges on grey-brown sands, sandy clays and or gravel on flats, swales and lower slopes. This TCT was always associated with areas of FCT 2a.

Based on Umwelt 2023, none of the FCTs mapped in the Umwelt Survey Area are considered to represent any formally listed Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs). Furthermore, all FCTs were mapped over relatively large areas by Woodman Environmental (2011) in both the EMRP Study Area and the wider Northern Sandplains Study Area, with the mapped extents in the Umwelt 2022 Survey Area representing small proportions of the total mapped extents regionally. It is also considered that none of the mapped FCTs in the Umwelt 2022 Survey Area are significant for any other reasons as per EPA guidance (2016a, 2016b).

A summary of the area of each FCT mapped within the Mine Access Road Clearing Permit Area, Umwelt Survey Area and the ERMP Study Area, is presented within Table 1, with FCT polygons presented in Figure 3. All FCTs within the Mine Access Road Clearing Permit Area are widespread and well represented throughout the Iluka Northern Sandplains Study Area, which is composed of the Iluka tenements within the Northern Sandplains Region.

Clearing as a result of this proposal will represent a negligible impact to each FCT (<0.55% of each FCT to be impacted) (see Table 1).

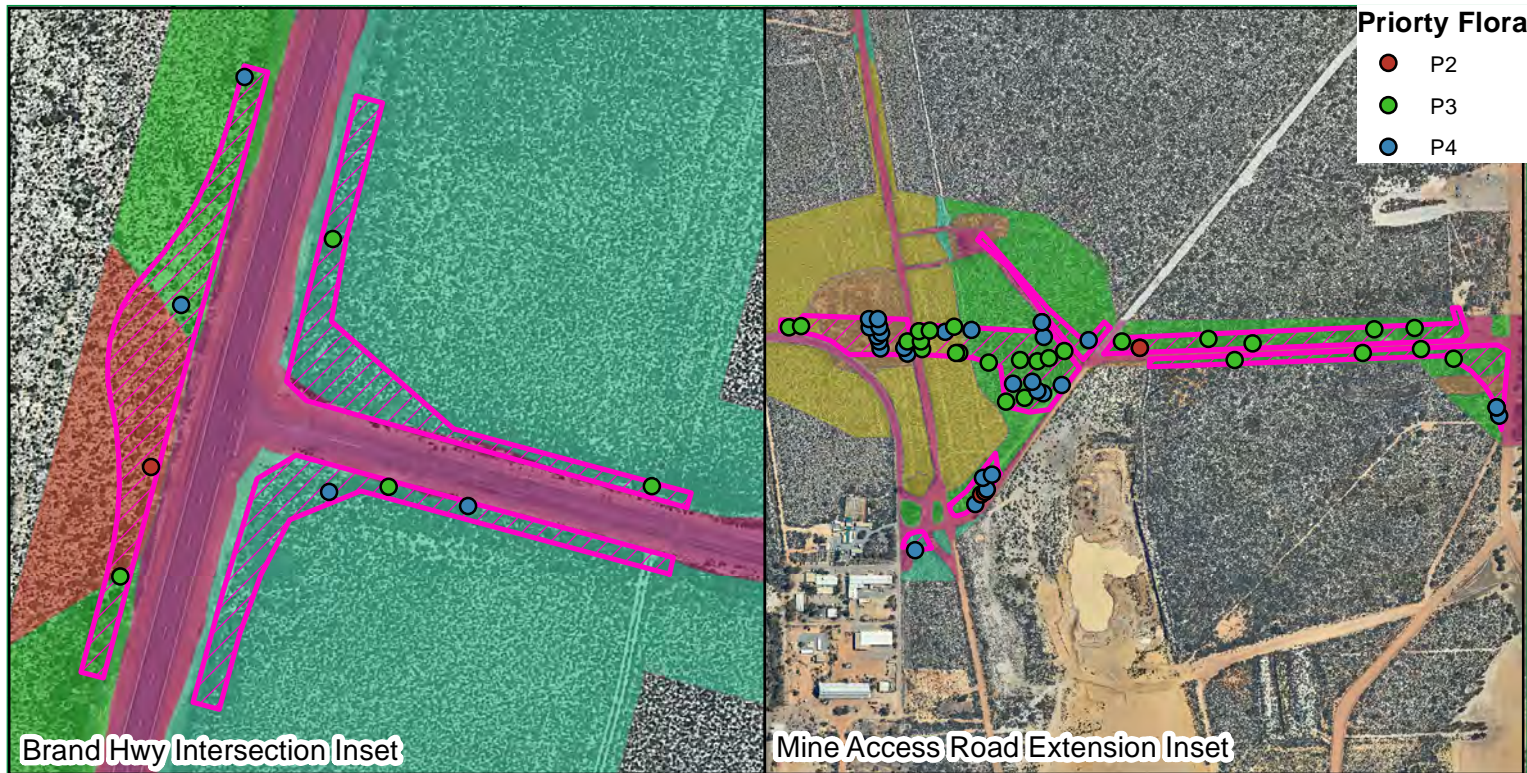
Table 1: Floristic Community Types within the Mine Access Road Clearing Permit Area

Floristic Community Type	Total Mapped in Clearing Permit Area (ha)	Total Mapped in Umwelt Survey Area (ha)	Total Mapped in ERMP Study Area (ha)	Impact to FCT (%)
FCT 1a	0.31	43.2	2,540.6	0.01
FCT 2a	0.22	11.4	5,907.9	0.004
FCT 2b	0.54	20	4,802.5	0.01
FCT 6b	5.15	16.8	926.2	0.55
TOTAL	6.22	91.4	14,177.2	0.04

Note: Mine Access Road Clearing Permit Area covers 7.1 ha of which 0.88 ha is rehabilitated land, which has been excluded from the table.

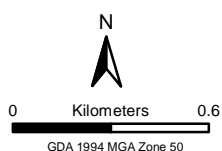
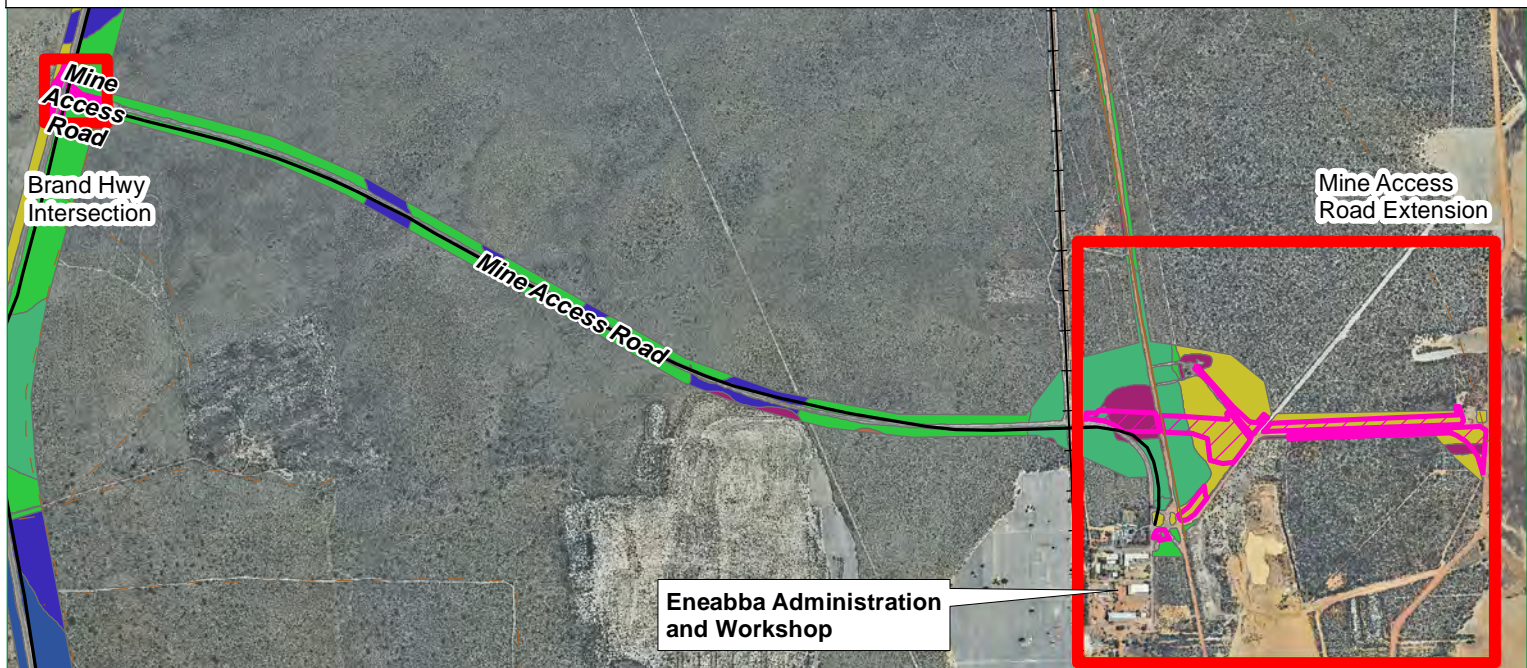
The rehabilitated land varied in age, structure and plant species composition, but overall tends to be a shrubland or heathland with emergent Eucalypts. The 0.88 ha of rehabilitated land to be cleared is considered to be in a degraded condition.

It should be noted that the report prepared by Umwelt (Appendix 2) presents the results from the flora and vegetation survey and the discussion on any impacts in the Umwelt report consider the entire survey area (100.4 ha). The discussion of results within this clearing permit application document relate to the Mine Access Road Clearing Permit Area only (7.1 ha).



Legend

- Mine Access Road Clearing Permit
- Low Woodland of *Banksia attenuata* and occasional *Banksia menziesii* and *Xylomelum angustifolium* over Low Scrub of mixed species including *Banksia leptophylla* var. *leptophylla*, *Banksia candolleana*, *Melaleuca leuropoma* and *Hibbertia hypericoides* on brown or
- Open Low Woodland to Heath of *Banksia* spp. over mixed shrubs commonly including *Melaleuca leuropoma*, *Eremaea beaufortioides* and *Scholtzia laxiflora* on grey or yellow sand on lower to mid slopes. This FCT is often adjacent to drainage lines or winter-wet
- Open Low Woodland to Open Low Scrub of *Eucalyptus pleurocarpa* and/or *Eucalyptus tottiana* over mixed shrubs dominated by *Banksia* spp. and *Hakea* spp. over sedges on grey to brown sands with very occasional laterite influence on lower to mid slopes
- Open Woodland to Scrub of *Eucalyptus* spp. and/or *Banksia* spp., with occasional *Xylomelum angustifolium*, over mixed shrubs dominated by myrtaceous spp., *Banksia* spp., and *Jacksonia* spp. on grey sand on mid to upper slopes. This FCT is generally restricted
- Rehabilitated land
- Scrub of *Banksia attenuata*, with emergent *Eucalyptus tottiana* or *Eucalyptus pleurocarpa*, over Low Scrub dominated by *Banksia* spp. on predominantly yellow sands on mid and upper slopes
- Shrublands and Heaths, with occasional Low Woodland of *Eucalyptus pleurocarpa*. Common species include *Allocasuarina microstachya*, *Melaleuca leuropoma*, *Melaleuca trichophylla*, and *Verticordia* spp. over sedges on grey-brown sands, sandy clays and or gravel



ENEABBA MINERAL SANDS MINE Mine Access Road and Brand Hwy Flora and Vegetation



3.3 Local Flora

Umwelt completed a systematic targeted survey for significant flora taxa as part of the 2022 field survey over the entirety of the Survey Area. A total of 23 significant flora taxa were recorded in the Survey Area, including the Threatened taxon *Paracaleana dixonii* and 22 DBCA-listed Priority taxa. Of the 23 significant flora taxa recorded in the Survey Area, 10 significant flora taxa were recorded in the Mine Access Road Clearing Permit Area as detailed in Table 2 and Figure 3. All priority flora taxa within the Mine Access Road Clearing Permit Area are known to occur at other locations and are well represented across Eneabba, outside the area of proposed clearing.

Table 2: Significant Flora Taxa Recorded

Significant Flora Taxa	Locations in Clearing Permit Area	Locations in Study Area	Locations outside Study Area within the ERMP Study Area
<i>Banksia chamaephyton</i> (P4)	2	11	256
<i>Calytrix superba</i> (P4)	2	998	1665
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i> (P4)	8	90	965
<i>Haemodorum loratum</i> (P3)	11	207	656
<i>Hemiandra</i> sp. <i>Eneabba</i> (<i>H. Demarz</i> 3687) (P3)	17	310	2396
<i>Schoenus griffinianus</i> (P4)	3	28	471
<i>Thelymitra pulcherrima</i> (P2)	2	19	59
<i>Verticordia argentea</i> (P2)	2	209	1088
<i>Verticordia aurea</i> (P4)	16	562	4979
<i>Verticordia fragrans</i> (P3)	5	337	138
TOTAL	68	2771	12673

3.4 Fauna

The Mine Access Road Clearing Permit Area is a small area of remnant vegetation (6.22 ha) and rehabilitated land supporting native vegetation (shrubland and heathlands) (0.88 ha) required to be disturbed for the proposed Brand Hwy and Mine Access Road Intersection and the Mine Access Road extension.

Fauna surveys have been conducted within the Eneabba region over the course of the mining operations. These include baseline surveys of undisturbed vegetation to characterise existing fauna and monitoring of fauna in rehabilitated areas. Western Wildlife completed a spring fauna and habitat survey in 2022 over a Survey Area of 100.4 ha, which included the Mine Access Road Clearing Permit Area. The Western Wildlife report 'Eneabba Mine Access Road: Basic Fauna Survey and Targeted Cockatoo Habitat Survey 2022, May 2023' is included as Appendix 3.

Habitat mapping was undertaken using landform descriptions and vegetation mapping (created by Woodman Environmental Consulting in 2011), observations made by fauna personnel in the field and interpretation of aerial photography. Five habitats were identified in the study area: Kwongan heath – uplands, Kwongan heath – lowlands, Rehabilitation – shrublands and heaths, Rehabilitation

- planted eucalypts and farmland. The faunal assemblage is likely to be typical of Kwongan heaths of the region, although the assemblage in the survey area may be somewhat depauperate as the native habitats are fragmented and likely to be subject to the impacts of weed invasion and the presence of feral predators.

The predicted faunal assemblage includes up to 10 frogs, 60 reptiles, 118 birds and 26 mammals (19 native and seven introduced). The observed faunal assemblage included one reptile, 24 birds and two mammals (one native and one introduced), and this is unlikely to be complete. The faunal assemblage is likely to be relatively intact and typical of kwongan heaths in the region. A total of seven vertebrate and eight invertebrate fauna species of conservation significance have the potential to occur in the study area.

Three threatened species potentially occur in the study area (two vertebrate and one invertebrate), of which one was recorded.

Carnaby's Cockatoo (*Calyptorhynchus latirostris*) was recorded, with foraging signs present in the study area. No breeding habitat is present, and no breeding habitat is known to occur within 12 km of the study area (Western Wildlife 2023). The birds present are likely to be a flock of over-wintering foraging birds that breed elsewhere in the wheatbelt. The study area provides 105 ha of foraging habitat in native kwongan heath and rehabilitation – shrublands and heaths of which 13.3 ha is low value, 4.1 ha is moderate and 87.6 ha is of high value. This high value non-breeding foraging resource can be considered habitat critical to the survival of the species.

The study area is unlikely to provide important habitat for the Malleefowl. The Shield-backed Trapdoor Spider is unlikely to occur due to changes in its taxonomic status.

One vertebrate Migratory species potentially occurs in the study area. The Fork-tailed Swift is thought to be almost entirely aerial when visiting Australia, so the study area is not likely to provide important habitat for this species.

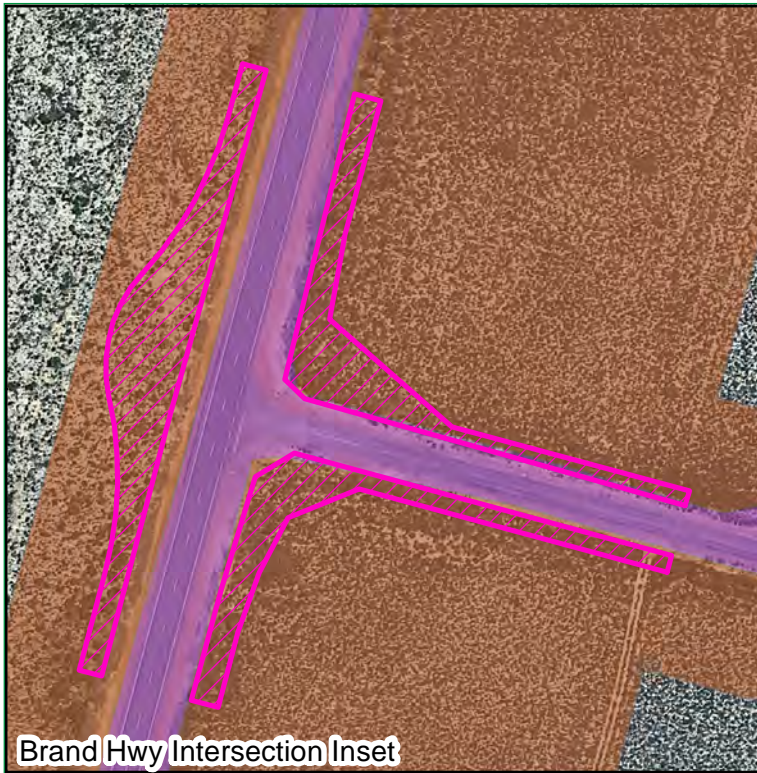
One vertebrate Specially Protected species potentially occurs in the study area. The Peregrine Falcon is likely to occur as a foraging visitor, but the study area is unlikely to be important for this species as its population is large and secure, and its favoured breeding habitat is absent.

Nine Priority species potentially occur in the study area (three vertebrate and six invertebrate). The Black-striped Snake is likely to occur in the Kwongan heaths, but the study area is unlikely to support the Woma (locally extinct) or provide important habitat for the Western Brush Wallaby. Many of the Priority invertebrates are poorly known, hampering an accurate assessment of their likely status in the study area, however, some potentially occur in the study area.

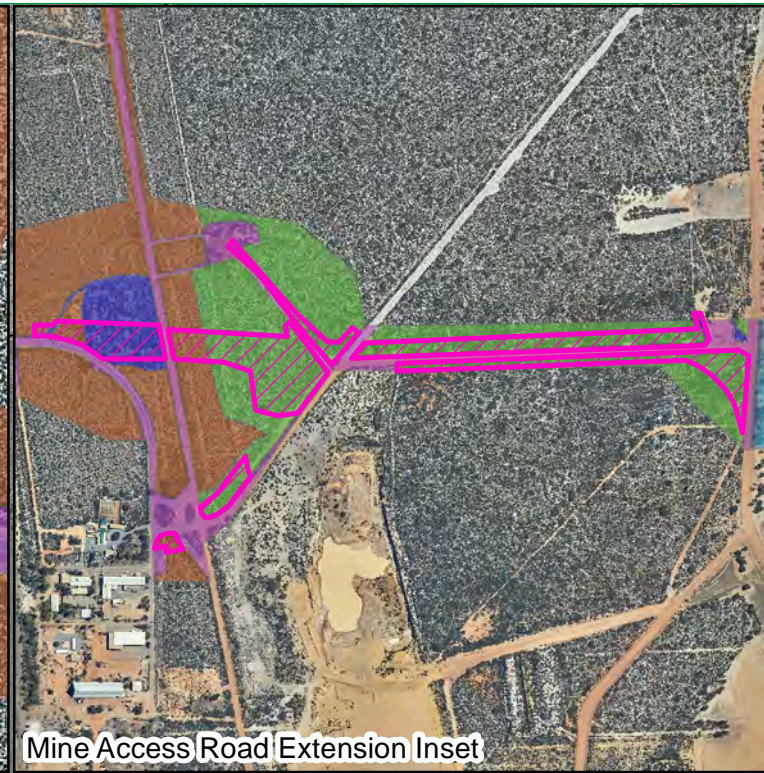
One locally significant millipede species is likely to occur. This millipede potentially occurs in the study area and is a probable short-range endemic (SRE) species. It is likely that other SRE invertebrates are present, however, the small size of the study area is unlikely to overlap the entire range of any SRE species.

Table 3: Fauna Habitats within the Survey and Mine Access Road Clearing Permit Areas

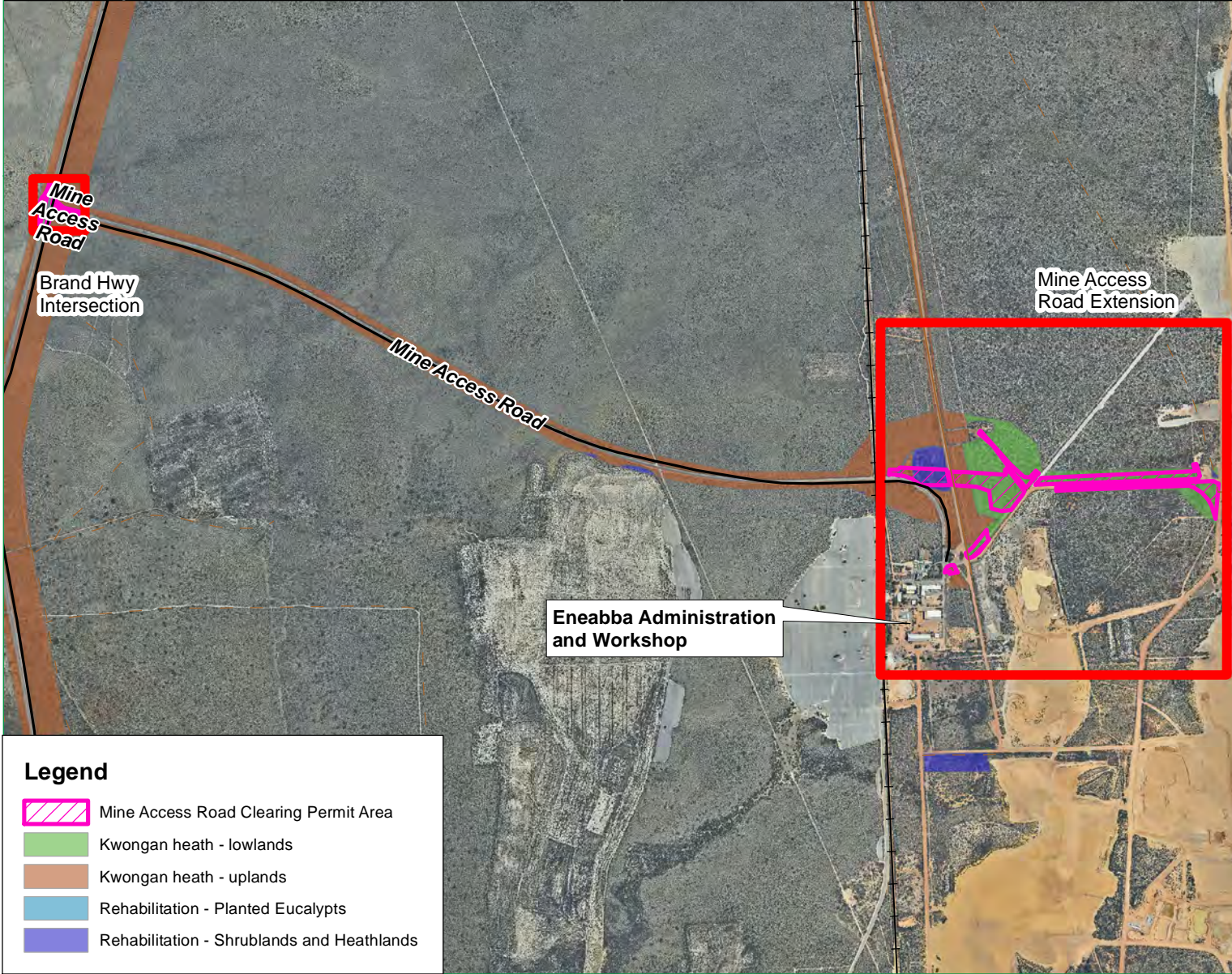
Fauna Habitat	Total Mapped in Clearing Permit Area (ha)	Total Mapped in Western Wildlife Survey Area (ha)	High Value Carnaby's Cockatoo Foraging Habitat within Survey Area(ha)
Kwongan heath - uplands	0.98	87.6	87.6
Kwongan heath – lowlands	5.24	12.9	0
Rehabilitation – shrublands and heaths	0.88	4.1	0



Brand Hwy Intersection Inset

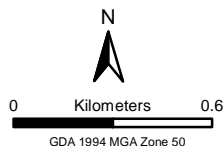


Mine Access Road Extension Inset



Legend

- Mine Access Road Clearing Permit Area
- Kwongan heath - lowlands
- Kwongan heath - uplands
- Rehabilitation - Planted Eucalypts
- Rehabilitation - Shrublands and Heathlands



ENEABBA MINERAL SANDS MINE
Mine Access Road and Brand Hwy
Fauna Habitat



3.5 Hydrology

3.5.1 Surface Water

The Mine Access Road Clearing Permit Area falls within the Logue Surface Water Catchment, which is served by watercourses that originate on the Dandaragan Plateau and Arrowsmith Region and drain into large swamps or lakes in interdunal depressions on the Swan Coastal Plain. The surface drainage pattern is towards the west reflecting the general slope of the landscape of the sedimentary basin.

Surface water flows are generally considered to be low in the Eneabba region due to the predominantly sandy nature of the surface soils and their corresponding high infiltration rates (SWC 2009). These sandy soils are associated with the Eneabba Plain, which consists of deep sands (up to 40 m deep) overlying the Yarragadee Formation. No watercourses intersect the Mine Access Road Clearing Permit Area.

The catchments upstream of the Mine Access Road Clearing Permit Area are relatively small. There are no developed areas within the upstream catchments.

3.5.2 Groundwater

The primary geological units of interest in the area around the Eneabba area are the Quaternary aged Superficial formations, and the underlying Yarragadee Formation (a high yielding aquifer). Iluka abstracts groundwater from the Yarragadee Aquifer under two groundwater licences (GWL) with a combined annual extraction limit of 11 GL issued under the *Rights in Water and Irrigation Act 1914*. The groundwater allocation is split across two licences because the mine and borefield traverse two groundwater management sub-areas within the Arrowsmith Groundwater Area: the Twin Hills sub-area (GWL 104709) and the Eneabba Plains sub area (GWL 104700).

Bore log information in the vicinity of the Mine Access Road Clearing Permit Area indicate that the underlying sediments are comprised of a combination of sand, silt and clay. Laterite and cementing are also present. The silt and clay, laterite and cementing will impede vertical groundwater flow. Cementing is potentially an indication of the Yarragadee Formation, which has weakly-cemented characteristics at depth or in older parts. In the vicinity of the Mine Access Road Clearing Permit Area the regional watertable is located within the Yarragadee Formation. Depth to groundwater is typically around 20 m (Jacobs 2020).

Historical activities at the Eneabba mine site have modified the depth to groundwater and groundwater elevation near the mine. Impacts such as localised groundwater mounding from seepage of water from water storage facilities and historical clay fine tailings dams, along with groundwater drawdown at production borefield sites have been observed (Jacobs 2020). The persistence of mounding many years after the cessation of mining suggests the downward vertical flow through the uppermost Yarragadee Formation sediments has been impeded

3.6 Conservation Features

The closest Environmentally Sensitive Area (ESA) is located approximately 250 m south west of the Mine Access Road Clearing Permit Area. This ESA correlates to the buffer of the TEC - Rocky Springs Ferricrete. The only recorded Rocky Springs Ferricrete TEC is 5.3 km south east of the Mine Access Road Clearing Permit Area, however this TEC is restricted to ferricrete soils, which are unusual in the Eneabba area, and are easily recognisable (Woodman 2016).

The Mine Access Road Clearing Permit Area is not mapped within any Regional Parks or Department of Biodiversity, Conservation and Attractions (DBCA) Managed Lands, the closest Reserve is South Eneabba Nature Reserve, located 2.5 km south.

4. CLEARING PERMIT ASSESSMENT METHODOLOGY

To assess potential impacts of clearing 7.1 ha of remnant native vegetation and rehabilitated land supporting native vegetation, for the purposes described in Section 2.4, the following methodology was adopted:

- Review of the reconnaissance and targeted flora and vegetation assessment completed for the Eneabba Mine Access Road (Umwelt 2023).
- Review of the basic vertebrate fauna survey and cockatoo habitat survey completed for the Eneabba Mine Access Road (Western Wildlife 2023).
- Undertake an assessment of the clearing of 7.1 ha against the ten clearing principles (Table 6).

The assessment methodology aligns with the DER's guideline to assessing clearing of native vegetation (DER 2014).

4.1 Selection of the clearing area

Iluka have applied avoidance and mitigation options to avoid, minimise or otherwise mitigate the scale of the proposed clearing at the Brand Highway and Mine Access Road intersection and the Eneabba Mine Access Road extension. As a result, clearing of remnant native vegetation (6.22 ha) and rehabilitated land supporting native vegetation (0.88 ha) is proposed within the Mine Access Road Clearing Permit Area.

The design of the Brand Highway and Mine Access Road intersection was limited to minor increases in the turning areas to allow road train vehicles to safely turn in and out of the intersection, which minimised the clearing required. The area selected for the Mine Access Road extension, was the shortest route between the existing Mine Access Road and existing haul road. Close proximity to these existing areas was prioritised to ensure the minimum disturbance footprint possible and thus the containment of any potential impacts to the smallest area possible.

Clearing will be undertaken in accordance with Iluka's standard clearing practices including:

- completion of a Ground Disturbance Permit that is reviewed and approved by site environmental personnel;
- survey and demarcation of clearing boundaries;
- marking of any plants to be retained (e.g. Priority flora on the edges of the clearing boundary);
- supervision of clearing activities; and
- verification that clearing is undertaken in accordance with the Ground Disturbance Permit and approved NVCP.

5. IMPACTS AND MANAGEMENT MEASURES

Environmental impacts at the Eneabba mine site have been identified over the life of operations. Annual and triennial environmental reports prepared and submitted under the *Mineral Sands (Eneabba) Agreement Act 1975* outline environmental management activities for a range of environmental factors. These include land clearing, dust, groundwater, surface water and rehabilitation. In addition, risk registers and management plans are regularly reviewed and updated. The key environmental impacts associated with the clearing for mineral sands processing and their proposed management measures are described in detail below.

5.1 Land Clearing

7.1 ha of clearing is proposed to occur to enable the construction of the Brand Highway and Mine Access Road Intersection and the Mine Access Road extension. The Mine Access Road Clearing Permit Area was selected to maximise the use of existing cleared areas whilst still being in close proximity to the existing roads. Once the Eneabba mine site operations ceases, these areas will be rehabilitated in accordance with standard Iluka rehabilitation practices.

Table 4: Mitigation and Management Measures for Impacts from Land Clearing

Potential Impact	Mitigation and Management Measures
Clearing of vegetation leading to soil erosion	<ul style="list-style-type: none"> • Site selected to minimise clearing and make use of existing cleared areas • Road design considerations to minimise project footprint • Progressive clearing and rehabilitation
Altered drainage patterns, leading to inundation or increased erosion (wind or water) resulting in impacts to surface water	<ul style="list-style-type: none"> • Design considerations to minimise project footprint to reduce the amount of potential runoff during storms • Progressive rehabilitation to minimise exposed areas resulting in wind erosion

5.2 Loss of Habitat and Biodiversity

Clearing within the Mine Access Road Clearing Permit Area will result in the loss of less than 0.55% of the total FCTs within the Eneabba region (see Table 1). The 10 significant flora taxa (P2s, P3s, and P4s) located across 60 locations, will be cleared as a result of the construction of the Brand Highway and Mine Access Road Intersection and the Mine Access Road extension. This represents only 0.4% of total number of these significant taxa located within the Eneabba region. All priority flora taxa within the Mine Access Road Clearing Permit Area are known to occur at other locations and are well represented across Eneabba, outside the area of proposed clearing. Therefore, the clearing within the Mine Access Road Clearing Permit Area will result in a minor impact on diversity.

The Mine Access Road Clearing Permit Area of 7.1 ha does not provide breeding or roosting habitat for Carnaby's Cockatoo. The greater Eneabba mine site and surrounding areas contain Carnaby's Cockatoo foraging habitat of varying values. The foraging value was assessed using the foraging quality scoring tools presented in DAWE 2022. High value foraging habitat included important food plants such as Banksia spp., Hakea spp. and Lambertia sp. Moderate value foraging habitat still included important food plants, but these were more sparsely distributed and were likely to be impacted by dieback. Low foraging value areas had few food-plants and lacked the favoured proteaceous species (Western Wildlife 2023). The foraging value was considered to be high for Kwongan heath – uplands (0.98 ha), moderate for Rehabilitation – shrublands and heathlands (0.88 ha) and low for Kwongan heath – lowlands (5.24 ha). Of the 7.1 ha of proposed clearing, only 0.98 ha is considered high value that will be disturbed which is insignificant considering the quantity of high value foraging habitat within 12 km of the Mine Access Road Clearing Permit Area. The 0.98 ha is 1% of the high value foraging habitat observed within the Western Wildlife Study area and would be significantly less than 1% within the larger Eneabba region. Carnaby's Cockatoo's have been observed foraging in rehabilitated areas within the mine site giving confidence that foraging habitat can be reinstated as part of future rehabilitation actions.

Table 5: Mitigation and Management Measures for Impacts from Loss of Habitat and Biodiversity

Potential Impact	Mitigation and Management Measures
Direct loss of rehabilitation vegetation and significant flora species during clearing	<ul style="list-style-type: none"> • Site selected to minimise clearing and make use of existing cleared areas • Design considerations to minimise project footprint • Progressive clearing and rehabilitation • Land disturbance permit system • Inductions will include flora awareness and clearing permit requirements • Flora and vegetation surveys completed to identify most sensitive areas and avoid these where possible
Indirect loss or degradation of rehabilitation vegetation from introduction or spread of weeds	<ul style="list-style-type: none"> • Implementation of Weed Management Plan • Weeds and seeds cleaning procedures for all vehicles and machinery coming onto site
Indirect impacts from dust emissions/deposition leading to degradation of vegetation	<ul style="list-style-type: none"> • Implementation of Eneabba Dust Management Plan • Water cart application during construction and operational activities • Daily visual inspections to monitor dust emissions and adjust activities accordingly

5.3 Introduction and Spread of *Phytophthora* Dieback and Weeds

Phytophthora Dieback is known to occur within portions of the Eneabba mine site containing infested areas, but do contain uninfested areas and yet to be interpreted areas (Figure 5). The Mine Access Road Clearing Permit Area is classified as ‘yet to be determined’ or uninfested.

The management of *Phytophthora* Dieback in rehabilitation areas is detailed within Iluka’s *Phytophthora* Dieback Management Plan – Eneabba Operations (Iluka 2016) which was approved by the OEPA in September 2016. Since 1991, Iluka has implemented hygiene management to prevent the spread of *Phytophthora* Dieback and will continue to implement these management actions. Dieback hygiene measures specific to the clearing activity required for the Eneabba Upgrade Project will be developed and implemented prior to disturbance. It is considered unlikely that clearing the Proposed Amendment Area will result in the spread of *Phytophthora* Dieback or the spread of weeds.

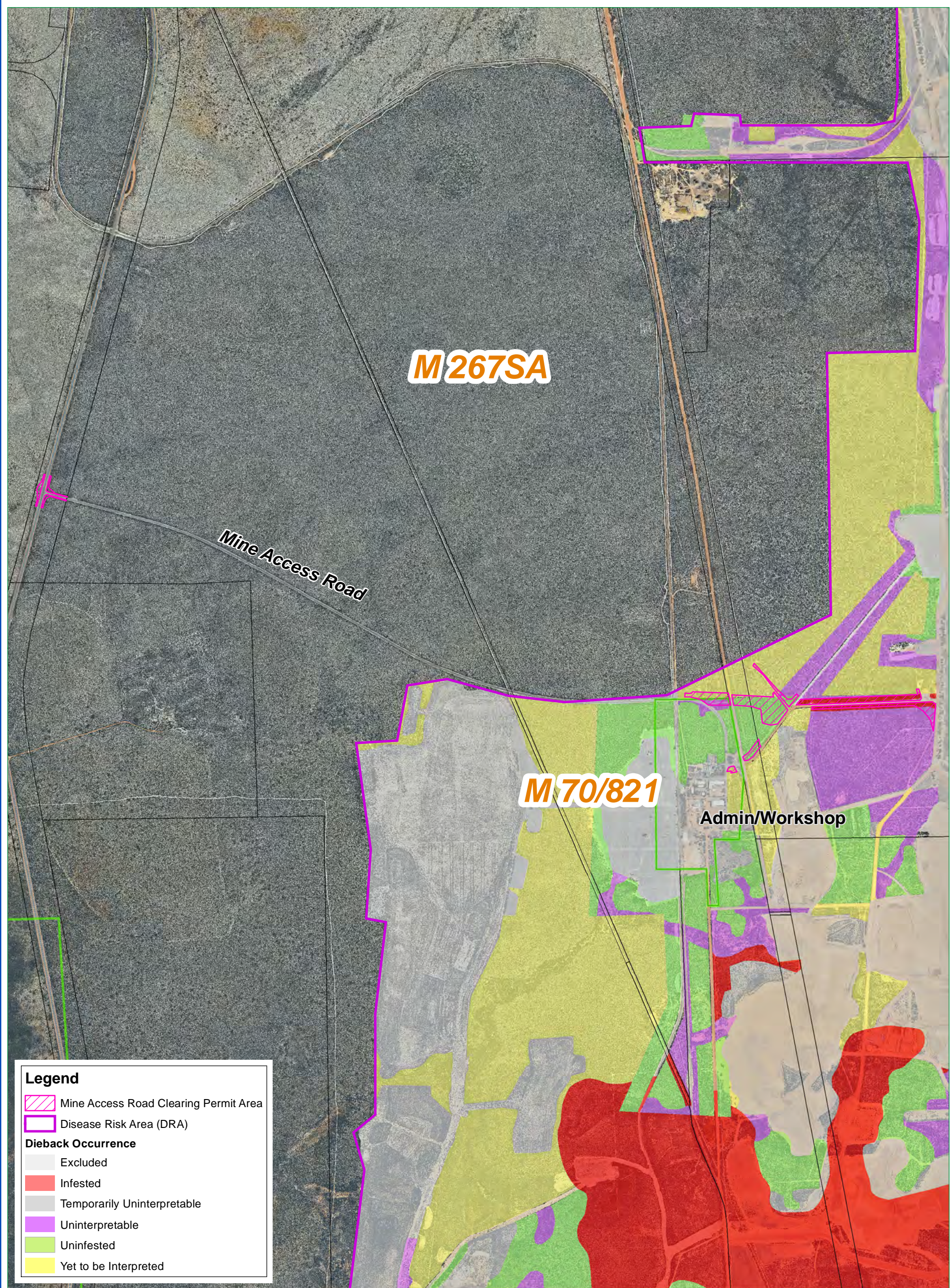
Table 6: Mitigation and Management Measures for Impacts from Spread of Weeds

Potential Impact	Mitigation and Management Measures
Indirect loss or degradation of rehabilitation vegetation from introduction or spread of dieback	<ul style="list-style-type: none"> • Implementation of Eneabba Dieback Management Plan (e.g. vehicle and personnel hygiene procedures) • Ongoing monitoring/assessments of infestations • Consideration of surface water drainage during construction to ensure all run-off from the plant area is contained within the operational footprint and/or directed to the process water dam
Indirect loss or degradation of rehabilitation vegetation from introduction or spread of weeds	<ul style="list-style-type: none"> • Weed Management Plan • Weeds and seeds cleaning procedures for all vehicles and machinery

The management of *Phytophthora* Dieback in areas being rehabilitated is in accordance with the Dieback Management Plan. Final rehabilitation will consider:

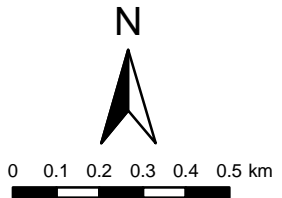
- whether the disease status of the area was known prior to disturbance;

- soil disturbance history;
- where the topsoil and subsoil have been stockpiled; and
- whether the area being rehabilitated is protectable from infestation through autonomous spread.



Legend

- Mine Access Road Clearing Permit Area
- Disease Risk Area (DRA)
- Dieback Occurrence**
- Infested
- Temporarily Uninterpretable
- Uninterpretable
- Uninfested
- Yet to be Interpreted



ENEABBA MINERAL SANDS MINE
Dieback Occurance within the
Eneabba Mine Site



6. ASSESSMENT AGAINST THE 10 CLEARING PRINCIPLES

The impacts of clearing under this proposal are discussed in Table 7 with regard to the 10 Clearing Principles as defined in DER's 'A guide to the assessment of applications to clear native vegetation' (DER 2014) under the EP Act.

Table 7: Assessment against 10 Clearing Principles

Principle	Assessment	Outcome
<p>Principle (a) – Native vegetation should not be cleared if it comprises a high level of biological diversity</p>	<p>The area described in this proposal lies within the Geraldton Sandplains Interim Biogeographical Regionalisation for Australia (IBRA) bioregion, specifically within the Lesueur Sandplain subregion. This subregion is recognised for its high level of biodiversity, and in particular floral diversity and endemism (Desmond & Chant 2001). This is reflected in the results of flora and vegetation surveys of Iluka's ERMP study area, with 940 vascular plant taxa recorded in this area, and 30 FCTs described and mapped (Woodman Environmental 2011).</p> <p>All the FCTs to be cleared are relatively common and widespread in the Iluka NSR, with the four FCTs being mapped over more than 14,000 ha (Table 1). Clearing as a result of this proposal will represent a relatively small impact to each FCT (<0.55 % of each FCT to be impacted; Table 1).</p> <p>Clearing under this proposal is likely to have a minimal impact on the overall biodiversity of the Lesueur Sandplain subregion and the local area within which the Mine Access Road Clearing Permit Area is located.</p> <p>The areas proposed to be cleared are relatively small and located adjacent to existing cleared areas, and are not considered to represent a high level of biological diversity" based on results of the surveys completed. This proposal is therefore not considered to be at variance to this principle.</p>	<p>The Amendment is unlikely to be at variance with this Principle.</p>
<p>Principle (b) – Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a significant habitat for fauna indigenous to Western Australia</p>	<p>All the FCTs to be cleared are relatively common and widespread in the Iluka NSR, with the four FCTs being mapped over more than 14,000 ha (Table 1). Clearing as a result of this proposal will represent a relatively small impact to each FCT (<0.55 % of each FCT to be impacted; Table 1). There is also extensive neighbouring native vegetation where migratory and itinerant fauna can relocate to.</p> <p>Of the significant fauna potentially identified within the Western Wildlife Study Area, only the Carnaby's Cockatoo was identified within the Study Area. Of the 7.1 ha of proposed clearing, only 0.98 ha is considered high value foraging habitat that will be disturbed, which is insignificant considering the quantity of high value foraging habitat within 12 km of the Mine Access Road Clearing Permit Area.</p> <p>Consequently, clearing of vegetation under this proposal is not expected to have a regional impact on any of the conservation significant fauna.</p>	<p>The Amendment is unlikely to be at variance with this Principle.</p>

Principle	Assessment	Outcome
<p>Principle (c) – Native vegetation should not be cleared if it includes or is necessary for the continued existence of rare flora.</p>	<p>A flora and vegetation survey of the Mine Access Road Clearing Permit Area in 2022 recorded 10 priority flora taxa, however no extant Threatened taxa individuals were recorded. All priority flora taxa within the Mine Access Road Clearing Permit Area are known to occur at other locations and are well represented across Eneabba, outside the area of proposed clearing (Umwelt 2023).</p> <p>The potential impacts to threatened flora taxa in the Mine Access Road Clearing Permit Area are therefore not considered to be significant. Areas required for construction activities only, will avoid the locations of the priority flora taxa, where possible.</p>	<p>The Proposal is unlikely to be at variance with this Principle.</p>
<p>Principle (d) – Native vegetation should not be cleared if it comprises the whole or a part of or is necessary for the maintenance of a Threatened Ecological Community (TEC).</p>	<p>There are no occurrences of any TEC or PEC within the Mine Access Road Clearing Permit Area. The closest occurrence of a known TEC or PEC is approximately 4.5 km to the south-west (Ferricrete Floristic Community (Rocky Springs Type) TEC) (DBCA 2020), however this TEC is restricted to ferricrete soils, which are unusual in the Eneabba area, and are easily recognisable. Therefore, no TECs or PECs will be impacted by this proposal, and as such, the proposal will not be at variance with this principle.</p>	<p>The Amendment will not be at variance with this Principle.</p>
<p>Principle (e) – Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared</p>	<p>The Mine Access Road Clearing Permit Area is located within the IBRA Geraldton Sandplains Subregion (GESO2), where 85.18 % of the pre-European extent of vegetation remains (Department of Primary Industries and Regional Development [DPIRD] 2019); therefore, more than 30% of the pre-European extent of this subregion is extant.</p> <p>The Mine Access Road Clearing Permit Area represents several small, areas of native vegetation and mining rehabilitation vegetation. There are extensive tracts of uncleared land to the west and north of the mine site. The Mine Access Road Clearing Permit Area does not represent an area that is significant.</p> <p>The proposed clearing is not at variance to this principle.</p>	<p>The Proposal is unlikely to be at variance with this Principle.</p>
<p>Principle (f) – Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.</p>	<p>There are no watercourses or wetlands associated with the Mine Access Road Clearing Permit Area.</p> <p>The proposed clearing is not at variance to this principle.</p>	<p>The Proposal will not be at variance with this Principle.</p>
<p>Principle (g) – Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation</p>	<p>The clearing proposed is to enable the construction of site roads, which will stabilise the area cleared and restrict and potential land degradation.</p> <p>The proposed clearing is not at variance to this principle.</p>	<p>The Proposal is unlikely to be at variance with this Principle.</p>
<p>Principle (h) – Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area</p>	<p>The Mine Access Road Clearing Permit Area does not intersect any conservation areas. The South Eneabba Nature Reserve is located 3.5 km to the south, however is separated by mining infrastructure and intact native vegetation on Vacant Crown Land. Therefore there will be no impact to this reserve.</p> <p>The proposed clearing is not at variance to this principle.</p>	<p>The Proposal will not be at variance with this Principle.</p>

Principle	Assessment	Outcome
<p>Principle (i) – Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water</p>	<p>Given the minor nature of the proposed clearing, it will not have an impact on the quality of either surface water or groundwater.</p> <p>The proposed clearing is not at variance to this principle.</p>	<p>The Proposal is unlikely to be at variance with this Principle.</p>
<p>Principle (j) – Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding</p>	<p>The minor quantity of proposed clearing of vegetation for the Mine Access Road and Brand Highway intersection will not cause or exacerbate the incidence or intensity of flooding.</p> <p>The proposed clearing is therefore not at variance to this principle.</p>	<p>The Proposal is unlikely to be at variance with this Principle.</p>

7. CONCLUSION

This proposal outlines Iluka's application for a clearing permit (Purpose Permit) in accordance with the EP Act. Iluka proposes to clear up to 7.1 ha of vegetation for the purpose of road infrastructure construction works related to the Eneabba mine site. The works will allow the existing Eneabba Mine Access Road to link to an adjacent haul road, allowing safe vehicle transport through the site and safe access when turning from Brand Highway into the Mine Access Road. The areas to be cleared that will not form part of the road infrastructure, outlined within this proposal, will be immediately rehabilitated.

The vegetation to be cleared is comprised of remnant native vegetation and rehabilitated land. The clearing will result in the loss of less than 0.55% of the total FCTs within the Eneabba region, which are well represented across Eneabba. No extant individuals of Threatened flora taxa were recorded within the Mine Access Road Clearing Permit Area. 10 priority flora taxa were also recorded within the Mine Access Road Clearing Permit Area, which will be impacted. Areas required for construction activities only, will avoid the locations of the priority flora taxa, where possible. All priority flora taxa within the Mine Access Road Clearing Permit Area are known to occur at other locations and are well represented across Eneabba, outside the area of proposed clearing. These species have been recruited into the rehabilitated areas.

Impacts to fauna from the clearing are expected to be minimal as the Mine Access Road Clearing Permit Area is comprised of small areas and the habitats present are widespread locally. The removal of 0.98 ha of high value Carnaby's Cockatoo foraging habitat is unlikely to represent a significant impact to the species, given the extensive high value habitat within and surrounding the Eneabba mine site.

Overall, it is considered that the proposed clearing area of 7.1 ha will not be at variance with any of the 10 clearing principles and will not result in a net loss of habitat or biodiversity in the long-term as a result of this proposal.

8. REFERENCES

- DAWE (Department of Agriculture, Water and Environment) (2022). Referral guideline for 3 WA threatened black cockatoo species: Carnaby's Cockatoo (*Zanda latirostris*), Baudin's Cockatoo (*Zanda baudinii*) and the Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*).
- DBCA. (2020). Conservation Codes for Western Australian Flora and Fauna. Last updated 10 December 2020. Department of Biodiversity, Conservation and Attractions (DBCA). <https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities>
- Department of Environmental Regulation 2014. A guide to the assessment of applications to clear native vegetation (Under Part V Division 2 of the Environmental Protection Act 1986). December 2014. Government of Western Australia, Perth.
- Department of Jobs, Tourism, Science and Innovation 1975. Mineral Sands (Eneabba) Agreement Act 1975. Environmental Protection Authority 2016 Technical Guidance Flora and Vegetation Surveys for Environmental Impact Assessment, December 2016
- Desmond, A., & Chant, A. (2002). Geraldton Sandplain 3 (GS3—Lesueur Sandplain subregion) (A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002, p. 21). Department of Conservation and Land Management. <https://www.dpaw.wa.gov.au/about-us/science-and-research/biological-surveys/117-a-biodiversity-audit-of-wa>
- DPIRD. (2019b). Pre-European Vegetation (DPIRD-006). Spatial data. Last updated 23 July 2019. Department of Primary Industries and Regional Development (DPIRD). <https://catalogue.data.wa.gov.au/dataset/preeuropean-dpird-006>
- DPIRD. (2022a). Soil Landscape Land Quality—Zones (DPIRD-017). Spatial data. Last updated 18 July 2022
- EPA. (2016a). Environmental Factor Guideline—Flora and Vegetation (p. 6). December 2016. Environmental Protection Authority (EPA). <https://www.epa.wa.gov.au/policies-guidance/environmental-factor-guidelineflora-and-vegetation>
- EPA. (2016b). Technical Guidance—Flora and Vegetation Surveys for Environmental Impact Assessment (p. 42). December 2016. Environmental Protection Authority (EPA). <https://www.epa.wa.gov.au/policiesguidance/technical-guidance-flora-and-vegetation-surveys-environmental-impact-assessment>
- Jacobs 2020. Eneabba Operation - Annual Aquifer Review, 2020 Annual Aquifer Review, IA254300-1, 4 March 2021. Prepared for Iluka Narngulu Synthetic Rutile Plant Groundwater and Solute Transport Model.
- Soil Water Consultants (SWC) 2008. Acid Sulfate Soil Survey for the Eneabba Minesite. Report prepared for Iluka Resources. (Report Ref: PN0112-1-5-IR-090).
- Umwelt 2023. Eneabba Mine Access Road – Reconnaissance and Targeted Flora and Vegetation Assessment 2022.
- Western Wildlife 2023. Eneabba Mine Access Road – Basic Vertebrate Fauna Survey and Cockatoo Habitat Survey 2022.
- Woodman Environmental. (2009). Eneabba Environmental Review and Management Programme Flora and Vegetation Studies (Report (Iluka07-19-01, Rev 2, April 2009) prepared for Iluka Resources Limited; p. 217). Woodman Environmental Consulting Pty Limited (Woodman Environmental)

Woodman Environmental. (2011). Spring 2009 Re-assessment of FCT Quadrats Established at Eneabba between 2001-2007 (Report (Iluka09-43-01, Rev 0, February 2011) prepared for Iluka Resources Limited; p. 99). Woodman Environmental Consulting Pty Limited (Woodman Environmental).

Woodman Environmental. (2012). Summary Report of Flora and Vegetation Studies 2001 to 2011 (Report (Iluka12-16, Rev 0, April 2012) prepared for Iluka Resources Limited; p. 148). Woodman Environmental Consulting Pty Limited (Woodman Environmental)

Woodman Environmental. (2016). Significant Flora Survey: South Mine Rehabilitation Clearing for Final Landform and Drainage (Report (Iluka15-36-02, Rev 0) prepared for Iluka Resources Ltd; p. 31). Woodman Environmental Consulting Pty Ltd (Woodman Environmental)

Appendix 1: NVCP Amendment Application Form and Fee



Application for new permit or referral to clear native vegetation

This is the form to submit a referral of proposed clearing or apply for a clearing permit under Part V of the *Environmental Protection Act 1986* (EP Act).

Before you submit this form, please check you have completed all the fields for the form type and fully prepared any required supporting documents (including maps etc.). We will return / decline any forms that are not correctly completed.

To find out more about the stages of assessment for clearing permit forms, see the [Procedure: Native vegetation clearing permits](#).

Part 1 – Form type

Select your form type . NOTE: Where appropriate in this form, and unless stated otherwise, the terms ‘application’ and ‘applicant’ also mean ‘referral’ and ‘referrer’ respectively.	<input type="checkbox"/> Referral of proposed clearing (s.51DA of the EP Act) <input type="checkbox"/> Application for an area permit (s.51E of the EP Act) <input checked="" type="checkbox"/> Application for a purpose permit (s.51E of the EP Act)
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Part 2 – Applicant details

2.1 Applicant name

For area permits: If granted, the name(s) of (all) landowner(s) will be listed as ‘permit holders’ on the permit.	<input type="checkbox"/> Applying as an individual – complete the following:	
	Title	<input type="checkbox"/> Mr <input type="checkbox"/> Mrs <input type="checkbox"/> Ms <input type="checkbox"/> Other:
Name(s)		
For purpose permits: If granted, the name(s) of (all) applicant(s) will go on the permit.	<input checked="" type="checkbox"/> Applying as a body corporate or other entity formed at law – complete the following:	
	Name	Iluka Rare Earths Pty Ltd
	Australian Company Number (ACN)	654 487 662
	<input type="checkbox"/> Applying as a government entity (e.g. government department, local government authority, or other statutory body)	
Name		

2.2 Applicant contact details

Provide the contact details for the above (primary contact).

Title	<input checked="" type="checkbox"/> Mr <input type="checkbox"/> Mrs <input type="checkbox"/> Ms <input type="checkbox"/> Other:		
First name	Ben		
Last name	Kraft		
Position	Principal Advisor – Approvals WA		
Company name	Iluka Rare Earths Pty Ltd		
Contact phone number (1)	08 9360 4652	Phone number (2)	0439 688 624
Email address	ben.kraft@iluka.com		

2.2 Applicant contact postal details

Provide the postal address for the above individual, body corporate or local government authority (primary contact).

Address line 1	Level 17, 240 St Georges Terrace		
Address line 2			
Suburb	Perth		
State	WA	Postcode	6000

2.3 Applicant contact – registered business address

If applying as a company, incorporated body, local government authority or public authority, please also supply the registered business office address.

Address line 1	Level 17, 240 St Georges Terrace		
Address line 2			
Suburb	Perth		
State	WA	Postcode	6000
Contact phone number (1)	08 9360 4700	Phone number (2)	

2.4 Electronic correspondence consent

Both the Department of Water and Environmental Regulation (DWER) and Department of Mines, Industry Regulation and Safety (DMIRS) prefer to send all correspondence via email. We request that you consent to receiving all correspondence relating to instruments and notices under Part V of the EP Act via email. Please indicate your consent in this section of the form.

I consent that all written correspondence between myself (the applicant) and DWER/DMIRS (as applicable) about the subject of this form will be exclusively via email, using the email address provided above.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------

2.5 Contact details for enquiries

If different from the applicant's contact details, enter the contact details of a person with whom DWER or DMIRS should liaise with (e.g. a consultant).

Same as applicant's contact details	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
-------------------------------------	---------------------------------------------------------------------

If 'No' – complete the following:

Contact name			
Position (if applicable)			
Company name (if applicable)			
Contact phone number (1)		Phone number (2)	
Business or postal address line 1			
Business or postal address line 2			
Suburb			
State		Postcode	
Email address			

Part 3 – Land details

- You must accurately describe the location of the land where your clearing is proposed.
- If you have a large number of properties, please provide the relevant details for each property in a separately attached supporting document.

3.1 Property details

I have a large number of properties and have given the relevant details in an attached supporting document.	<input type="checkbox"/> Yes – skip to Part 4 <input type="checkbox"/> No
-------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------

If 'No' – complete the following:

<u>Land description</u> Provide the following details, as applicable, for all properties: <ul style="list-style-type: none"> – volume and folio number – lot or location number(s) – crown lease or reserve number – pastoral lease number – mining tenement number 	M267SA, M70/821 and Crown Road Reserve (PIN: 1288439)		
Street address – Line 1	Brand Hwy		
Street address – Line 2			
Suburb	Eneabba		
State	WA	Postcode	6518
Local government area(s)	Shire of Carnamah		
Land zoning	Mining		

Part 4 – Relationship to landowner

Tell us which of the following options best describes you as the person completing and submitting this form. If you are filling out this form on behalf of the applicant, answer this question as though you are the applicant.

Proof of ownership may include:

- a certificate of title (that is less than 6 months old)
- a pastoral or mining lease
- public authority that has care, control or management of the land
- other form of lease, land tenure or specific arrangement.

Relationship to landowner <i>(select one of the following options)</i>	Complete the following
<input type="checkbox"/> I am the landowner	<input type="checkbox"/> Attach proof of ownership
<input type="checkbox"/> I am lodging a form on behalf of the landowner (e.g. a consultant)	<input type="checkbox"/> Attach proof of ownership
<input type="checkbox"/> I am acting on the landowner's behalf and will be jointly responsible for the clearing permit (i.e. joint form)	<input type="checkbox"/> Attach proof of ownership <input type="checkbox"/> Complete and attach an 'Acting on behalf and jointly responsible' letter
<input type="checkbox"/> I am likely to become the landowner	<input type="checkbox"/> Attach the Certificate of Title <input type="checkbox"/> Attach evidence of the pending transfer of ownership and/or contract of sale ('offer and acceptance')
<input type="checkbox"/> I will undertake the clearing activities with the landowner's authority and will be the permit holder	<input type="checkbox"/> Attach proof of ownership <input type="checkbox"/> Complete and attach an 'Authority to access and clear native vegetation' letter (if the applicant is not the landowner)
<input checked="" type="checkbox"/> A person with multiple land parcels	<input checked="" type="checkbox"/> Attach proof of ownership <input checked="" type="checkbox"/> Complete and attach 'Authority to access and clear native vegetation' letter (if the applicant is not the landowner)

Part 5 – Proposed clearing

5.1 Maps and/or spatial data

<p>Select which map type(s) you will attach with your form.</p> <p>Note: We will decline / return forms (as applicable) if you do not provide sufficient information for this question.</p>	<p><input checked="" type="checkbox"/> An ESRI shapefile with the following properties (<i>preferred</i>)</p> <ul style="list-style-type: none"> • Geometry type: polygon shape • Coordinate system: Geocentric Datum of Australia (GDA) 2020 (geographic latitude / longitude) • Datum: GDA 2020 <p><input checked="" type="checkbox"/> An aerial photograph or map with a north arrow, clearly marking the proposed clearing area</p> <p>Note:</p> <ul style="list-style-type: none"> • An ESRI shapefile must use one of the following filename extensions: .shp, .shx, .dbf, and/or .prj • You must provide an ESRI shapefile if the form requires an assessment under an <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth) (EPBC Act) accredited process. See Part 8 of this form for more information.
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

5.2 Size

- If you propose to clear a patch(s) of vegetation, enter a hectare value for the total size of the area (mark number of trees as zero).
- If you propose to remove only individual trees from the area(s) (i.e. the shrubs, grasses, groundcover plants will remain intact), provide the number of trees (and mark total area as estimated hectares).
Note: If any shrubs, grasses, and/or groundcover plants MAY be damaged in the clearing process, add this to the total area.
- If you propose to clear an area of vegetation within a larger footprint, enter the hectare value for the total size of the area to be cleared (mark number of trees as zero) and the size of the footprint. For example, 5 hectares of clearing within a 10 hectare footprint. This option is only available for **purpose permit** applications.
- Enter values for BOTH number of trees and the size of the area if you are clearing individual trees in one area AND a patch of vegetation in a different area.
- Please note the following area conversions/calculations:

1 hectare = 10,000 m ²	Area of circle = 3.14 x radius ²
1 acre = 0.4 hectares / 4,000 m ²	Area of a rectangle = length x width
1 tree = 0.01 hectares / 100 m ²	Area of a triangle = ½ length x perpendicular height

Total area of clearing proposed (hectares)	7.1
Footprint of clearing (hectares) (purpose permit only)	7.1
Number of individual trees to be removed	0

Note: Calculate the area of a tree based on the area encompassed by the tree's drip line; that being the outermost circumference of the tree's canopy.

5.3 Purpose

Provide the reason for proposed clearing (e.g. road construction, grazing and pasture, hazard reduction, horticulture, timber harvesting etc.)	The purpose of the clearing is to allow safe vehicle transport from Brand Hwy, along the existing Eneabba Mine Access Road to an adjacent haul road.
Specify what the final land use will be after clearing	Mining and Mineral Processing

5.4 Method

Proposed method of clearing (i.e. burning, cutting, draining, flooding, grazing, mechanical clearing/bulldozing or other – specify)	Mechanical clearing
-------------------------------------------------------------------------------------------------------------------------------------	---------------------

5.5 Timeframe

Period within which you propose to do the clearing (e.g. 1/7/2022 to 30/8/2024)	Start date: 1/10/2023 End date: 1/6/2025
---------------------------------------------------------------------------------	---------------------------------------------

Note: The clearing referral process is not suitable for any clearing that is expected to take longer than two years.

5.6 Avoidance and mitigation

Explain how you have, or will, put avoidance and mitigation measures in place to eliminate, reduce, or otherwise mitigate the need for and scale of the proposed clearing of native vegetation.

Attach supporting documents to substantiate your explanation.

Your explanation should demonstrate you have planned the project so that the least clearing possible is to be undertaken. The following questions may help you frame your explanation:

- Why did you select this location and amount of clearing?
- What alternatives to clearing – e.g. engineering solutions – did you consider?
- What changes, if any, did you make to the location or amount of clearing to reduce the impacts of the clearing?

Note: If you do not demonstrate adequate efforts to avoid and mitigate clearing, we will ask you to do so during the validation of this form.

Provide the avoidance and mitigation details	The clearing area has been designed to minimise the clearing required to construct the roads. The shortest distance between two existing roads was selected and a minimum allowance around the roads was included for construction. Locations of priority flora will be avoided during the clearing works, where possible.
----------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Part 6 – Offset

Do you want to submit a clearing offset proposal with your form? For more information on environmental offsets, refer to DWER's website and Fact Sheet 11: Environmental offsets for native vegetation clearing permits .	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
If 'Yes' – please complete and attach Appendix A of the Clearing of native vegetation offsets procedure guideline as a supporting document for your form.	<input type="checkbox"/> Appendix A attached

Part 7 – Surveys for assessments (IBSA and IMSA)

Do you want to submit marine or biodiversity surveys in support of your form?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No – skip to Part 8
-------------------------------------------------------------------------------	--------------------------------------------------------------------------------------

7.1 Biodiversity surveys

If you want to submit any biodiversity surveys to support this form, you must follow the Environmental Protection Authority's (EPA) [Instructions for the preparation of data packages for the Index of Biodiversity Surveys for Assessments](#) (IBSA). If you do not meet the IBSA requirements, DWER/DMIRS (as applicable) may decline/return your form. For further information on IBSA, refer to [DWER's website](#).

Please provide the IBSA number(s) – or submission number(s) if the IBSA number has not yet been issued – in the space provided. Note that a submission number is not confirmation that a biodiversity survey has been accepted and is not the same as an IBSA number. IBSA numbers are only issued once a survey has been accepted. Once an IBSA number is issued, please notify DWER / DMIRS (as applicable). Please note DWER / DMIRS will suspend the assessment timeframes for your form until you provide the IBSA number(s).

Have you submitted all the biodiversity surveys that support this form to the IBSA portal, via ibsasubmissions.dwer.wa.gov.au ?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> Not applicable
Provide an IBSA number (preferred) or a submission number(s)	IBSA-2023-0283

7.2 Marine surveys

If you want to submit any marine surveys to support this form, you must follow the EPA's [Instructions for the preparation of data packages for the Index of Marine Surveys for Assessments](#) (IMSA). If you do not meet the IMSA requirements, DWER may decline / return your form. For more information on IMSA, refer to [DWER's website](#).

Have you prepared all the marine surveys that support this form in accordance with the EPA's <i>Instructions for the preparation of data packages for the Index of Marine Surveys for Assessments</i> ?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------

Part 8 – Assessment Bilateral Agreement

The native vegetation clearing processes under Part V of the EP Act have been accredited by the Commonwealth of Australia under the EPBC Act and so can be assessed under an assessment bilateral agreement.

To be assessed this way, the proposed clearing action must have been referred to the Commonwealth under the EPBC Act and deemed a **‘controlled action’** before you submit this form.

For further information, see [DWER’s website guidance on the assessment bilateral agreement](#).

Is your proposed clearing a controlled action?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No – skip to Part 9
------------------------------------------------	--------------------------------------------------------------------------------------

If ‘Yes’ – complete the following:

Please make sure you have entered all the mandatory details in the Annex C7 form	<input type="checkbox"/> <i>Annex C7 form</i> attached
List the controlling provisions identified in the notification of the controlled action decision	

Part 9 – Other approvals

Which department are you submitting this form to? If the clearing is for mineral and petroleum activities authorised under the <i>Mining Act 1978</i> , the various Petroleum Acts, and/or a State Agreement Act, select ‘Department of Mines, Industry Regulation and Safety’. For all other clearing activities, select ‘Department of Water and Environmental Regulation’.	<input checked="" type="checkbox"/> Department of Mines, Industry Regulation and Safety <input type="checkbox"/> Department of Water and Environmental Regulation
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------

9.1 Environmental impact assessment (Part IV of the EP Act)

Clearing may be referred to the EPA if it is considered to be part of a ‘significant proposal’, as defined by s.37B(1) of the EP Act, or will likely to be part of a larger development. An example is when the clearing is for a road to a future mine.

Section 37B(1) of the EP Act defines a ‘significant proposal’ as “a proposal likely, if implemented, to have a significant effect on the environment”. If a decision-making authority (e.g. DWER or DMIRS) considers the proposal in this form is likely to constitute a ‘significant proposal’, under s.38(5) of the EP Act they must refer the proposal to the EPA or for assessment under Part IV, if such a referral has not already been made.

Has the proposed clearing or any related matter been referred to the EPA?	<input type="checkbox"/> Yes <div style="border: 1px solid black; padding: 2px; margin: 5px 0;">Enter details:</div> <input checked="" type="checkbox"/> No – complete question below.
If 'No' – do you intend to refer the proposal to the EPA?	<input type="checkbox"/> Yes – intend to refer (proposal is a 'significant proposal') <input type="checkbox"/> Yes – intend to refer (proposal will require a s.45C amendment to the current Ministerial Statement) <input type="checkbox"/> No – a current valid Ministerial Statement applies <div style="border: 1px solid black; padding: 2px; margin: 5px 0;">Enter Ministerial Statement number:</div> <input checked="" type="checkbox"/> No – not a significant proposal

9.2 Other approvals – pre-application scoping (DWER forms only)

Have you had any pre-application/ pre-referral/ scoping meetings with DWER about any planned applications?	<input type="checkbox"/> Yes <div style="border: 1px solid black; padding: 2px; margin: 5px 0;">Enter details:</div> <input type="checkbox"/> No
------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------

9.3 Other approvals – works approval, licence or registration (Part V Division 3 of the EP Act)

<p>Have you applied for or do you intend to apply for a Part V Division 3 works approval, licence or registration, or the amendment or renewal of any of the above, under the EP Act or Environmental Protection Regulations 1987 (EP Regulations)?</p> <p>It is an offence to perform any action that would cause a premises to become a prescribed premises of a type listed in Schedule 1 of the EP Regulations, unless that action is done in accordance with a works approval, licence, or registration.</p> <p>For further guidance, see DWER's Procedure: Prescribed premises works approvals and licences and Guideline: Industry Regulation Guide to Licensing.</p>	<input type="checkbox"/> Yes <div style="border: 1px solid black; padding: 2px; margin: 5px 0;">Application reference:</div> <input type="checkbox"/> No – a valid works approval or licence applies <div style="border: 1px solid black; padding: 2px; margin: 5px 0;">Works approval or licence number:</div> <input type="checkbox"/> No – a valid registration applies <div style="border: 1px solid black; padding: 2px; margin: 5px 0;">Registration number:</div> <input checked="" type="checkbox"/> No – not required
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

9.4 Water licences and permits (*Rights in Water and Irrigation Act 1914*)

<p>Have you applied or do you intend to apply for:</p> <ul style="list-style-type: none"> • a licence or amendment to a licence to take water (surface water or groundwater) • a licence or amendment to a licence to construct wells (including bores and soaks), or • a permit or amendment to a permit to interfere with the bed and banks of a watercourse? <p>For further guidance on water licences and permits under the <i>Rights in Water and Irrigation Act 1914</i>, see DWER's Procedure: Water licences and permits.</p>	<p><input type="checkbox"/> Yes</p> <p><input checked="" type="checkbox"/> No – a current valid licence or permit applies</p> <table border="1" style="width: 100%;"> <tr> <td style="width: 30%;">Licence or permit number:</td> <td>GWL 104709 and GWL 104700</td> </tr> </table> <p><input type="checkbox"/> No – an exemption applies</p> <table border="1" style="width: 100%;"> <tr> <td style="width: 20%;">Enter details:</td> <td></td> </tr> </table> <p><input type="checkbox"/> Not applicable</p>	Licence or permit number:	GWL 104709 and GWL 104700	Enter details:	
Licence or permit number:	GWL 104709 and GWL 104700				
Enter details:					

Part 10 – Prescribed fee

10.1 Referral or application?

<p>There are no prescribed fees for referrals.</p> <p>Is this form a referral of proposed clearing or an application for a new permit?</p>	<p><input type="checkbox"/> Referral – skip to Part 11</p> <p><input checked="" type="checkbox"/> Application – continue and complete Part 10</p>
--------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------

10.2 Calculating the application fees

You must pay the prescribed fee at the time you submit the application form.

Please calculate the prescribed fee using the online [clearing permit fee calculator tool](#).

For further guidance, see DWER's online [clearing fees frequently asked questions](#).

Calculated fee:	\$ 3,500
-----------------	----------

10.3 Payment method

Fees are payable to:

- **DWER** for all clearing purposes other than mineral and petroleum activities
- OR
- **DMIRS** for mineral and petroleum clearing activities under the *Mining Act 1978*, various Petroleum Acts, or State Agreement Acts.

<p>Please indicate how you would like to pay your application fee. Select one option only.</p> <p>DWER will only accept fees paid via either:</p> <ul style="list-style-type: none"> • DWER's BPoint system (go to www.dwer.wa.gov.au/make-a-payment) • secure EFT payment, or • cheque/money order. <p>DMIRS will only accept fees paid via secure credit card payment at the DMIRS online payment and application lodgement portal.</p> <p>Do not send cash in the mail.</p>	<p><input type="checkbox"/> (DWER) Secure credit card payment through BPoint</p> <p>See www.dwer.wa.gov.au/make-a-payment.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; padding: 5px;">Receipt number</td> <td style="width: 70%;"></td> </tr> <tr> <td style="padding: 5px;">Date of payment</td> <td></td> </tr> </table> <p><input type="checkbox"/> (DWER) Secure EFT payment</p> <p>See www.dwer.wa.gov.au/make-a-payment for payment details.</p> <p><i>State the name of the intended permit holder clearly in the EFT payment subject.</i></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; padding: 5px;">Date of payment</td> <td style="width: 70%;"></td> </tr> </table> <p><input type="checkbox"/> (DWER) Cheque/money order</p> <p><i>Please make cheques or money orders payable to the Department of Water and Environmental Regulation.</i></p> <p><input checked="" type="checkbox"/> (DMIRS) Secure credit card payment online at the DMIRS online payment and application lodgement portal.</p> <p>Please note: All DMIRS applications will be paid online and submitted simultaneously. Please save this application form, along with any supporting documents, and have them ready for the submission portal. Use the link above to pay for and submit your application.</p> <p><i>A receipt will be issued upon submission only. Please ensure this receipt is saved for your records.</i></p>	Receipt number		Date of payment		Date of payment	
Receipt number							
Date of payment							
Date of payment							

For further information on fees, go to the [clearing permit fees frequently asked questions page](#) on DWER's website.

Part 11 – Form checklist

Please ensure you have included the following as part of your form. You may also attach additional information to support the assessment of your proposal; for example, reports on salinity, fauna or flora studies or other environmental reports for the site. You should submit these in electronic format on a suitable portable digital storage device.

Required

- Proof of land ownership (see attachment requirements in Part 4).
- An aerial photograph and/or map with a north arrow that clearly shows the areas of vegetation for proposed clearing or an ESRI shapefile (see Part 5).
- If this form is a permit application, payment of the prescribed fee (see Part 10).

As required

- Copy of written authority to act on behalf of landowner (see Part 4).
- Evidence of the pending transfer of land ownership, such as the offer and acceptance, or written notice from the current landowner.
- If you want the form to be assessed under the assessment bilateral agreement, include all details the [Annex C7 form](#) asks for, such as 'Proposed clearing action and impact assessment details' and 'Consultation' information.
- If the form includes a proposal for clearing offsets, include Appendix A of the [Clearing of native vegetation offsets procedure](#) guideline.
- IBSA number.

Additional supporting information

- Photos of the area.
- Biodiversity surveys that follow the EPA's [Instructions for the preparation of IBSA data packages](#) or [Instructions for the preparation of IMSA data packages](#) (as applicable).
- Any other additional supporting information.

Part 12 – Request for exemption from publication

The information you submit as part of this form will be made publicly available. If you wish to submit commercially or otherwise sensitive or confidential information, please identify the information in this section, and include a written statement of the reasons why you request each item of information be kept confidential.

DWER and DMIRS will take reasonable steps under Part 3 of the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (the Clearing Regulations) to protect confidential material and/or otherwise sensitive information (such as information of a kind listed under r.13 of the Clearing Regulations).

However, please note that DWER and DMIRS cannot commit to redacting all personal information from all supporting documents. We advise you to remove all personal information, including signatures, from any supporting documents before you submit them to us. Please note that all the information you submit may become the subject of an application for release under the *Freedom of Information Act 1992 (WA)* (FOI Act).

You must identify all information in this form or attached supporting documents that you propose to be exempt from public disclosure in the table below. You must then attach a separate redacted version of this form and its supporting documents. This is in addition to the unredacted version(s) you submit to DWER/DMIRS (as applicable) for assessment. You must specify the grounds for claiming an exemption in accordance with Part 3 of the Clearing Regulations.

Is any information in this form or in any attached supporting documents confidential or commercially sensitive?	<input type="checkbox"/> Yes	
	Specify what part of this form or relevant attachment	
	Specify grounds for claiming exemption from publication	
	<input checked="" type="checkbox"/> No	
Attach file(s) with the relevant confidential information redacted	<input type="checkbox"/> File name: <input type="checkbox"/> File name: <input type="checkbox"/> File name:	

Part 13 – Declaration

General

I / We declare and/or acknowledge that:

- the information I / we have provided in this form is true and correct
- I / we have legal authority to sign on behalf of the applicant (where authorisation provided)
- I / we have been authorised to make this form by the owner of the land (as applicable)
- I / we have not altered the requirements and instructions set out in this form
- I / we have provided a valid email address in Part 2 for receipt of correspondence via email from DWER or DMIRS (as applicable) in relation to this form
- successful delivery to my / our server constitutes receipt of correspondence and service of any statutory notices or instruments, and
- giving or causing to be given information that to my knowledge is false or misleading is an offence under s.112 of the EP Act and may incur a penalty of up to \$100,000.

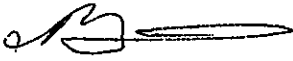
Publication

I / We declare and/or acknowledge that:

- this form (including all attachments) will be a public document and may be published, except for personal information including personal signatures, email and home addresses and any documents verifying my / our identity
- the marine surveys provided in accordance with Part 7 will be published and used for the purposes of the IMSA project, in accordance with your declaration made in the Metadata and Licensing Statement
- all necessary consents for the publication of information have been obtained from the relevant third parties
- the specification of the information identified in Part 12 constitutes a written request under r.11(2) of the Clearing Regulations not to publish that information due to its confidential or otherwise sensitive nature
- subsequent information provided to DWER or DMIRS (as applicable) in relation to this form will be a public document and will be published under r.8A of the Clearing Regulations, unless accompanied by a further written request under r.11(2) by the referrer or applicant that that information be treated as confidential
- in accordance with the requirements of r.11, r.12 and r.13 of the Clearing Regulations, DWER or DMIRS (as applicable) must refrain from publishing bank account details or confidential material (as defined under r.11(1) of the Clearing Regulations)
- DWER or DMIRS (as applicable) may refrain from publishing:
 - o certain otherwise sensitive information identified in Part 12, if satisfied it is desirable to not publish due to the confidential nature of the information
 - o personal information or certain otherwise sensitive information listed under r.13 of the Clearing Regulations.

<p>Are you signing as an individual or a company?</p> <p>Note: A person expressly authorised or authorised to execute on behalf of a body corporate must sign this form.</p>	<p><input type="checkbox"/> An individual</p> <p><input checked="" type="checkbox"/> A company</p> <p><input type="checkbox"/> Other entity formed at law</p>
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------

I / We hereby declare, the information provided is correct.

Signature			
Name	Angela Bishop		
Date declaration signed	15/6/2023		
Position (if applicable)	Manager Environment		
Company or organisation (if applicable)	Iluka Rare Earths Pty Ltd	ACN:	654 487 662

Note that all persons who will be listed on any clearing permit granted for this application as holders of the permit must sign the application form. If more than one signature is required, attach all signatures together in a separate attachment.

Part 14 – Submission

14.1 Method of submission

<p>Confirm how you will submit your form (<i>mark one option only</i>).</p> <p>To submit to DWER:</p> <p>Files larger than 50MB cannot be received via email. You can email DWER to make other arrangements for electronic transfer.</p> <p>To submit to DMIRS:</p> <p>The DMIRS online portal can accept 1024MB for each attachment. Files larger than 45MB cannot be received via email. You can email DMIRS to make other arrangements for electronic transfer.</p>	<input type="checkbox"/> A signed, electronic copy of the form, including all attachments, has been submitted via the applicable email address specified below (if submitting form to DWER).
	<input type="checkbox"/> A signed, electronic copy of the form has been submitted via the applicable email address specified below, and attachments have been submitted via File Transfer, or electronically by other means as arranged with the relevant department (if submitting form to DWER).
	<input type="checkbox"/> A full, signed hard copy has been sent to the applicable postal address specified below (if submitting form to DWER).
	<input checked="" type="checkbox"/> A signed electronic copy of the form, fee payment, and any supporting documentation has been saved and uploaded to the <u>DMIRS online payment and application lodgement portal</u> (if submitting form to DMIRS).

14.2 Submission details

- Please retain a copy of this form for your records.
- We will decline or return incomplete forms that do not meet the requirements for a valid referral or permit application (as applicable).
- If you do not have enough space on any part of this form, please continue on a separate sheet of paper and attach it to this form.

<p>Department of Water and Environmental Regulation</p> <p>Forms for all clearing purposes (other than mining and petroleum activities) may be submitted via:</p> <p>Email: info@dwer.wa.gov.au or</p> <p>Post: Department of Water and Environmental Regulation Locked Bag 10 Joondalup DC WA 6919</p> <p>If you have any questions about lodging your form, please contact DWER via:</p> <p>Email: info@dwer.wa.gov.au</p> <p>Phone: (08) 6364 7000</p> <p>For more information: www.dwer.wa.gov.au</p>	<p>Department of Mines, Industry Regulation and Safety</p> <p>Forms related to mining and petroleum clearing activities (under delegation) can be lodged online via the DMIRS online payment and application lodgement portal.</p> <p>If you have any questions about lodging your form, please contact DMIRS via:</p> <p>Email: nvab@dmirs.wa.gov.au</p> <p>Phone: (08) 9222 3535</p> <p>For more information: www.dmirs.wa.gov.au</p>
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Appendix 2: Reconnaissance and Targeted Flora and Vegetation Assessment – Umwelt 2023



ILUKA

**RECONNAISSANCE AND TARGETED
FLORA AND VEGETATION
ASSESSMENT**

Eneabba Mine Access Road

FINAL

May 2023



ILUKA

**RECONNAISSANCE AND TARGETED
FLORA AND VEGETATION
ASSESSMENT**

Eneabba Mine Access Road

FINAL

Prepared by
Umwelt (Australia) Pty Limited
on behalf of
Iluka Resources Limited

Project Director: Cathy Godden
Project Manager: Marlee Starcevich
Report No. 22446/R02
Date: May 2023



Perth
PO Box 255
South Perth WA 6951
T | 1300 793 267
E | info@umwelt.com.au
www.umwelt.com.au



QMS Certification Services

This report was prepared using
Umwelt's ISO 9001 certified
Quality Management System.

Acknowledgement of Country

Umwelt would like to acknowledge the traditional custodians of the country on which we work and pay respect to their cultural heritage, beliefs, and continuing relationship with the land. We pay our respect to the Elders – past, present, and future.

Disclaimer

This document has been prepared for the sole use of the authorised recipient and this document may not be used, copied or reproduced in whole or part for any purpose other than that for which it was supplied by Umwelt (Australia) Pty Ltd (Umwelt). No other party should rely on this document without the prior written consent of Umwelt.

Umwelt undertakes no duty, nor accepts any responsibility, to any third party who may rely upon or use this document. Umwelt assumes no liability to a third party for any inaccuracies in or omissions to that information. Where this document indicates that information has been provided by third parties, Umwelt has made no independent verification of this information except as expressly stated.

©Umwelt (Australia) Pty Ltd

Document Status

Rev No.	Reviewer		Approved for Issue	
	Name	Date	Name	Date
V1	Marlee Starcevich David Coultas	24/03/2023	Cathy Godden	24/03/2023
V2	Marlee Starcevich David Coultas Cathy Godden	4/05/2023	Cathy Godden	5/05/2023

Definitions and Terms

Term	Definition
ALA	Atlas of Living Australia
BAM Act	<i>Biosecurity and Agriculture Management Act 2007</i>
BC Act	<i>Biodiversity Conservation Act 2016</i>
BoM	Bureau of Meteorology
DAWE	Department of Agriculture, Water and the Environment (now DCCEEW)
DBCA	Department of Biodiversity, Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DEC	Department of Environment and Conservation (now DBCA)
Desktop Study Area	Area encompassing the Survey Area with a 10 km buffer. Used for the purposes of elements of the desktop assessment, including interrogation of databases and searches for relevant literature
DPIRD	Department of Primary Industries and Regional Development
EP Act	<i>Environmental Protection Act 1986</i>
EPA	Environmental Protection Authority
EPBC Act	<i>Environment Protection Biodiversity Conservation Act 1999</i>
ERER	Eneabba Rare Earth Refinery
ERMP	Environmental Review and Management Programme
ERMP Study Area	Study area assessed by Woodman Environmental (2011), approximately 47,495.4 ha in size
FCT	Floristic Vegetation Type
GDA94	Geocentric Datum of Australia 1994
GDE	Groundwater Dependent Ecosystem
GDV	Groundwater Dependent Vegetation
GIS	Geographic Information System
GPS	Global Positioning System
ha	Hectares
IBRA	Interim Biogeographic Regionalisation for Australia
IBSA	Index of Biodiversity Surveys for Assessments
Iluka	Iluka Resources Limited
IUCN	International Union for Conservation of Nature
km	Kilometres
listed	Pertaining to listed taxa or vegetation – those that are formally listed as conservation significant under the EPBC or BC Act, and/or by DBCA. Refer to Sections 3.8.1 and 3.8.2
m	Metres
mm	Millimetres
MNES	Matters of National Environmental Significance

Term	Definition
Northern Sandplains Study Area	Regional study area assessed by Woodman Environmental (2011) that provides a regional assessment of the conservation significance of flora and vegetation on the Eneabba sandplain area. Approximately 81,486.5 ha in size
NVIS	National Vegetation Information System
P	Denotes a taxon listed as Priority 1 to 4 by DBCA (2020)
PEC	Priority Ecological Community, listed by DBCA (DEC, 2013)
Significant flora	As defined in Sections 1.3 and 3.8.1
Significant vegetation	As defined in Sections 1.3 and 3.8.2
SPRAT	Species Profile and Threats database – a database produced by DCCEEW to enable identification of MNES listed under the EPBC Act within a given area
Survey Area	Area within which the reconnaissance and targeted flora and vegetation assessment was conducted, approximately 129.1 in size
T	Denotes a taxon listed as Threatened under the BC and/or EPBC Acts (DBCA, 2020; TSSC, 2021)
TEC	Threatened Ecological Community, listed under the EPBC Act (TSSC, 2017) or classified by DBCA and endorsed by the WA Minister for the Environment (DEC, 2013)
TPFL	Threatened and Priority Flora Database
TSSC	Threatened Species Scientific Committee
Umwelt	Umwelt (Australia) Pty Limited
VSA	Vegetation System Association
WA	Western Australia
WoNS	Weeds of National Significance
Woodman Environmental	Woodman Environmental Consulting Pty Limited (now Umwelt (Australia) Pty Limited)

Executive Summary

Iluka Resources Limited (Iluka) is an international mineral sands company with expertise in exploration, development, mining, processing, marketing and rehabilitation. Iluka and its predecessor companies have, since the 1970s, carried out mineral sands mining at the Eneabba Mineral Sands Mine, located approximately 140 kilometres (km) south of Geraldton, Western Australia (WA).

Iluka has recently received State (Part IV of the *Environmental Protection Act 1986* (EP Act)) and Commonwealth (*Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)) environmental approvals for the development of the Eneabba Rare Earth Refinery (ERER), on which construction has commenced. To enable the operation of the proposed ERER, the mine access road is required to be upgraded and realigned to allow safe and efficient truck access to the ERER. The Brand Highway intersection will also require upgrading for entry into the Mine Access Road.

Umwelt (Australia) Pty Limited (Umwelt) were commissioned by Iluka in 2022 to undertake a reconnaissance and targeted flora and vegetation assessment to inform a Native Vegetation Clearing Permit application for the ERER. The vegetation aspect of this survey builds on extensive vegetation mapping previously undertaken by Umwelt (as Woodman Environmental Consulting Pty Limited (Woodman Environmental)).

For the purposes of the reconnaissance and targeted flora and vegetation assessment, a Survey Area (129.1 hectares (ha)) was defined, consisting of linear sections along Brand Highway, Mineral Sands Road and the current mine access road, as well as a large turnaround area north of the washdown bay, and a small disjunct area to the south within rehabilitation.

The flora and vegetation field survey was undertaken over multiple visits in 2022 as listed below:

- 5th to 9th September 2022: targeted survey for the majority of significant flora taxa identified by the desktop assessment
- 12th to 15th September 2022: relevé establishment, and targeted survey for the majority of significant flora taxa identified by the desktop assessment
- 7th to 10th November 2022: targeted survey for *Paracaleana dixonii* (T) and other late-flowering species; e.g. *Calytrix chrysantha* (P4)

A total of 22 non-permanent flora and vegetation survey relevés were established and surveyed in the Survey Area in 2022. Notes on vegetation pattern boundaries and distribution were also taken while traversing the Survey Area, as well as locations of significant, opportunistic and introduced flora taxa encountered while traversing between relevés, and while conducting targeted searching.

A total of 23 significant flora taxa were recorded in the Survey Area, including the Threatened taxon *Paracaleana dixonii*, and 22 DBCA-listed Priority taxa. All significant flora taxa recorded by the 2022 survey were returned by the desktop assessment. The significant flora taxa recorded in the Survey Area were:

- *Banksia chamaephyton* (P4)
- *Calytrix chrysantha* (P4)

- *Calytrix eneabbensis* (P4)
- *Calytrix superba* (P4)
- *Conostephium magnum* (P4)
- *Desmocladius elongatus* (P4)
- *Eucalyptus macrocarpa* subsp. *elachantha* (P4)
- *Grevillea biformis* subsp. *cymbiformis* (P3)
- *Grevillea rudis* (P4)
- *Haemodorum loratum* (P3)
- *Hemiandra* sp. Eneabba (H. Demarz 3687) (P3)
- *Hypocalymma gardneri* (P3)
- *Paracaleana dixonii* (T)
- *Persoonia filiformis* (P3)
- *Schoenus griffinianus* (P4)
- *Stylidium carnosum* subsp. Narrow leaves (J.A. Wege 490) (P1)
- *Styphelia filamentosa* (P3)
- *Thelymitra pulcherrima* (P2)
- *Thryptomene spicata* (P2)
- *Verticordia amphigia* (P3)
- *Verticordia argentea* (P2)
- *Verticordia aurea* (P4)
- *Verticordia fragrans* (P3).

A total of six FCTs previously defined by Woodman Environmental (2011) were mapped across the Survey Area. While no major changes to the existing FCT mapping was required, it was revised slightly to capture changes in cleared and rehabilitated areas since the mapping dataset was prepared in 2010. All six FCTs mapped in the Survey Area belong to Super Group 1 as defined by Woodman Environmental (2011), being woodlands, thickets and heaths on well drained sandy soils and sandy clays, occasionally over lateritic gravel.

None of the FCTs mapped in the Survey Area are considered to represent any formally listed TECs or PECs. Furthermore, all FCTs were mapped over relatively large areas by Woodman Environmental (2011) in the Northern Sandplains Study Area (the regional study area assessed by Woodman Environmental; approximately 81,487 ha in size, extending from Yandanogo Nature Reserve to South Eneabba Nature

Reserve). It is also considered that none of the mapped FCTs in the Survey Area are significant for any other reasons as per EPA guidance (2016a, 2016b).

It is unlikely that any of the vegetation in the Survey Area is accessing or is reliant on groundwater. FCT 6b, which occurs on flats, swales and lower slopes, sometimes with a clay component, is subject to seasonal waterlogging due to its low point in the landscape. All other FCTs in the Survey Area occur on well-drained sandy soils on slopes, undulating plains and crests, and are characteristic of dryland vegetation.

A total of six introduced flora taxa were recorded opportunistically by the 2022 survey of the Study Area, as listed below. These taxa are not noted as being serious environmental weeds.

- *Arctotheca calendula*
- *Avena barbata*
- *Brassica tournefortii*
- *Briza maxima*
- *Ehrharta longifolia*
- *Monoculus monstrosus*.

The majority of the vegetation in the Survey Area was rated and mapped as being in 'Excellent' condition, with no obvious evidence of impact to vegetation composition as a result of human activities, and no (or very low levels) of introduced flora taxa. While vegetation adjacent to roads or tracks occasionally had minor weed levels, the area of affected vegetation was very narrow, and it would not be possible to map this as a different vegetation condition rating at 1:5,000 scale. A very small proportion of the Survey Area was mapped as being in 'Degraded' condition, corresponding to five small patches of vegetation near the washdown bay that had moderate weed levels and altered vegetation structure compared to the surrounding 'Excellent' vegetation.

Table of Contents

Definitions and Terms	i
Executive Summary	iii
1.0 Introduction	1
1.1 Project Overview	1
1.2 Survey Location	1
1.3 Aims and Objectives	3
1.4 Level of Assessment	4
2.0 Background	5
2.1 Climate	5
2.2 Geology, Landform and Soils	7
3.0 Methods	9
3.1 Desktop Assessment Methods	9
3.2 Personnel and Licensing	10
3.3 Aerial Photography Interpretation and Survey Design	11
3.4 Field Survey Methods	12
3.4.1 Survey Timing and Access	12
3.4.2 Sample Sites	12
3.4.3 Vegetation Notes	13
3.4.4 Targeted Survey for Significant Flora Taxa and Vegetation	14
3.4.5 Introduced Flora Taxa	15
3.5 Plant Collection and Identification	22
3.6 Floristic Community Type Mapping	22
3.7 Vegetation Condition Mapping	23
3.8 Definitions	23
3.8.1 Significant Flora Taxa	23
3.8.2 Significant Vegetation	24
4.0 Adequacy and Limitations of Survey	26
4.1 Adequacy of Survey	26
4.2 Limitations of Survey	26
5.0 Results	30
5.1 Desktop Assessment	30
5.1.1 Regional Vegetation	30

5.1.2	Local Flora and Vegetation Surveys	37
5.1.3	Local Vegetation	42
5.1.4	Significant Flora Taxa	45
5.1.5	Introduced Flora Taxa	53
5.1.6	Significant Vegetation	54
5.1.7	Groundwater and Surface Water Values	58
5.2	Field Survey Results	63
5.2.1	Vascular Flora Census	63
5.2.2	Significant Flora Taxa	63
5.2.3	Distribution Extensions	69
5.2.4	Likelihood of Occurrence of Further Significant Flora Taxa	69
5.2.5	Introduced Flora Taxa	70
5.2.6	Vegetation of the Survey Area	71
5.2.7	Significant Vegetation	81
5.2.8	Groundwater and Surface Water Dependent Vegetation	85
5.2.9	Vegetation Condition	85
6.0	Discussion and Conclusions	88
7.0	References	90

Figures

Figure 1.1	Survey Location	2
Figure 2.1	Soil Landscape Units of the Survey Area	8
Figure 3.1	Track Logs and Sample Sites	16
Figure 5.1	Vegetation System Associations of the Survey Area	31
Figure 5.2	ERMP and Northern Sandplains Study Areas	34
Figure 5.3	Flora and Vegetation Surveys Previously Conducted Within and in the Vicinity of the Survey Area	41
Figure 5.4	Existing Vegetation Mapping of the Survey Area and Surrounds	43
Figure 5.5	Existing Significant Flora Records of the Desktop Study Area	48
Figure 5.6	Existing Significant Vegetation Records of the Desktop Study Area	57
Figure 5.7	Groundwater Values of the Desktop Study Area	61
Figure 5.8	Surface Water Values of the Desktop Study Area	62
Figure 5.9	Significant Flora Taxa Recorded in the Survey Area	67
Figure 5.10	Vegetation of the Survey Area	79
Figure 5.11	Vegetation Condition of the Survey Area	87

Photos

Photo 5.1	FCT 1a (Relevé MAR03)	73
Photo 5.2	FCT 1b (Relevé MAR04)	74
Photo 5.3	FCT 2a (Relevé MAR13)	75
Photo 5.4	FCT 2b (Relevé MAR19)	76
Photo 5.5	FCT 3 (Relevé MAR21)	77
Photo 5.6	FCT 6b (Relevé MAR07)	78

Graphs

Graph 2.1	Climate Statistics for Eneabba (EN), Green Grove (GG; Precipitation), Badgingarra Research Station (BRS; Maximum Temperature)	6
-----------	-------------------------------------------------------------------------------------------------------------------------------	---

Tables

Table 2.1	Soil Landscape Units of the Survey Area	7
Table 3.1	Searches Undertaken for the Desktop Assessment of the Survey Area	9
Table 3.2	Personnel and Licensing Information	11
Table 3.3	Field Survey Timing	12
Table 4.1	Limitations of the Flora and Vegetation Survey of the Survey Area	27
Table 5.1	Vegetation System Associations of the Survey Area	30
Table 5.2	FCTs Mapped by Woodman Environmental (2011) in the ERMP Study Area	35
Table 5.3	Summary of Flora and Vegetation Surveys Previously Conducted Within and in the Vicinity of the Survey Area	39
Table 5.4	Taxa Returned from the Desktop Assessment that are Not Considered to Occur in the Desktop Study Area and its Vicinity	46
Table 5.5	Introduced Flora Taxa Known from the Survey Area and its Vicinity	53
Table 5.6	Significant Vegetation Communities Known from the Desktop Study Area	56
Table 5.7	Summary of Significant Flora Taxa Recorded Within and Immediately Outside the Survey Area	65
Table 5.8	Introduced Flora Taxa Recorded in the Study Area	71
Table 5.9	Summary of FCTs in the Survey Area	73
Table 5.10	Potential Presence of Significant Vegetation Communities in the Survey Area	82
Table 5.11	Regional Extents of FCTs of the Survey Area	84
Table 5.12	Woodman Environmental Conservation Significance Rankings of Survey Area FCTs	84
Table 5.13	Vegetation Condition Ratings for FCTs Mapped in the Survey Area	86

Appendices

Appendix A	Vegetation Condition Scale for the South West and Interzone Botanical Provinces (EPA, 2016b)
Appendix B	Results of Search of the Department of Climate Change, Energy, the Environment and Water Species Profile and Threats Database (DAWE, 2022)
Appendix C	Significant Flora Taxa Known from the Survey Area and its Vicinity
Appendix D	Vascular Plant Taxa Recorded in the Survey Area
Appendix E	Raw Data Recorded within Relevés in the Survey Area in 2022
Appendix F	Significant Flora Taxa Recorded in the Survey Area
Appendix G	Detailed Information of Significant Flora Taxa Recorded in the Survey Area by the 2022 Survey
Appendix H	Photographs of Significant Flora Taxa Recorded in the Survey Area by the 2022 Survey
Appendix I	Location Details of Significant Flora Taxa Recorded by the 2022 Survey
Appendix J	Likelihood of Occurrence of Further Significant Flora Taxa in the Survey Area
Appendix K	Vegetation Mapping Observations Recorded in the Survey Area in 2022
Appendix L	Vegetation of the Survey Area
Appendix M	Matrix of Vascular Plant Taxa Recorded in Relevés by the 2022 Survey within Each FCT in the Survey Area

1.0 Introduction

1.1 Project Overview

Iluka Resources Limited (Iluka) is an international mineral sands company with expertise in exploration, development, mining, processing, marketing and rehabilitation. Iluka and its predecessor companies have, since the 1970s, carried out mineral sands mining at the Eneabba Mineral Sands Mine, located approximately 140 kilometres (km) south of Geraldton, Western Australia (WA). Mining and rehabilitation activities have occurred on the area of Mining Lease 267SA, granted under the *Mineral Sands (Eneabba) Agreement Act 1975* (WA).

Iluka has recently received State (Part IV of the *Environmental Protection Act 1986* (EP Act)) and Commonwealth (*Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)) environmental approvals for the development of the Eneabba Rare Earth Refinery (ERER), on which construction has commenced. To enable the operation of the proposed ERER, the mine access road is required to be upgraded and realigned to allow safe and efficient truck access to the ERER. The Brand Highway intersection will also require upgrading for entry into the Mine Access Road.

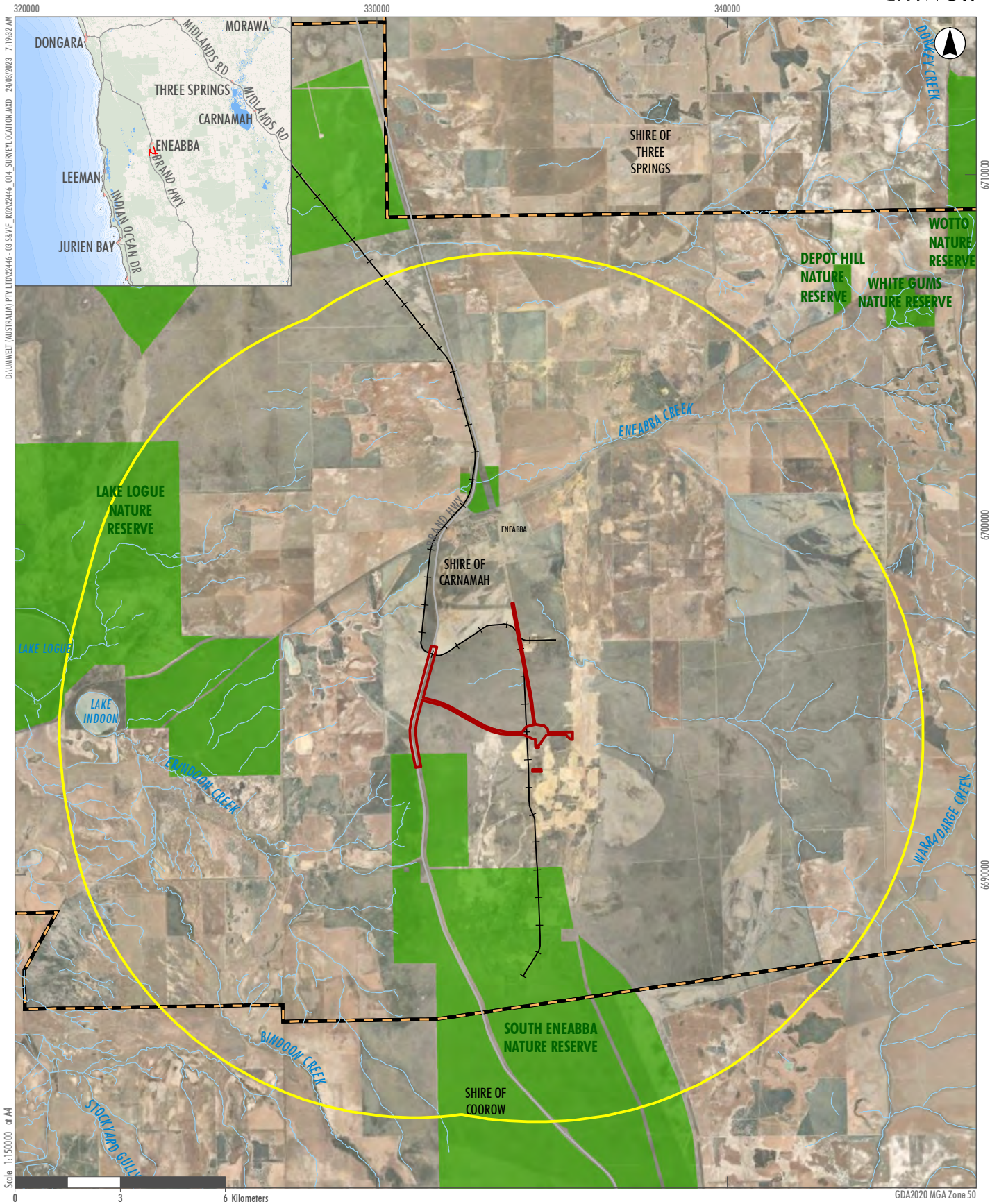
Umwelt (Australia) Pty Limited (Umwelt) were commissioned by Iluka in 2022 to undertake a reconnaissance and targeted flora and vegetation assessment to inform a Native Vegetation Clearing Permit application for the ERER. The vegetation aspect of this survey builds on extensive vegetation mapping previously undertaken by Umwelt (as Woodman Environmental Consulting Pty Limited (Woodman Environmental)) (**Section 5.1.1**).

This report documents all methods from the survey and presents the desktop assessment and results of field surveys.

1.2 Survey Location

For the purposes of the reconnaissance and targeted flora and vegetation assessment, a Survey Area has been defined, as presented on **Figure 1.1**. The Survey Area is approximately 129.1 hectares (ha) in size and consists of linear sections along Brand Highway, Mineral Sands Road and the current mine access road, as well as a large turnaround area north of the washdown bay, and a small disjunct area to the south within rehabilitation. The Survey Area is located on Unallocated Crown Land and Main Roads road reserve. South Eneabba Nature Reserve is adjacent to the southern part of the Survey Area along Brand Highway. Lake Logue Nature Reserve occurs west of the Survey Area, and an un-named nature reserve (LR3005/237) is north of the Survey Area near the Eneabba townsite (DBCA, 2022a) (**Figure 1.1**).

For the purposes of elements of the desktop assessment, including interrogation of databases and searches for relevant flora and vegetation assessments, a Desktop Study Area was defined. The Desktop Study Area encompasses the Survey Area with a 10 km buffer (**Figure 1.1**).



D:\UMWELT (AUSTRALIA) PVT LTD\22446 - 03 SRV - R02\22446_004_SURVEYLOCATION.MXD 24/03/2023 7:19:32 AM
 Scale 1:150000 at A4

- Legend**
- Desktop Study Area
 - Survey Area
 - Railways
 - State Roads
 - Drainage Lines
 - Waterbodies
 - LGA Boundary
 - Nature Reserve

FIGURE 1.1
Survey Location

1.3 Aims and Objectives

The primary aim of this assessment was to characterise the flora and vegetation values of the Survey Area to the current regulatory standard.

The overall objectives of the assessment were to:

- Search for and census the following taxa (hereafter referred to as significant flora taxa) identified as occurring or potentially occurring within the Survey Area:
 - Threatened flora taxa (T) listed under the EPBC Act (Commonwealth)
 - Threatened flora taxa (T) listed under the *Biodiversity Conservation Act 2016* (BC Act) (WA)
 - Priority flora taxa (P) classified by the WA Department of Biodiversity, Conservation and Attractions (DBCA)
 - Other significant flora taxa as defined by the WA Environmental Protection Authority (EPA) (2016a, 2016b) (**Section 3.8.1**)
- Opportunistically identify locations and determine the extent of introduced vascular flora taxa that are considered to be serious weeds (i.e. Weeds of National Significance (WoNS), or Declared Pests listed under the *Biosecurity and Agriculture Management Act 2007* (BAM Act))
- Undertake low intensity sampling of flora and vegetation to identify vegetation communities and verify/adjust existing vegetation boundaries
- Identify, map and describe vegetation that occurs within the Survey Area that is one of the following (hereafter referred to as significant vegetation), to provide context for impact assessment:
 - Listed Threatened Ecological Communities (TECs) under the EPBC Act
 - TECs endorsed by the WA Minister for the Environment and protected under the BC Act
 - Priority Ecological Communities (PECs) as classified by DBCA
 - Other significant vegetation as defined by EPA (2016a, 2016b) (**Section 3.8.2**)
- Identify potential groundwater dependent vegetation (GDV) and surface water dependent vegetation in the Survey Area
- Map the condition of the vegetation in accordance with EPA (2016b).

Note that this assessment does not attempt to record a full census of vascular flora taxa that occur in the Survey Area.

The survey and reporting works comply with the following documents:

- *Environmental Factor Guideline – Flora and Vegetation* (EPA, 2016a)
- *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016b).

1.4 Level of Assessment

The flora and vegetation survey of the Survey Area involved a Reconnaissance and Targeted Survey as defined in Sections 4.1 and 4.2 of the *Technical Guidance for Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016b). This is considered appropriate for the ERER Project, which is located in an area where flora and vegetation values are well defined (**Section 5.1**). Furthermore, due to the small size of potential impact (i.e. the Survey Area), any such impacts are not likely to be significant.

As discussed in **Section 1.1**, this survey builds on previous work conducted by Umwelt; the key results of relevant previous surveys are presented in **Section 5.1.2**.

2.0 Background

2.1 Climate

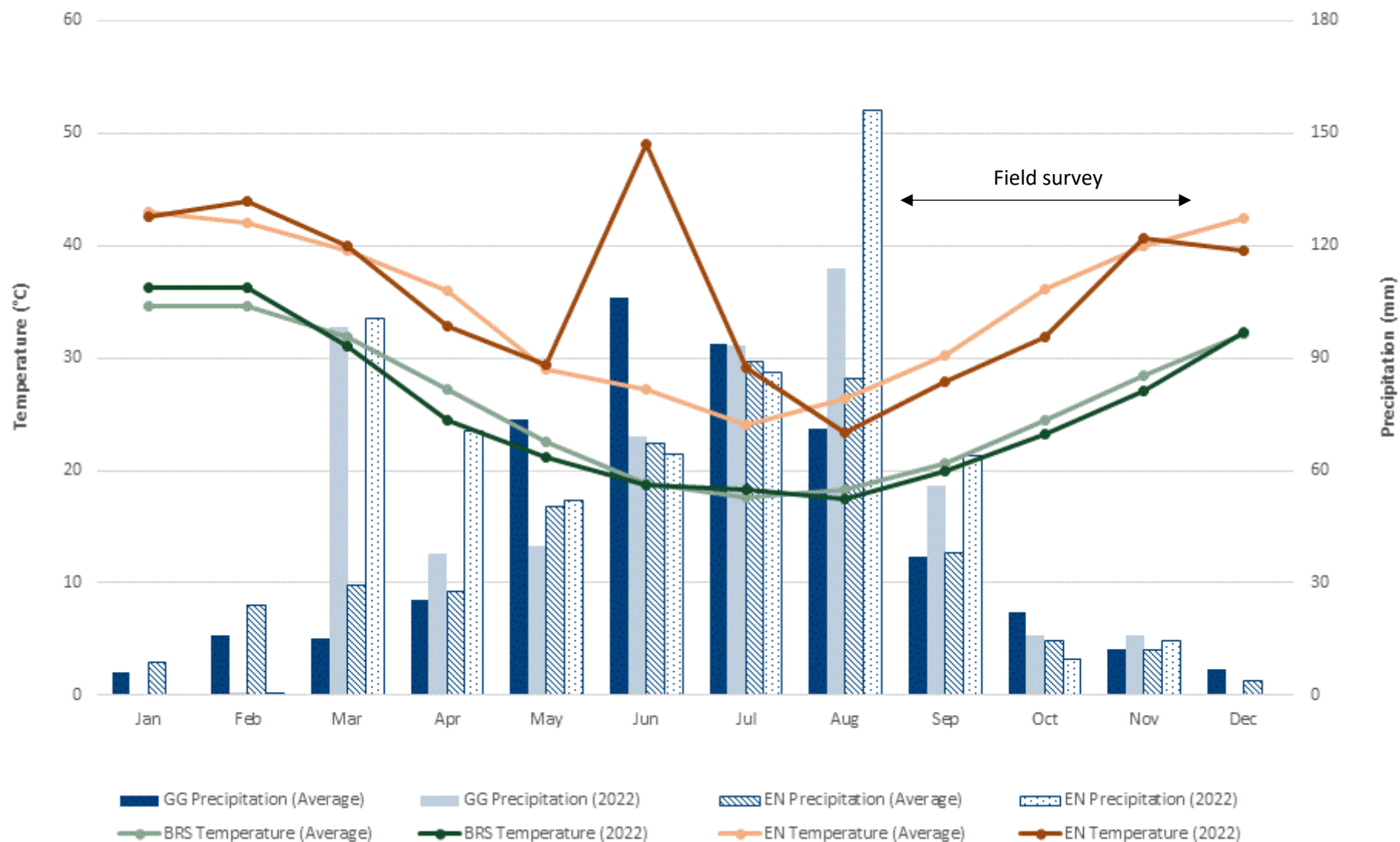
The Study Area is located within Irwin Botanical District (Northern Sandplains Region), within the Southwest Botanical Province as classified by Beard (2015). The climate of the Northern Sandplains Region is classified as dry, warm Mediterranean, with predominantly winter precipitation (300 – 500 millimetres (mm)) and seven to eight dry months per year (Beard, 2015).

Long-term climate data is not available for Eneabba. However, precipitation and maximum temperature data has been recorded at Eneabba from 2012 by the Department of Primary Industries and Regional Development (DPIRD, 2023a), as presented on **Graph 2.1**. This graph also displays average monthly maximum temperature and long-term average monthly maximum temperature at Bureau of Meteorology (BoM) Badgingarra Research Station (station number 9037, long-term data averaged from 1962-2023), as well as monthly precipitation for 2022 and long-term precipitation statistics for Green Grove (station number 8057, data from 1951-2023) (BoM, 2023a). Badgingarra Research Station and Green Grove are the most relevant BoM stations to the Survey Area that have long-term, reliable meteorological data. Note that the monthly climate data for Badgingarra Research Station and used to Green Grove has been taken from BoM monthly climate statistics data, which is calculated by BoM from daily temperature and precipitation records. Review of the daily and monthly data from these BoM stations reveals that there are some gaps in these datasets over the history of data collection. However, given these stations have been established for over 60 years, a small number of gaps is unlikely to significantly affect the long-term averages. It is worth noting that the BoM datasets for 2022 appear to be complete. However, the DPIRD maximum temperature data at Eneabba in June 2022 is erroneous (**Graph 2.1**).

Average monthly maximum temperatures at Eneabba and Badgingarra Research Station peak in January (42.9 °C and 34.6 °C, respectively), while the lowest average monthly maximums are experienced in July (24.0 °C and 17.6 °C, respectively). Average monthly precipitation at Eneabba and Green Grove peaks from May to August (an average of 290.8 mm and 344.3 mm received during this period, respectively). The greatest precipitation on average is received in July at Eneabba (88.9 mm) and June at Green Grove (106.1 mm), and the least in December at Eneabba (3.9 mm) and January at Green Grove (6.3 mm). Annually, Eneabba receives an average of 448.7 mm of precipitation, while Green Grove receives 486.4 mm (**Graph 2.1**).

Precipitation received in the three months preceding the start of the 2022 field survey (i.e. June to August 2022) was above average at Eneabba (306.4 mm cf. 240.6 mm), but similar to the long-term average at Green Grove (276.2 mm cf. 270.7 mm). At Eneabba, August 2022 was wetter than average (156 mm cf. 84.4 mm). August 2022 was also wetter than the long-term average at Green Grove (113.8 mm cf. 71.0 mm), but June 2022 was much drier (69.2 mm cf. 106.1 mm) (**Graph 2.1**).

The mean monthly maximum temperatures recorded during June to August 2022 were slightly higher than average at Eneabba (26.3 °C after removing the aberrant record for June, cf. 25.9 °C), but similar to the long-term average for this period at Badgingarra Research Station (18.1 °C cf. 18.2 °C) (**Graph 2.1**).



Graph 2.1 Climate Statistics for Eneabba (EN), Green Grove (GG; Precipitation), Badgingarra Research Station (BRS; Maximum Temperature)

2.2 Geology, Landform and Soils

The Survey Area is located in the Northern Sandplains region as defined by Beard (2015), which is broadly equivalent to the Geraldton Sandplains Interim Biogeographic Regionalisation for Australia (IBRA) region (DCCEEW, 2021). The Northern Sandplains region consists of mainly sedimentary basins exposing Permian to Cretaceous sediments and horsts of Proterozoic rocks. Sandplains are covered with leached sandy soils near the coast, and yellow sands with an earthy fabric further inland, both overlying laterite (Beard, 2015).

The Survey Area occurs at the junction of the Geraldton Coastal and the Arrowsmith soil landscape zones (DPIRD, 2022a). The Geraldton Coastal zone consists of dunes with alluvial plains and sand sheets, low hills of Pleistocene Tamala Limestone and recent calcareous and siliceous dunes. The Arrowsmith zone consists of dissected lateritic sandplain on Cretaceous and Jurassic sediments, with sandy and gravelly soils formed in colluvium and rock weathered in situ. The Arrowsmith zone is bounded in the east by the Dandaragan Scarp and in the south and west by the Gingin Scarp (Schoknecht et al., 2004).

Soil landscape mapping has been prepared across South-West WA as a compilation of the results of a variety of soil and soil-landscape surveys, considering general ecological information, vegetation physiognomy and composition, patterns of variation, conservation status, gradational association and land system representation (DPIRD, 2022b). Soil landscape mapping information for the Survey Area originates from two surveys conducted by the WA Department of Agriculture (now the Department of Primary Industries and Regional Development (DPIRD)), being the North Coastal Plain land resources survey and Three Springs Latham land resources survey (Schoknecht et al., 2004). The Survey Area occurs across three soil landscape subsystems and two disturbed mine phases as presented in **Table 2.1** and on **Figure 2.1**.

Table 2.1 Soil Landscape Units of the Survey Area

Unit	Description	Extent in Survey Area (ha)
221Cy_1: Correy 1 Subsystem	Alluvial plain; Pale deep sands dominate with yellow deep sands and shallow and deep sandy duplexes	5.2
221En_2: Eneabba 2 Subsystem	Sandplain, with occasional areas of low sandy rises; Sandy and gravelly duplex soils and gravelly deep sands on the plain, minor pale deep sands on the rises	79.5
221En_7: Eneabba 7 Subsystem	Gently undulating sandplain and low sandy rise; Pale deep sand with a yellow subsoil, yellow deep sands, minor wet soils	36.2
221EnX_MINE: Eneabba disturbed land, mine Phase	Mine. Disturbed land	5.1
224YeX_MINE: Yerramullah disturbed land, mine Phase	Mine. Disturbed land	3.0

Source: Soil Landscape Mapping - Best Available (DPIRD-027) (DPIRD, 2022b).

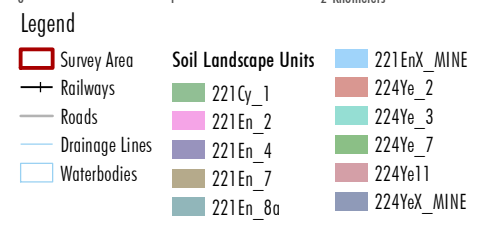
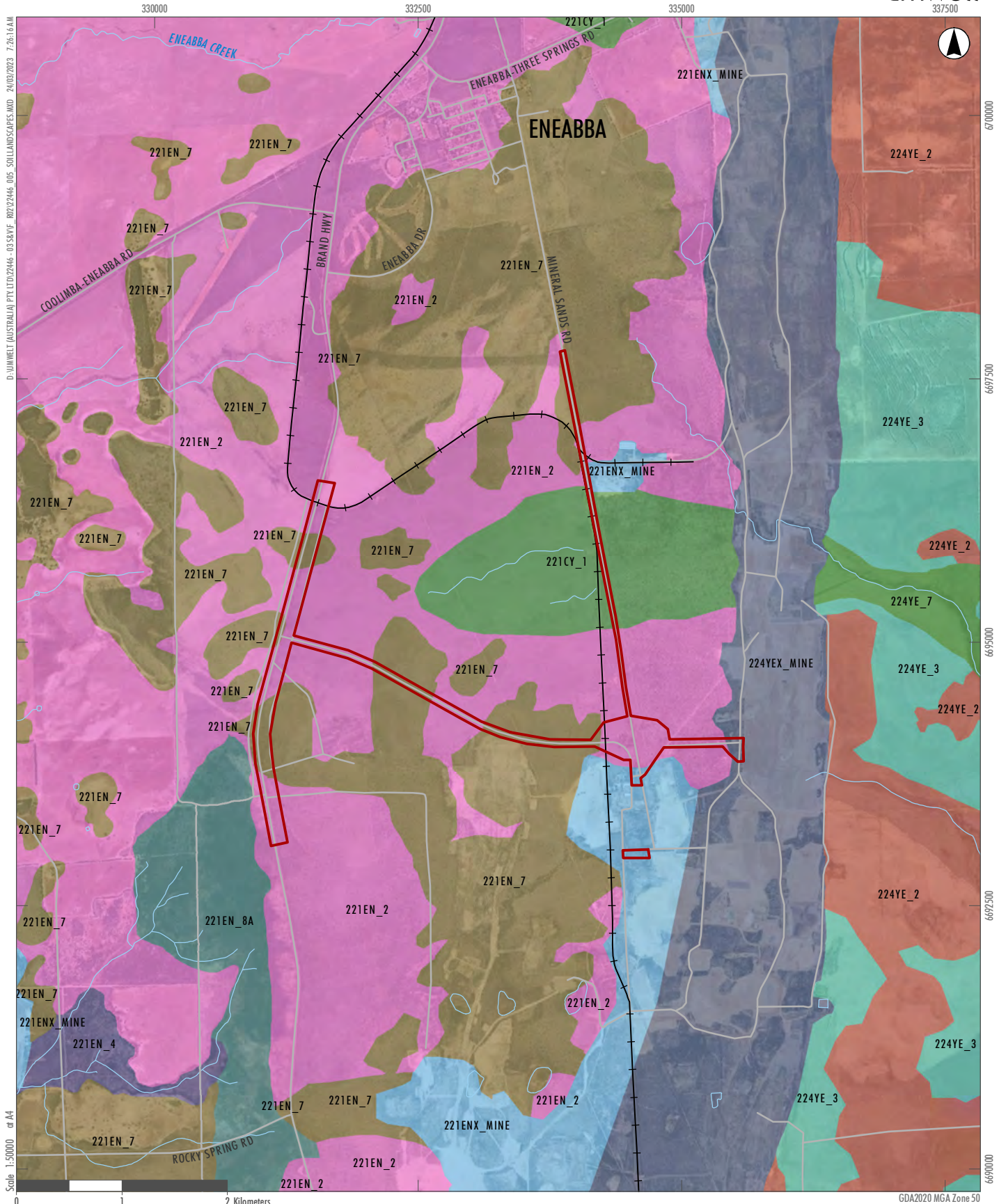


FIGURE 2.1
Soil Landscape Units of the Survey Area

Image Source: ESRI Basemap (2021) Data source: Iluka (2022), Landgate (2023), DPIRD (2022b)

3.0 Methods

3.1 Desktop Assessment Methods

Prior to commencement of the 2022 field survey, a review of all publicly available flora and vegetation data relevant to the Survey Area was undertaken, as listed in **Table 3.1**. This included obtaining and reviewing copies of previous biological survey reports carried out within the vicinity of the Survey Area (those undertaken in compliance with current or previous EPA Technical Guidance), including interrogation of the Index of Biodiversity Surveys for Assessments (IBSA) database. Where TECs or PECs were identified by the desktop assessment, appropriate DBCA or DCCEEW nomination/listing descriptions and recovery plans of the TEC or PEC were also reviewed prior to field survey, as well as the ‘Methods for survey and identification of Western Australian threatened ecological communities’ report from DBCA (2022d).

Table 3.1 Searches Undertaken for the Desktop Assessment of the Survey Area

Source	Search Attributes	Search Purpose
BoM Groundwater Dependent Ecosystems Atlas (Moore–Hill rivers) (BoM, 2023b)	Database interrogated using the Desktop Study Area boundary	Identify aquatic and terrestrial GDEs in the Desktop Study Area
Department of Agriculture, Water and the Environment (DAWE; now Department of Climate Change, Energy, the Environment and Water (DCCEEW)) Species Profile and Threats (SPRAT) Database (interrogated using the Protected Matters Search Tool) (DAWE, 2022)	Database interrogated using the Desktop Study Area boundary. Search undertaken 23 August 2022	Identify Matters of National Environmental Significance (MNES), including Threatened flora and TECs listed under the EPBC Act, that occur or have the potential to occur within the Desktop Study Area
DBCA Threatened Ecological Community (TEC) and Priority Ecological Community (PEC) Database (DBCA, 2022b)	Database interrogated using the Desktop Study Area boundary. Search undertaken 10 August 2022, reference 30-0822EC	Obtain records of DBCA-classified TECs and/or DBCA-classified PECs within or in proximity to the Survey Area
DBCA TEC and PEC records spatial data (DBCA-038) (DBCA, 2017b)	Review of mapped DBCA TECs and PECs within or in proximity to the Desktop Study Area	Identify whether there are any DBCA-classified TECs or PECs that could occur within the Desktop Study Area
DBCA TEC and PEC lists (DBCA, 2018b, 2022e)	Manual review of current DBCA TECs and PECs listed for the Midwest region	Identify whether there are any additional DBCA listed TECs or PECs that could occur within the Desktop Study Area
DBCA Significant Flora Databases (WA Herbarium specimen database and Threatened and Priority Flora (TPFL) database) (DBCA, 2022c)	Database interrogated using the Desktop Study Area boundary. Search undertaken 17 August 2022, reference 30-0822EC	Obtain records of listed significant flora within or in proximity to the Survey Area
Directory of Important Wetlands in Australia (DBCA-045) (DBCA, 2018a)	Desktop Study Area	Identify whether there are any Nationally Important Wetlands that occur within the Desktop Study Area
Geomorphic Wetlands Cervantes Eneabba dataset (DBCA-015) (DBCA, 2017a)	Desktop Study Area	Identify whether there are any wetlands that occur within the Desktop Study Area and review of their location, boundary and geomorphic classification

Source	Search Attributes	Search Purpose
IBSA database (DWER, 2022)	Approximate Desktop Study Area boundary (exact boundary cannot be used)	Obtain copies of flora and vegetation reports and associated spatial data (where available), undertaken in compliance with current or previous EPA Technical Guidance, to identify records of significant flora and vegetation and introduced flora in the vicinity of the Survey Area
Medium Scale Topo Water (Line) (LGATE-018) (Landgate, 2022)	Desktop Study Area	Identify whether there are any watercourses that occur within or in close proximity to the Survey Area
Previous flora and vegetation surveys conducted for the Project or within or in the vicinity of the Survey Area (various sources)	Approximate Desktop Study Area boundary	Identify records of significant flora taxa and vegetation and introduced flora in the vicinity of the Survey Area
Tronox-Iluka Significant Flora Database (current at 16 June 2021) (Iluka, 2021)	Desktop Study Area	Identify records of significant flora taxa in the Desktop Study Area
2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (DBCA, 2019) (Report 3b) and Pre-European Vegetation spatial database (DPIRD, 2019b)	Survey Area	Identify extent of Vegetation System Associations within the Survey Area

3.2 Personnel and Licensing

Table 3.2 lists the personnel involved in fieldwork, plant identifications, and report preparation for the flora and vegetation assessment. The Project Manager has previous experience (> 6 years) and field team leaders have previous experience (> 2 years) in conducting flora and vegetation surveys in the region. Other personnel have previous experience in assisting with flora and vegetation surveys in the region.

All plant material was collected under the relevant *Flora Taking (Biological Assessment) Licence* (under Regulation 62 of the Biodiversity Conservation Regulations 2018) and *Authorisation to Take or Disturb Threatened Species* (pursuant to Section 40 of the BC Act) as outlined in **Table 3.2**. Personnel reviewing plant identifications have had extensive previous experience (> 15 years) in plant identifications of flora of the Geraldton Sandplains and checked plant identifications undertaken by less experienced personnel for accuracy.

Table 3.2 Personnel and Licensing Information

Personnel and Qualifications	Experience	Flora Collecting Licence/Permit	Role
David Coultas BSc (Environmental Biology) (Hons)	> 15 years	FB62000051-2 TFL 131-2122	<ul style="list-style-type: none"> Plant identifications
Jaroslav Hruban Mgr. (MSc equivalent) (Botany) BSc (Botany) (Hons)	2 years	FB62000251-3 TFL 044-2122	<ul style="list-style-type: none"> Desktop assessment Targeted survey (field team leader) Report preparation
Kim Kershaw BSc	14 years	FB62000054-2 TFL 133-2122	<ul style="list-style-type: none"> Targeted survey (field team leader)
Kyler Rowson BSc (Marine Biology & Biological Sciences)	1 year	FB62000399	<ul style="list-style-type: none"> Targeted survey Plant identifications
Leah Firth BSc (Conservation Biology)	3 years	FB62000055-2 TFL 145-1920	<ul style="list-style-type: none"> Targeted survey (field team leader)
Marlee Starceвич BSc (Environmental Science) (Hons)	6 years	FB62000056-2 TFL 155-2122	<ul style="list-style-type: none"> Project management Desktop assessment Reconnaissance survey (field team leader) Targeted survey (field team leader) Plant identifications Data analysis Report preparation
Monika Hrubanova Mgr. (MSc equivalent) (Botany) BSc (Botany) (Hons)	1 year	FB62000375	<ul style="list-style-type: none"> Reconnaissance survey Targeted survey

3.3 Aerial Photography Interpretation and Survey Design

The design of the 2022 survey complies with the requirements of EPA Technical Guidance (EPA, 2016b) and is consistent with the methods used for other similar flora and vegetation assessments conducted within the vicinity of the Survey Area (**Section 5.1.2**) and the wider Geraldton Sandplains region.

As mentioned in **Section 1.1**, the area around (and including) the Survey Area has received considerable historical survey effort by Woodman Environmental (2011), and a number of quadrats from that assessment occur within or in close proximity to the Survey Area. The results of this survey (with a focus on the flora and vegetation of the Survey Area and its vicinity) are summarised in **Section 5.1.1**.

Initial interpretation of ortho-rectified aerial photography at a scale of 1:10,000 was conducted to determine preliminary vegetation patterns present within the Survey Area (including any areas of restricted or unusual landforms and types). This review considered the size of vegetated areas, visible vegetation patterns, and previous vegetation mapping and quadrat density/locations in the Survey Area. Relevé locations were proposed based on this review to ensure that a minimum of three relevés sampled each major discernible vegetation pattern and previously mapped floristic vegetation types (FCTs) where possible; for smaller patterns/FCTs, fewer relevés were allocated based on the size of the pattern/FCT polygon, while for widespread vegetation patterns/FCTs, relevés were allocated across their geographic range.

Data from the existing quadrats located within the Survey Area, as well as from additional relevés established in 2022, were utilised for the vegetation ground truthing (**Section 3.6**).

3.4 Field Survey Methods

3.4.1 Survey Timing and Access

The flora and vegetation field survey was undertaken over several site visits in 2022 as outlined in **Table 3.3**.

Table 3.3 Field Survey Timing

Survey Type	Survey Details	Timing
Reconnaissance Survey	Relevé establishment	12 th to 15 th September 2022
Targeted Survey	Targeted survey for the majority of significant flora taxa identified by the desktop assessment	5 th to 9 th September 2022 12 th to 15 th September 2022
	Targeted survey for <i>Paracaleana dixonii</i> (T) and other late-flowering species (e.g. <i>Calytrix chrysantha</i> (P4))	7 th to 10 th November 2022

The timing of the field survey was selected to coincide with what is considered to be the most appropriate time to survey in the South West province; as per EPA Technical Guidance (EPA, 2016b), this is spring (September to November), as most of the taxa in this region flower at this time. This includes the majority of significant flora taxa that were identified by the desktop assessment as potentially occurring in the Survey Area (**Section 5.1.4**). As per **Table 3.3**, Targeted searching for significant flora taxa was undertaken at the appropriate time for individual taxa as required (e.g. survey for *Paracaleana dixonii* (T) was undertaken in November when this taxon's flowers are visible).

The Survey Area was accessed by vehicle using existing roads, and via foot transects. Appropriate landholder/manager permissions were obtained prior to undertaking the field survey, including from Main Roads WA for the survey of the Brand Highway road reserve.

3.4.2 Sample Sites

A total of 22 non-permanent flora and vegetation survey relevés were established and surveyed in the Survey Area in 2022. Relevés surveyed an area within a radius of approximately 10 m around a central point. Relevé locations were selected to ensure that at least three relevés sampled each vegetation pattern initially identified from aerial photography interpretation and/or previously mapped FCT, where possible (as per **Section 3.3**). Vegetation boundaries or transition zones were avoided. Additional relevés were established in areas that were not identified by the initial aerial photography interpretation but were observed in the field to differ from pre-identified areas, or areas of unusual habitat. The final relevé locations were adjusted from the initial proposed locations where:

- variations in floristic patterning were observed, including placing additional relevés in areas of unusual habitat
- the vegetation had been obviously recently disturbed
- the vegetation had been recently burnt (< 2 years) (where possible)

- access or safety issues were encountered.

Within each relevé, dominant vascular flora taxa (native and introduced) that were visually identifiable in each stratum level were recorded. Any taxa not previously observed elsewhere were also recorded at relevés. At least one reference specimen of most taxa recorded (excluding common, distinctive taxa) was collected for verification and identification purposes (see **Section 3.5**).

The following information was recorded at each relevé:

- personnel
- unique relevé code
- survey date
- GPS coordinates at centre point of relevé (recorded using handheld GPS units) (Geocentric Datum of Australia 1994 (GDA94), Zone 50)
- site photograph, taken at centre point of relevé
- topography (including landform type and slope class)
- soil colour and type (including the presence of any rock outcropping and surface stones)
- vegetation condition (as per EPA Technical Guidance (EPA, 2016b) for the South West and Interzone Botanical Provinces; scale presented in **Appendix A**) and a description of disturbances (where relevant)
- approximate time since fire
- foliage cover (%) (for each dominant taxon, native and introduced)
- height (m) (average for each dominant taxon, native and introduced, excluding climbers/aerial shrubs)
- foliage cover and height, as above, for any additional flora taxa not previously recorded elsewhere.

Note that due to the narrow shape of the Survey Area, four relevés were established outside, but immediately adjacent to, the Survey Area. This was required when vegetation adjacent to roads or tracks was disturbed, or when the Survey Area intersected only a small part of a larger FCT polygon or vegetation pattern. Establishing these relevés immediately outside the Survey Area ensured that the results of the sampling and subsequent FCT verification (**Section 3.6**) was not affected by the location of relevés within ecotones or disturbed vegetation.

3.4.3 Vegetation Notes

Notes on vegetation pattern boundaries and distribution were also taken while traversing the Survey Area. These notes included a GPS location at the point where the notes were taken (GDA94, Zone 50), and a brief description of the vegetation, including dominant and characteristic taxa and landform information. The notes were used to aid in mapping polygons of vegetation patterns that were not surveyed by relevés. Not all vegetation pattern/FCT polygons received relevés due to time constraints; however, many polygons could be confidently allocated to a final FCT using a combination of field mapping notes and aerial photograph interpretation. Additional flora taxa (significant, opportunistic and introduced taxa) were also

recorded opportunistically in the Survey Area during traverses between relevés and while conducting targeted searching, with GPS locations of such taxa recorded (GDA94, Zone 50).

3.4.4 Targeted Survey for Significant Flora Taxa and Vegetation

Systematic targeted survey for significant flora taxa and vegetation was undertaken as part of the 2022 field survey over the entirety of the Survey Area. All significant taxa and vegetation identified by the desktop assessment as potentially occurring within the Survey Area were considered to be identifiable during either the September or November survey periods (**Sections 5.1.4** and **5.1.6**), and therefore all such taxa and vegetation were targeted. Note that the entire Survey Area was traversed during the September field survey, but only areas of appropriate habitat for those taxa to be targeted in November were traversed during the November field survey.

Information relating to identifying characteristics, flowering period and habitat of significant taxa, and relating to dominant taxa, soil and landform characteristics for significant vegetation, was provided to all field team members prior to undertaking targeted survey. Targeted survey was undertaken in a grid pattern via traverses spaced approximately 10 metres (m) apart (in line with Survey Guidelines for Australia's Threatened orchids). Where plants of significant flora taxa were encountered, or where transects intersected habitat of less conspicuous flora, survey was undertaken between transects.

The following information was recorded along traverses (where significant flora taxa and/or significant vegetation was encountered):

- location (including GPS coordinates and datum, recorded using handheld GPS units), taxon and count of any significant flora encountered at location within a radius of approximately 5 m from GPS coordinates
- location (including GPS coordinates and datum, recorded using handheld GPS units), community name and extent of any significant vegetation encountered within a radius of approximately 5 m from GPS coordinates
- comments on habitat, including landform and soils, vegetation condition, description of disturbances and any apparent correlation between vegetation and landform features, as necessary.

If new locations of significant flora taxa were identified, a representative collection of material was made (**Section 3.5**). Targeted significant flora and vegetation searching was also undertaken opportunistically while traversing to relevé locations. Information recorded at such locations was the same as that recorded during targeted searching.

No counts of taxa were made where hitherto unknown significant flora taxa were identified from plant collections taken at relevé locations or opportunistically. Similarly, boundaries of hitherto unknown significant vegetation communities were not recorded during the field survey.

All traverses made during the 2022 field survey are mapped as track logs on **Figure 3.1**, along with vegetation mapping note and relevé locations.

3.4.5 Introduced Flora Taxa

Opportunistic locations of introduced flora taxa encountered while traversing between relevés, and while conducting targeted searching for significant flora taxa and vegetation, were recorded using the same method as for significant flora taxa, with particular emphasis given to WoNS and Declared Pests.



- Scale 1:10000 at A4
- Legend**
- Survey Area
 - Railways
 - Roads
 - Drainage Lines
 - Relevé
 - Track Logs (September)
 - Track Logs (November)

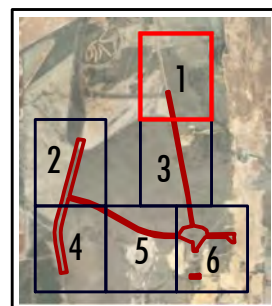


FIGURE 3.1
Track Logs and Sample Sites
SHEET 1



Legend

- Survey Area
- Railways
- Roads
- Relevé
- Track Logs (September)
- Track Logs (November)

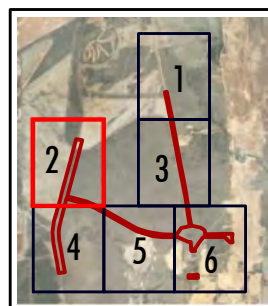


FIGURE 3.1
Track Logs and Sample Sites
SHEET 2



Legend

- Survey Area
- Railways
- Roads
- Drainage Lines
- Waterbodies
- Relevé
- Track Logs (September)
- Track Logs (November)

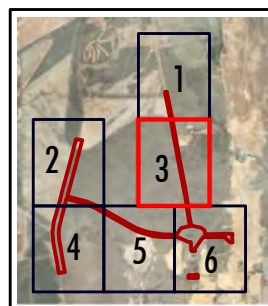


FIGURE 3.1
Track Logs and Sample Sites
SHEET 3



Legend

- Survey Area
- Roads
- Relevé
- Track Logs (September)
- Track Logs (November)

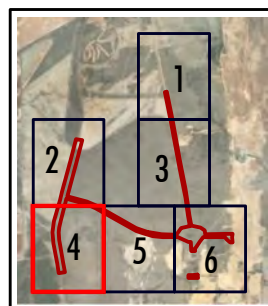


FIGURE 3.1
Track Logs and Sample Sites
SHEET 4



D:\UMWELT (AUSTRALIA) PTY LTD\2446 - 03 SRWF 802\2446_007_TRACKLOGS.MXD 4/05/2023 11:14:51 AM

Scale 1:10000 of A4

GDA2020 MGA Zone 50

Legend

- Survey Area
- Roads
- Vegetation Mapping Notes
- Relevé
- Track Logs (September)
- Track Logs (November)

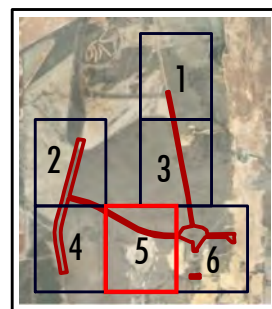
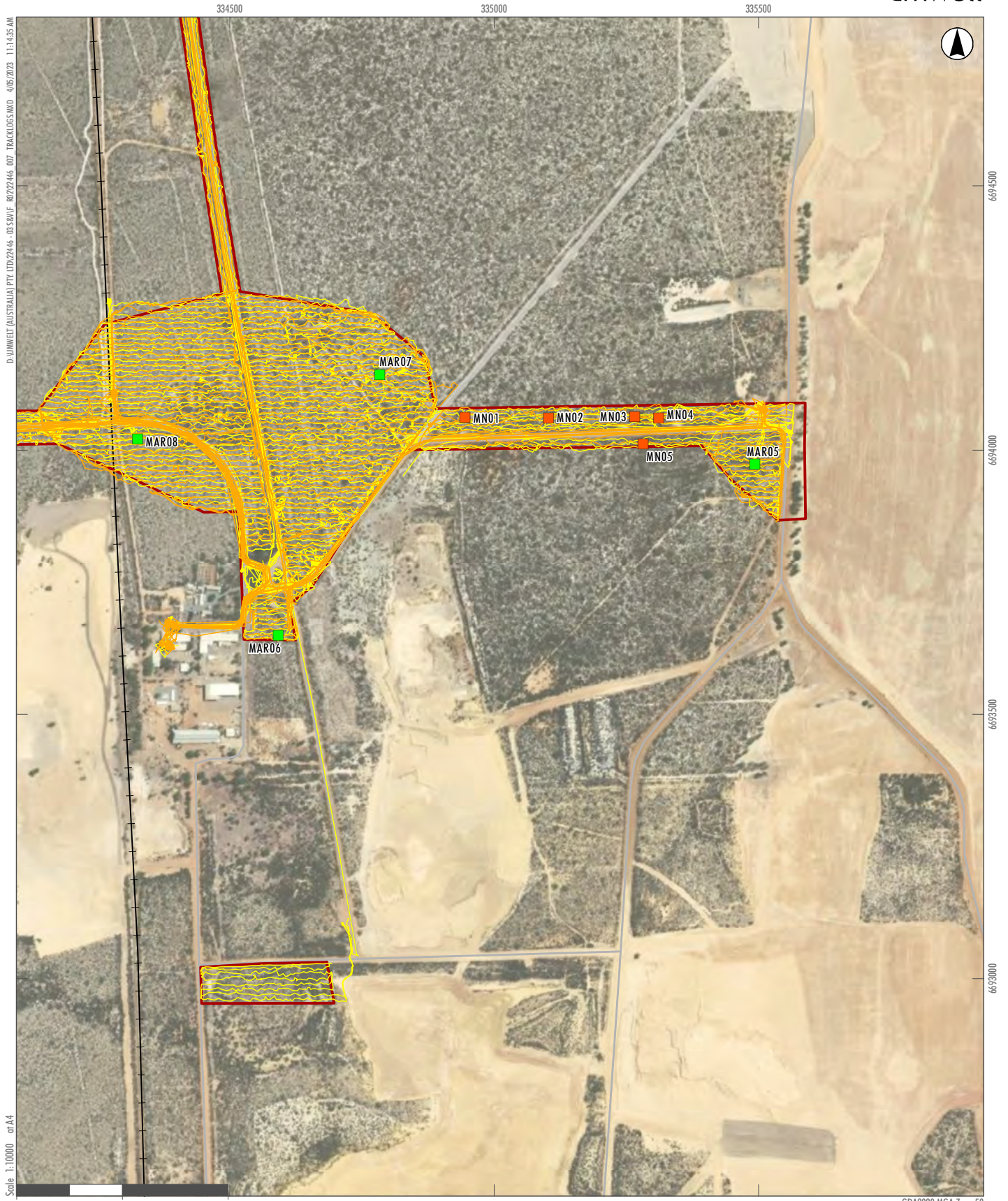


FIGURE 3.1
Track Logs and Sample Sites
SHEET 5



- Scale 1:10000 at A4
- Legend**
- Survey Area
 - Railways
 - Roads
 - Vegetation Mapping Notes
 - Relevé
 - Track Logs (September)
 - Track Logs (November)

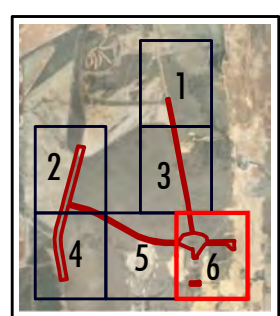


FIGURE 3.1
Track Logs and Sample Sites
SHEET 6

3.5 Plant Collection and Identification

Specimens of any unknown flora taxa encountered during the field survey were collected and pressed as per Western Australian Herbarium (WA Herbarium) guidelines (WA Herbarium, 2020). Plant identifications were undertaken at the WA Herbarium and were overseen by a Principal Ecologist - Botanist with extensive previous experience (> 15 years) in plant identifications for flora of the Geraldton Sandplains (**Section 3.2**). The identification of all flora taxa (including significant taxa) used the most up to date information available, including taxonomic keys published in books, journals and online, comparison with herbarium specimens, and consultation with taxonomic experts. External experts of particular families or genera were consulted for any specimens considered to be difficult to identify or of taxonomic interest, including botanists at the WA Herbarium.

Taxon nomenclature generally follows Florabase (WA Herbarium, 1998-), with all names checked against the current DBCA Max database to ensure their validity. However, in cases where names of plant taxa have been published recently in scientific literature but have not yet been adopted on Florabase due to time constraints, nomenclature in the published literature is followed. The conservation status of each taxon was checked against Florabase, which provides the most up-to-date information regarding the conservation status of flora taxa in WA.

As per section 7.2 of EPA Technical Guidance (EPA, 2016b), specimens of interest, including significant flora taxa, taxa representing range extensions, potential new taxa, and key species in new occurrences of TECs and PECs, will be sent to the WA Herbarium for consideration for vouchering as soon as practicable. However, this process is via donation, and the WA Herbarium may not voucher all specimens, in accordance with its own requirements. The specimen vouchering will be supported by completed Threatened and Priority Flora Report Forms submitted to DBCA (Species and Communities Branch) in the case of listed significant flora (i.e. Threatened and Priority flora taxa).

3.6 Floristic Community Type Mapping

Floristic and structural data recorded at relevés was examined to verify FCT boundaries previously described and mapped in the Survey Area by Woodman Environmental (2011). Reference was made to the original detailed FCT summaries (which includes the FCT description, number of quadrats assessed, location mapped, species richness per quadrat, and indicator taxa), as well as data collected at nearby existing quadrats. If the relevé data did not support previously mapped FCTs, the data was reviewed to determine whether the vegetation was considered to be analogous to any other FCTs. Any vegetation that was not considered to be analogous with any of the previously-described FCTs was considered to represent a discrete FCT.

It should be noted that FCT descriptions were prepared by Woodman Environmental (2011) using an adaptation of the Muir (1977) classification of vegetation structure. This adaptation utilises the vegetation classification system described in Table 1 in Muir (1977) and omits the use of floristic and soil codes which have been replaced by full genus and species labels in addition to descriptions of surface soils and topography. This vegetation classification system differs slightly from the method stipulated by EPA Technical Guidance (EPA, 2016b) (as the Woodman Environmental (2011) assessment was prepared prior to the publication of the current EPA Technical Guidance in 2016), which is described in the National Vegetation Information System (NVIS) Australian Vegetation Attribute Manual Version 6.0 (ESCAVI, 2003). The system described by Muir (1977) uses the same structural formation classes from 2-100 % foliage cover

(although the terminology for each class differs slightly), but the NVIS system has classes for <2 % foliage cover, more growth forms, and different height classes. For example, a vegetation stratum consisting of shrubs 1-2 m in height and with 10-30 % canopy cover would be referred to as a “low scrub” in the Muir (1977) system and a “mid open shrubland” in the NVIS system. However, as described in **Section 1.3**, the purpose of this assessment was to verify the existing mapping undertaken by Woodman Environmental (2011), and it is outside the scope of works to update the FCT descriptions prepared by that assessment to follow the NVIS system.

It should be noted that both the Muir (1977) and NVIS systems utilise vegetation descriptions derived from structural characteristics of the individual community units, while the FCTs described by Woodman Environmental (2011) are defined based on the results of a floristic classification analysis, excluding any structural data. Such FCTs may therefore include multiple structural types. Considering the effect of disturbance factors such as fire on vegetation structure, this approach is designed to provide a map of FCTs that reflect taxon composition and the influences of the physical and chemical environment, rather than disturbance history.

Note also that EPA Technical Guidance (EPA, 2016b) stipulates the use of the term “vegetation type” for local scale vegetation units defined at a scale of 1:100,000 to 1:10,000. However, as discussed above, this current assessment utilises vegetation mapping and descriptions prepared by Woodman Environmental (2011) prior to the publication of the current EPA Technical Guidance. Therefore, this current assessment uses the term “FCT” when referring to the existing vegetation units described in the Survey Area.

Locations of relevés within each FCT were used in conjunction with existing mapping polygons, aerial photograph interpretation and field notes taken during the field survey to verify or adjust FCT mapping polygon boundaries. Where adjustments to the existing mapping was required, mapping boundaries were developed using aerial photography on a scale of 1:5,000 and reflected changes in vegetation patterns visible at this scale. The FCT mapping polygon boundaries were then digitised using Geographic Information System (GIS) software.

3.7 Vegetation Condition Mapping

Vegetation condition was described using the vegetation condition scale presented in EPA Technical Guidance (2016b) for the South West and Interzone Botanical Provinces (as per **Appendix A**). Notes on vegetation condition were taken throughout the field survey during targeted survey and foot traverses between relevés. Vegetation condition was also recorded at all relevés. Vegetation condition category polygon boundaries were developed using this information in conjunction with introduced flora taxa location data and were digitised using GIS software as for FCT polygon boundaries.

3.8 Definitions

3.8.1 Significant Flora Taxa

As per EPA definitions (EPA, 2016a, 2016b), flora taxa may be significant for a range of reasons, including, but not limited to the following:

- being identified as a Threatened or Priority species (formally listed significant taxa – includes taxa listed under both State and Commonwealth legislation, and classified as Priority by DBCA)

- being locally endemic or associated with a restricted habitat type (e.g. surface water or groundwater dependent ecosystems)
- being a new species or having anomalous features that indicate a potential new species
- being representative of the range of a species (particularly at the extremes of range, recently discovered range extensions, or isolated outliers of the main range)
- being an unusual species, including restricted subspecies, varieties or naturally occurring hybrids
- having a relictual status, being representative of taxonomic groups that no longer occur widely in the broader landscape.

Significant flora taxa recorded within the Survey Area are discussed in **Section 5.2.2** with reference to the above categories. Data including point locations and individuals of significant flora taxa recorded in the Survey Area are also presented in this section.

DBCA (2020) presents conservation codes for DBCA-listed taxa. Further information about Commonwealth conservation categories is provided in Threatened Species Scientific Committee's (TSSC) 'Guidelines for assessing the conservation status of native species according to the *Environment Protection and Biodiversity Conservation Act 1999* and Environment Protection and Biodiversity Conservation Regulations 2000' (TSSC, 2021).

3.8.2 Significant Vegetation

As per EPA definitions (EPA, 2016a, 2016b), vegetation may be significant for a range of reasons, including, but not limited to the following:

- being identified as a TEC or PEC (formally listed significant vegetation – includes vegetation listed under Commonwealth or State legislation, or classified as a PEC by DBCA)
- having restricted distribution
- having a degree of historical impact from threatening processes
- playing a role as a refuge
- providing an important function required to maintain ecological integrity of a significant ecosystem.

To determine the presence of TECs and PECs defined from quadrat-derived data, EPA Technical Guidance (EPA, 2016b) requires comparison of the quadrat data with that of the survey in which the TEC or PEC was originally described. However, limited information is often available for TECs and PECs; generally, only broad descriptions are provided in the respective TEC and PEC lists to allow for diagnosis. The vegetation of the Survey Area was therefore manually compared to such descriptions to determine whether any vegetation may represent a TEC or PEC; specifically, comparisons of dominant taxa, soils, topography and geographical distribution of FCTs were made to those of any relevant TEC or PEC. A similar process was followed for TECs listed under the EPBC Act, with comparisons made to the appropriate listing and conservation advice for any TECs likely to occur in the Survey Area. The DBCA publication 'Methods for survey and identification of Western Australian threatened ecological communities' (DBCA, 2022d) was also reviewed for TECs classified by DBCA and endorsed by the WA Minister for the Environment.

The remaining significant vegetation criteria other than “being identified as a TEC and PEC” were applied to FCTs mapped in the Survey Area to determine whether a FCT was significant in a local or regional context. In a regional context, reference has been made to the extent of FCTs mapped by Woodman Environmental (2011) in the Northern Sandplains Study Area (**Section 5.1.1**). This is discussed further in **Section 5.2.7**.

Definitions, categories and criteria for WA TECs and PECs are presented by Department of Environment and Conservation (DEC; now DBCA) (DEC, 2013). Further information about Commonwealth conservation categories is provided in TSSC’s ‘Guidelines for nominating and assessing the eligibility for listing of ecological communities as threatened according to the *Environment Protection and Biodiversity Conservation Act 1999* and the EPBC Regulations 2000’ (TSSC, 2017).

4.0 Adequacy and Limitations of Survey

4.1 Adequacy of Survey

The Survey Area covers 129.1 ha, with 22 relevés established within it during the 2022 field survey. Relevés were established in all preliminary vegetation patterns discernible by initial aerial photograph interpretation, and within all previously mapped FCTs (**Sections 3.3** and **3.4.2**), both to adequately sample variation in vegetation throughout the Survey Area, and to validate the existing vegetation mapping.

The number of relevés established in the Survey Area is considered to be acceptable given it occurs in an area that has received extensive historical survey, as well as the small size and low number of FCTs previously mapped in the Survey Area (approximately 1 relevé established per 0.17 ha of Survey Area).

Targeted survey for significant flora taxa and vegetation was undertaken over the entirety of the Survey Area (see **Section 4.2**).

4.2 Limitations of Survey

Table 4.1 presents the limitations of the flora and vegetation assessment of the Survey Area in accordance with EPA Technical Guidance (EPA, 2016b).

Table 4.1 Limitations of the Flora and Vegetation Survey of the Survey Area

Limitation	Determination	Comment
Effort and extent	Not a limitation	<p>A Reconnaissance survey was undertaken across the entire Survey Area. Overall, 22 relevés were established in the Survey Area in 2022, equivalent to 1 relevé established per 0.17 ha of Survey Area. The number of relevés is considered adequate to characterise the flora and vegetation of the Survey Area and verify existing vegetation mapping, with at least three relevés allocated to each vegetation pattern identified pre-survey and each FCT previously mapped in the Survey Area where possible. Two FCTs (2b and 3) were sampled by only two relevés in the Survey Area, as these FCTs occurred across very small areas in the Survey Area, therefore limiting the ability to replicate sampling within them. However, these FCTs were sampled by 43 and 33 quadrats, respectively, in the original vegetation assessment undertaken by Woodman Environmental (2011). Therefore, this is not considered to be a limitation of this assessment.</p> <p>The Reconnaissance and Targeted surveys were undertaken over 52 person days in September and November 2022. Systematic Targeted survey for all significant flora taxa and vegetation identified by the desktop assessment was conducted. Opportunistic targeted survey for significant flora taxa and vegetation was also undertaken while traversing the Survey Area to establish relevés. Data reliability is considered to be relatively high. However, many taxa recorded in the Survey Area by the 2022 survey have records within areas mapped as cleared land. In some instances, this makes the record appear as though it occurs on a road. This is likely due to the actual record being located close to the road or on the verge, coinciding with poor satellite connection, resulting in low GPS accuracy. However, all surveys were conducted within vegetation, and similarly all plant locations occur within vegetation. When determining preferred habitat for significant flora taxa, the FCT of the vegetation adjacent to the road where the record is located is considered to represent the FCT at that location. Therefore, this is not considered to be a limitation of this assessment.</p> <p>No constraints prevented appropriate sampling techniques (relevé establishment, foot traverses) being employed. All areas were relatively easy to access using available roads and access tracks.</p>
Competency / experience of the team carrying out the survey	Not a limitation	<p>The Project Manager has previous experience (> 6 years) in conducting similar assessments in the South West Botanical Province and conducting systematic sampling and analysis. Other field team leaders have previous experience (> 2 years) in conducting flora and vegetation surveys in the Geraldton Sandplains Region, and field team personnel have previous experience assisting in flora and vegetation surveys. Senior personnel provided guidance to less experienced botanists throughout the survey where necessary. Information relating to identifying characteristics, flowering period and habitat of significant flora taxa identified by the desktop assessment as potentially occurring in the Survey Area was provided to all field team members prior to undertaking the 2022 field survey. Similarly, information relating to diagnostic characteristics, landform, geology, soils, dominant taxa, etc., of all significant vegetation returned by the desktop assessment was provided to personnel prior to field survey.</p> <p>Personnel overseeing plant identifications have > 15 years' experience in plant identification in flora of the Geraldton Sandplains Region. Relevant taxonomic experts (including botanists at the WA Herbarium) were consulted for any specimens considered to be difficult to identify or of taxonomic interest.</p>

Limitation	Determination	Comment
Proportion of flora recorded and/or collected and identified	Not a limitation	<p>The Reconnaissance survey was not intended to represent a primary survey or provide a full census of the flora of the Survey Area. At least one reference specimen of most taxa recorded (excluding common, distinctive taxa) was collected for verification and identification purposes, and at least one collection was made of all recorded significant flora taxa. All unknown vascular taxa were collected, with specimens identified at the WA Herbarium. All dominant taxa recorded in relevés could be adequately identified to inform the FCT verification process. A very small number of specimens could not be identified to species level due to inadequate material; however, none of these are considered likely to represent significant taxa. This is not considered to constitute a limitation of the survey.</p> <p>The Reconnaissance and Targeted surveys were conducted within the most appropriate time to survey in the Geraldton Sandplains region (discussed further below). Targeted survey for taxa that are only visible/identifiable at certain times was specifically aligned with the appropriate time to survey for these taxa (e.g. survey for <i>Paracaleana dixonii</i> (T) was undertaken in November, to coincide with when flowering parts are visible). Precipitation and temperatures experienced the three months preceding the start of the 2022 field survey (i.e. June to August 2022) were similar to the long-term averages for this period (Section 2.1). Ephemeral taxa were observed to be relatively abundant and the majority of perennial taxa were in flower.</p>
Sources of information e.g. previously available information (whether historic or recent) as distinct from new data	Not a limitation	<p>Good contextual information for the Survey Area was available prior to the 2022 field survey. Sources of information used included government databases (DCCEEW, DBCA) and numerous general sources pertaining to the climate, geomorphology, and flora and vegetation of the Geraldton Sandplains Region, all of which are considered to have high reliability. Previous reports and data from the vicinity of the Survey Area as summarised in Section 5.1.2 are also considered to be generally reliable unless where stated. Review of BoM daily and monthly climate data from Badgingarra Research Station and Green Grove stations reveals that there are some gaps in these datasets over the history of data collection. However, given these stations have been established for over 60 years, a small number of gaps is unlikely to significantly affect the long-term averages, and therefore this is not considered a limitation. It is worth noting that the datasets for 2022 appear to be complete. All other data sources used for the desktop assessment were considered to have high reliability.</p>

Limitation	Determination	Comment
Survey timing and weather/season/cycle	Not a limitation	<p>The field survey was conducted in Spring (September to November 2022), corresponding with what is considered the optimum flowering period for the Geraldton Sandplains region. The timing of the final site visit coincided with the appropriate time to survey for <i>Paracaleana dixonii</i> (T).</p> <p>The 2022 flowering period was considered by Umwelt to be good, with precipitation received in the three months preceding the start of the 2022 field survey (i.e. June to August 2022) (276.2 mm), being similar to the long-term average for this period (270.7 mm) (Section 2.1). Annual and ephemeral taxa were observed to be relatively abundant and widely distributed, and many perennial taxa in flower. All perennial taxa were at least in good condition.</p> <p>All significant flora taxa identified during the desktop assessment were considered by Umwelt to be identifiable during either the September or November site visits, or both. As previously discussed, targeted survey for taxa that are only visible/identifiable at certain times was specifically aligned with the appropriate time to survey for these taxa. All perennial taxa, including all perennial significant taxa known or potentially occurring in the Survey Area, were in a condition suitable for identification during either the September or November site visits, or both.</p>
Disturbances (e.g. fire, flood, accidental human intervention etc.) that may have affected results of survey	Not a limitation	<p>A recent fire (May 2021) had affected a small area in the northern part of the Survey Area on the eastern side of Brand Highway (approximately 220 m long and 100 m wide). This was not considered to be a limitation of the Reconnaissance survey, as the western side of Brand Highway was unaffected and long-unburnt, and hence a relevé was established here instead. Further, this was not a limitation of the Targeted flora and vegetation survey, as most taxa had already matured sufficiently to allow confident identification, and the abundance of target taxa was similar in burnt areas compared to unburnt areas.</p> <p>As is to be expected, vegetation fringing roads and tracks showed minor signs of disturbance, such as minor changes to vegetation structure and greater presence of weeds. This did not affect the detectability or identifiability of significant flora taxa or vegetation, and is therefore not considered to be a limitation of the Targeted survey. As discussed in Section 3.4.2, in areas where the Survey Area intersected a narrow strip of vegetation such as along a road verge, relevés were placed just outside the Survey Area so as to sample vegetation that was not impacted by disturbance.</p>
Remoteness and/or access restrictions	Not a limitation	<p>There were no access-related constraints, with all areas of native vegetation being easily accessible by vehicle and foot using roads and tracks.</p>

5.0 Results

5.1 Desktop Assessment

5.1.1 Regional Vegetation

As previously mentioned, the Survey Area is located in the Geraldton Sandplains IBRA region, specifically within the Lesueur Sandplain IBRA subregion (DCCEEW, 2021). The Lesueur Sandplain subregion comprises vegetation mainly consisting of proteaceous scrub-heaths, rich in endemics (Desmond & Chant, 2002).

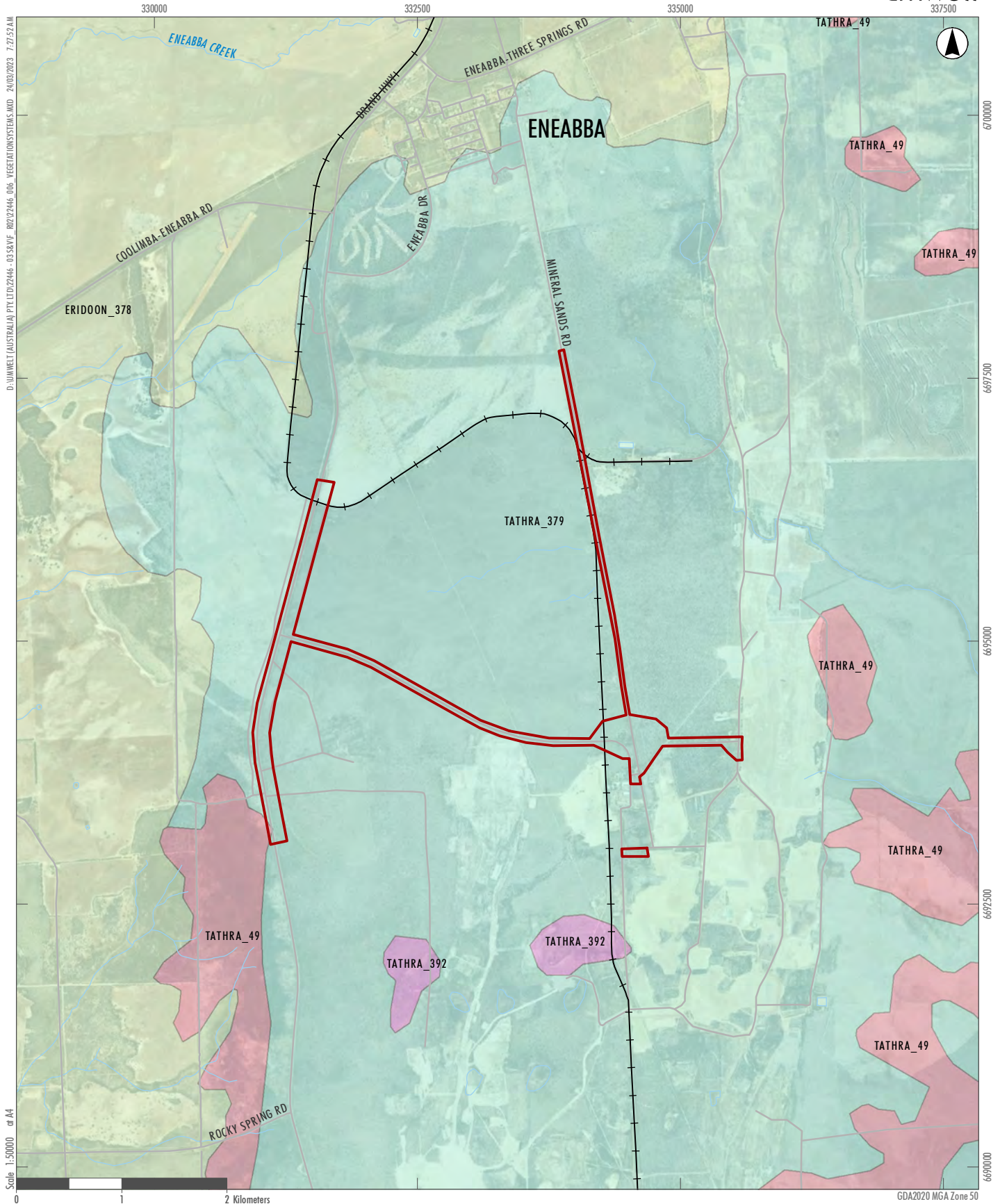
The vegetation of WA as it was presumed to have existed prior to European settlement has been mapped at a scale of 1:250,000 as vegetation system associations (VSAs), with the Pre-European Vegetation spatial database subsequently created (Beard et al., 2013; DPIRD, 2019b). The Survey Area predominantly intersects one VSA, Tathra_379, with a small area in the southwestern part of the Survey Area representing Tathra_49, as summarised in **Table 5.1** and presented on **Figure 5.1**. **Table 5.1** also presents the current extent of each of the two VSAs in relation to its pre-European extent within the Geraldton Sandplains IBRA region, and the percentage of the current extent of each VSA currently protected for conservation within the Geraldton Sandplains IBRA region (DBCA, 2019). Note that as per DBCA's Statewide Vegetation Statistics Report (DBCA, 2019), protected areas in this context are considered to be any areas listed in DBCA-Legislated Lands and Waters dataset as either Crown reserves or lands managed under Section 8A of the *Conservation and Land Management Act 1984* that have an International Union for Conservation of Nature (IUCN) category of I to IV.

The Tathra_49 and Tathra_379 VSAs have less than 40 % and 25 %, respectively, of their pre-European extent remaining within the Geraldton Sandplains IBRA region. Both VSAs have less than 23 % of their current extents within the Geraldton Sandplains IBRA region protected for conservation (**Table 5.1**).

Table 5.1 Vegetation System Associations of the Survey Area

VSA	Description*	Extent (ha)			Pre-European Extent Remaining (%)	Current Extent Protected for Conservation (%)
		Survey Area	Pre-European	Current		
Tathra_49	Shrublands; mixed heath	0.51	39,718	14,490	36.48	22.02
Tathra_379	Shrublands; scrub-heath on lateritic sandplain in the central Geraldton Sandplain Region	128.60	544,709	129,345	23.75	21.65

Source: DBCA Statewide Vegetation Statistics: Full Report (DBCA, 2019).



- Legend**
- Survey Area
 - Railways
 - Roads
 - Drainage Lines
 - Waterbodies
- Vegetation System Associations**
- ERIDOOON_378
 - TATHRA_49
 - TATHRA_379
 - TATHRA_392

FIGURE 5.1

Vegetation System Associations of the Survey Area

Woodman Environmental (2011) undertook a floristic community type (FCT) rescore assessment for Iluka in 2009. The assessment involved surveying a total of 226 quadrats throughout the Iluka Environmental Review and Management Programme (ERMP) project area that runs from near Arrowsmith in the north to near Warradarge in the south. However, the floristic analysis utilised a total of 541 quadrats established in the ERMP Study Area and the wider Northern Sandplains Study Area (including the 226 quadrats surveyed as part of the FCT rescore assessment and additional quadrats previously established by Woodman Environmental (2009a, 2011)). The ERMP Study Area is approximately 47,495.4 ha in size, and is entirely contained within southern part of the Northern Sandplains Study Area (**Figure 5.2**), the latter of which is approximately 81,486.5 ha in size and provides a regional assessment of the conservation significance of flora and vegetation on the Eneabba sandplain area, extending from the northern end of Yandanogo Nature Reserve in the north, to the southern end of South Eneabba Nature Reserve in the south.

A total of 31 FCTs were described and mapped by the survey within the ERMP Study Area and 41 FCTs within the wider Northern Sandplains Study Area, as well as cleared areas, and burnt and degraded vegetation. A summary of these FCTs mapped in the ERMP Study Area is provided in **Table 5.2**. Note that non-current plant names have been updated in this table where required.

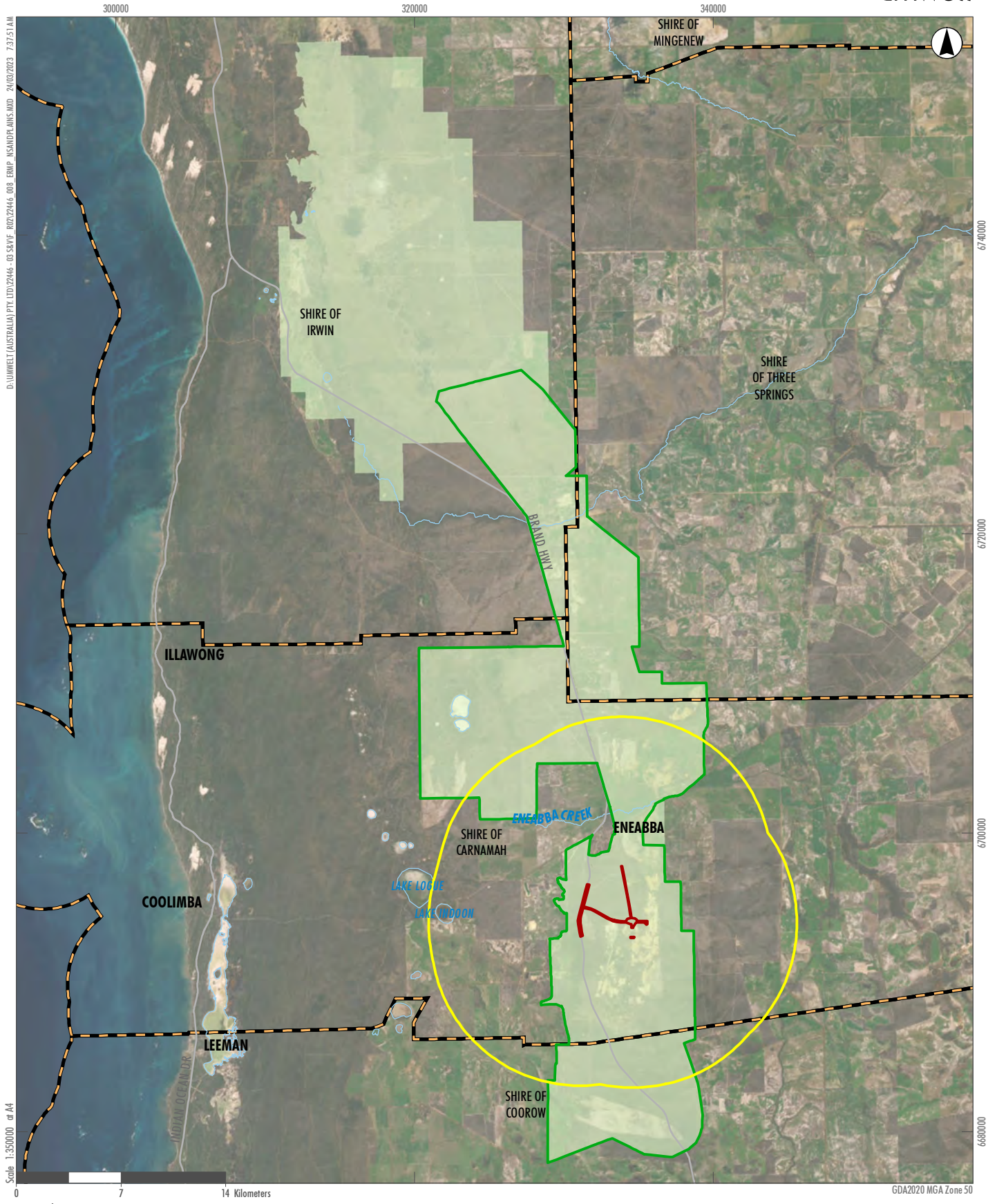
Three of the FCTs mapped by Woodman Environmental (2011) were considered by Woodman Environmental to represent the 'Ferricrete floristic community (Rocky Springs type)' DBCA-listed TEC (FCTs 12a, 12b and 15b). FCT 12b was mapped at the known location of this TEC, with FCT 12a and 15b mapped at a few adjacent locations. It was considered possible by Woodman Environmental (2011) that both FCTs 14 and 19 also form part of the Rocky Springs TEC, as they contain species listed as occurring within the ecological community (CALM, 2004); however, the results of the DBCA TEC/PEC Database interrogation undertaken in 2022 (DBCA, 2022b) (see **Section 5.1.6**) does not correspond with known occurrences of FCTs 14 or 19, so it is presumed that these two FCTs are not currently considered representative of this TEC. Note that FCTs 12a, 12b and 15b do not have any mapped occurrences within the current Survey Area, with the closest location being approximately 1.9 km to the south-southwest.

Nine FCTs (FCTs 10a, 12a, 12b, 13, 15b, 20, 22a, 24 and 25c) described by Woodman Environmental (2011) were identified as being locally restricted, due to being mapped over less than 20 ha within the ERMP study area. Note that none of these FCTs occur within the Survey Area.

A total of 29 FCTs described by Woodman Environmental (2011) were identified by a later assessment by Woodman Environmental (2012) as being of high conservation significance (rated 4 or 5 out of 5 in a conservation significance scale that considers the regional distribution of the FCT, the presence of the FCT in conservation reserves, whether the FCT occurs on restricted landforms and whether the FCT provides habitat for conservation significant flora). Of these, five FCTs occur within the Survey Area (FCTs 1a, 1b, 2a, 2b, and 6b).

Vegetation condition mapping was not undertaken by Woodman Environmental (2011). However, the vegetation condition was recorded at each quadrat during the original vegetation mapping of the Iluka lease areas in the vicinity of Eneabba (Woodman Environmental, 2009a), and Woodman Environmental (2011, 2012) noted no significant change in vegetation condition within the Iluka ERMP Study Area between 2011 and the previous surveys. Overall, the intact vegetation within the majority of the ERMP Study Area was rated as Excellent to Very Good with disturbance only noted along road verges and in areas adjacent to private property (vegetation condition rating scale defined in **Appendix A**). A small area of FCT 6b vegetation in the centre of the current Survey Area was observed to be highly disturbed. This area was located on private property and had been modified through clearing and grazing. Some small areas of

wetland vegetation and drainage lines adjacent or downslope of private property recorded high levels of annual weed cover that reduced the condition within these areas to Good. Vegetation between Eneabba and the South Mine was in Good to Poor condition as it had been historically chained for agriculture, mulched and/or extensively drilled for exploration (Woodman Environmental, 2012).



D:\UMWELT (AUSTRALIA) PTY. LTD\22446 - 03 SRVF - R0722446_008_ERMP_NSANDPLAINS.MXD 24/03/2023 7:37:51 AM
 Scale 1:350000 or A4

- Legend**
- Desktop Study Area
 - Survey Area
 - ERMP Study Area
 - Northern Sandplains Study Area
 - State Roads
 - Drainage Lines
 - Waterbodies
 - LGA Boundary

FIGURE 5.2

ERMP and Northern Sandplains Study Areas

Table 5.2 FCTs Mapped by Woodman Environmental (2011) in the ERMP Study Area

FCT	Description	Area Mapped in ERMP Study Area (ha)
1a	Open Low Woodland to Open Low Scrub of <i>Eucalyptus pleurocarpa</i> and/or <i>Eucalyptus todtiana</i> over mixed shrubs dominated by <i>Banksia</i> spp. and <i>Hakea</i> spp. over sedges on grey to brown sands with very occasional laterite influence on lower to mid slopes	2,540.6
1b	Open Woodland to Scrub of <i>Eucalyptus</i> spp. and/or <i>Banksia</i> spp., with occasional <i>Xylomelum angustifolium</i> , over mixed shrubs dominated by myrtaceous spp., <i>Banksia</i> spp., and <i>Jacksonia</i> spp. on grey sand on mid to upper slopes. This FCT is generally restricted to upper slope and crest areas characterised by deep sands	1,411.8
1c	Heath to Thicket of mixed shrubs commonly including <i>Melaleuca leuropoma</i> , <i>Hibbertia hypericoides</i> , <i>Banksia shuttleworthiana</i> and <i>Allocasuarina</i> spp. over <i>Ecdeiocolea monostachya</i> on yellow or brown sand and sandy clay	3,347.7
2a	Low Woodland of <i>Banksia attenuata</i> and occasional <i>Banksia menziesii</i> and <i>Xylomelum angustifolium</i> over Low Scrub of mixed species including <i>Banksia leptophylla</i> var. <i>leptophylla</i> , <i>Banksia candolleana</i> , <i>Melaleuca leuropoma</i> and <i>Hibbertia hypericoides</i> on brown or grey sand on upper slopes	5,907.9
2b	Scrub of <i>Banksia attenuata</i> , with emergent <i>Eucalyptus todtiana</i> or <i>Eucalyptus pleurocarpa</i> , over Low Scrub dominated by <i>Banksia</i> spp. on predominantly yellow sands on mid and upper slopes	4,802.5
3	Open Low Woodland to Heath of <i>Banksia</i> spp. over mixed shrubs commonly including <i>Melaleuca leuropoma</i> , <i>Eremaea beaufortioides</i> and <i>Scholtzia laxiflora</i> on grey or yellow sand on lower to mid slopes. This FCT is often adjacent to drainage lines or winter-wet areas, and is dominated by a number of <i>Banksia</i> species including <i>Banksia attenuata</i> , <i>Banksia candolleana</i> , <i>Banksia menziesii</i> and <i>Banksia leptophylla</i> with emergent <i>Eucalyptus todtiana</i>	938.3
4	Low Woodland to Thicket of <i>Banksia attenuata</i> and <i>Banksia menziesii</i> over mixed shrubs dominated by myrtaceous species on brown or yellow sand on lower to mid slopes and plains	152.8
5a	Species rich Woodlands and Heaths on grey sand in the eastern portion of the Eneabba sandplain. Common species include <i>Conospermum boreale</i> subsp. <i>boreale</i> , <i>Ecdeiocolea monostachya</i> , <i>Eremaea beaufortioides</i> , <i>Hakea polyanthema</i> and <i>Banksia candolleana</i>	1,977.9
6a	Low Scrub of mixed species including <i>Beaufortia elegans</i> and <i>Banksia</i> spp., with occasional Low Woodland of <i>Eucalyptus pleurocarpa</i> , over <i>Xanthorrhoea</i> spp. and sedges on soil types ranging from white-grey sands to grey sand with lateritic gravel on mid and upper slopes	516.7
6b	Shrublands and Heaths, with occasional Low Woodland of <i>Eucalyptus pleurocarpa</i> . Common species include <i>Allocasuarina microstachya</i> , <i>Melaleuca leuropoma</i> , <i>Melaleuca trichophylla</i> , and <i>Verticordia</i> spp. over sedges on grey-brown sands, sandy clays and or gravel on flats, swales and lower slopes. This FCT was always associated with areas of FCT 2a	926.2
6c	Heath to Low Heath dominated by <i>Banksia</i> spp. and <i>Melaleuca</i> spp. over <i>Ecdeiocolea monostachya</i> on grey or brown sandy clay or gravel on lower slopes and plains	309.2
7	Open Low Woodland of <i>Eucalyptus pleurocarpa</i> to species rich Low Heath generally dominated by <i>Banksia</i> spp., <i>Daviesia</i> spp., <i>Lambertia multiflora</i> var. <i>multiflora</i> and <i>Xanthorrhoea drummondii</i> on grey sands with a moderate to heavy laterite component. This FCT is generally surrounded by FCT 2b	2,788.0

FCT	Description	Area Mapped in ERMP Study Area (ha)
8a	Low Woodland of <i>Melaleuca raphiophylla</i> over a species poor understorey dominated by annuals, <i>Leptocarpus</i> spp. and <i>Conostylis aculeata</i> subsp. <i>breviflora</i> on sandy clay in wet depressions and drainage lines. The soils of FCT 8a are generally seasonally damp in the winter months. The understorey is generally quite sparse and dominated by introduced annual species	23.0
8c	Low Scrub of <i>Melaleuca leuropoma</i> , often with <i>Banksia leptophylla</i> var. <i>leptophylla</i> and <i>Melaleuca ciliosa</i> or <i>Melaleuca raphiophylla</i> , over low mixed shrubs including <i>Verticordia densiflora</i> and <i>Lyginia imberbis</i> on grey-brown sands in drainage lines and depressions	144.3
9	Shrublands and Thickets dominated by <i>Melaleuca</i> spp. and <i>Banksia</i> spp. on grey or brown sandy clays and sandy loams with some lateritic gravel on seasonally wet flats, depressions and creek-lines. Dominant species included <i>Scholtzia laxiflora</i> , <i>Melaleuca ?urceolaris</i> , <i>Melaleuca leuropoma</i> and <i>Acacia blakelyi</i>	336.1
10a	Heath to Thicket dominated by <i>Allocasuarina campestris</i> and/or <i>Banksia leptophylla</i> var. <i>leptophylla</i> on grey or brown sandy clay in drainage lines	19.4
11	Thickets of <i>Calothamnus hirsutus</i> , <i>Melaleuca</i> spp. and/or <i>Callitris pyramidalis</i> over <i>Thryptomene mucronulata</i> on sandy clay in seasonally inundated depressions. Common species included <i>Melaleuca viminea</i> subsp. <i>viminea</i> , <i>Melaleuca leuropoma</i> and <i>Melaleuca ciliosa</i>	121.2
12a	Thickets of <i>Calytrix depressa</i> , <i>Melaleuca acutifolia</i> and <i>Melaleuca concreta</i> over <i>Borya sphaerocephala</i> and <i>Dodonaea</i> spp. on sandy loams, clay and ferricrete in depressions. This FCT was restricted to drainage lines and depressions in the vicinity of Rocky Springs Road. This FCT may be part of the Rocky Springs Complex and contains many of the species listed as occurring within the Rocky Springs TEC (CALM, 2004)	19.3
12b	Thicket to Low Scrub dominated by <i>Allocasuarina campestris</i> , <i>Calothamnus quadrifidus</i> and <i>Banksia strictifolia</i> on ferricrete on mid-slopes. This FCT was mapped at one location adjacent to Rocky Springs Road. It corresponds to the known location of the Ferricrete floristic community (Rocky Springs type) TEC and forms part of the Rocky Springs Complex with FCT 12a	5.0
12c	Open Low Scrub of <i>Acacia saligna</i> over Dwarf Scrub of <i>Melaleuca concreta</i> on brown sandy clay on lower slopes	28.7
13	Low Heath dominated by <i>Petrophile chrysantha</i> , with occasional emergent <i>Eucalyptus arachnaea</i> , on shale	7.4
14	Low Woodland of <i>Eucalyptus accedens</i> over Open Low Scrub dominated by <i>Baeckea/Babingtonia</i> spp. and <i>Melaleuca</i> spp. on sandy gravels or sandy clay on flats and lower slopes. Dominant species included <i>Melaleuca leuropoma</i> , <i>Melaleuca concreta</i> and <i>Melaleuca radula</i>	78.5
15a	Low Woodland of <i>Eucalyptus</i> spp. and/or <i>Corymbia calophylla</i> over a species rich Heath on grey or brown sandy gravel on lower slopes. This FCT was mapped in small areas restricted to drainage lines and winter wet pockets	115.4
15b	Scrub of <i>Allocasuarina campestris</i> on brown sand with lateritic gravel on mid-slope. This FCT was mapped at one location adjacent to Rocky Springs Road. It is adjacent to FCTs 12a and 12b and may therefore also form part of the Rocky Springs complex	1.9
17b	Heath of <i>Banksia lanata</i> and <i>Acacia spathulifolia</i> , with occasional emergent <i>Banksia prionotes</i> and <i>Eucalyptus todtiana</i> , on yellow sand over limestone on mid to upper slopes	495.6

FCT	Description	Area Mapped in ERMP Study Area (ha)
18	Thicket dominated by <i>Melaleuca viminea</i> subsp. <i>viminea</i> , with occasional <i>Eucalyptus loxophleba</i> subsp. <i>loxophleba</i> or <i>Eucalyptus camaldulensis</i> in clay flats. This FCT was restricted to narrow drainage lines and winter wet depressions. It had low species richness, with the herb layer often dominated by annual weed species	93.9
19	Low Woodland to Low Forest of <i>Melaleuca rhapsiophylla</i> and <i>Eucalyptus camaldulensis</i> over a species poor understorey dominated by annuals on grey or brown sandy clay in wet depressions and drainage lines. This FCT was mapped within five wetlands south of Eneabba. The understorey was often dominated by annual weed species	39.8
20	Scrub of <i>Acacia acuminata</i> over Open Low Scrub of <i>Melaleuca marginata</i> on grey sandy-clay	5.0
22a	Low Woodland of <i>Melaleuca preissiana</i> over a sparse, often disturbed shrub layer of species including <i>Tecticornia pergranulata</i> subsp. <i>pergranulata</i> and <i>Rhagodia preissii</i> subsp. <i>obovata</i> on grey sandy clay in depressions and seasonally inundated basins. This FCT was mapped along one drainage line within the Eneabba South Mine area. The only quadrat previously located in this FCT had been cleared since the 2001 survey so could not be re-scored in 2009. This FCT allocation is therefore an inference based on the previous data. The remaining vegetation within this drainage line is very disturbed, with the understorey consisting predominantly of annual weed species	10.9
24	Low Woodland to Low Forest of <i>Eucalyptus camaldulensis</i> over Open Scrub of <i>Acacia rostellifera</i> on brown sand on lower slopes and drainage lines	1.2
25c	Heath of <i>Melaleuca systema</i> , <i>Melaleuca huegelii</i> subsp. <i>huegelii</i> and <i>Olearia</i> sp. Kennedy Range (G. Byrne 66) subsp. <i>dampieri</i> on grey brown clay in clay pans	18.7

Source: 'Spring 2009 Re-assessment of FCT Quadrats Established at Eneabba between 2001-2007' (Woodman Environmental, 2011).

5.1.2 Local Flora and Vegetation Surveys

A number of flora and vegetation surveys undertaken in compliance with current (or previous) EPA Technical Guidance have been undertaken within the vicinity of the Survey Area; the results of those assessments undertaken within the last 10 years are summarised in **Table 5.3**, and the survey locations are shown on **Figure 5.3** (subject to the availability of spatial data). **Table 5.3** also includes data on the presence of Declared Pest introduced flora (DPIRD, 2023b) and WoNS (CISS, 2023) where recorded by previous surveys. Note that the nomenclature and conservation status ratings of significant flora taxa presented in **Table 5.3** have been updated where necessary to align with Florabase (WA Herbarium, 1998-).

Note that Tsakalos et al. (2018) undertook classification analyses on a subset of the Woodman Environmental (2011) dataset (kwongan quadrats only, excluding wetlands, drainage lines, salt pan edges, and disturbed sites) with an additional 29 relevés from a study by Griffin et al. (1983). In addition to floristic data, these analyses considered 95 environmental drivers including climate, fire, soil and terrain properties. These analyses identified two major community groups (MCGs), eight community groups (CGs), and 17 communities.

It appears that these vegetation communities have not been mapped, and the Tsakalos et al. (2018) study does not present an assessment of local or regional conservation significance of the communities (including spatial extent) or presence in conservation reserves. This lack of spatial dataset does not allow for

determination of significance by way of spatial analysis, or calculation of impacts to these communities in terms of percent loss.

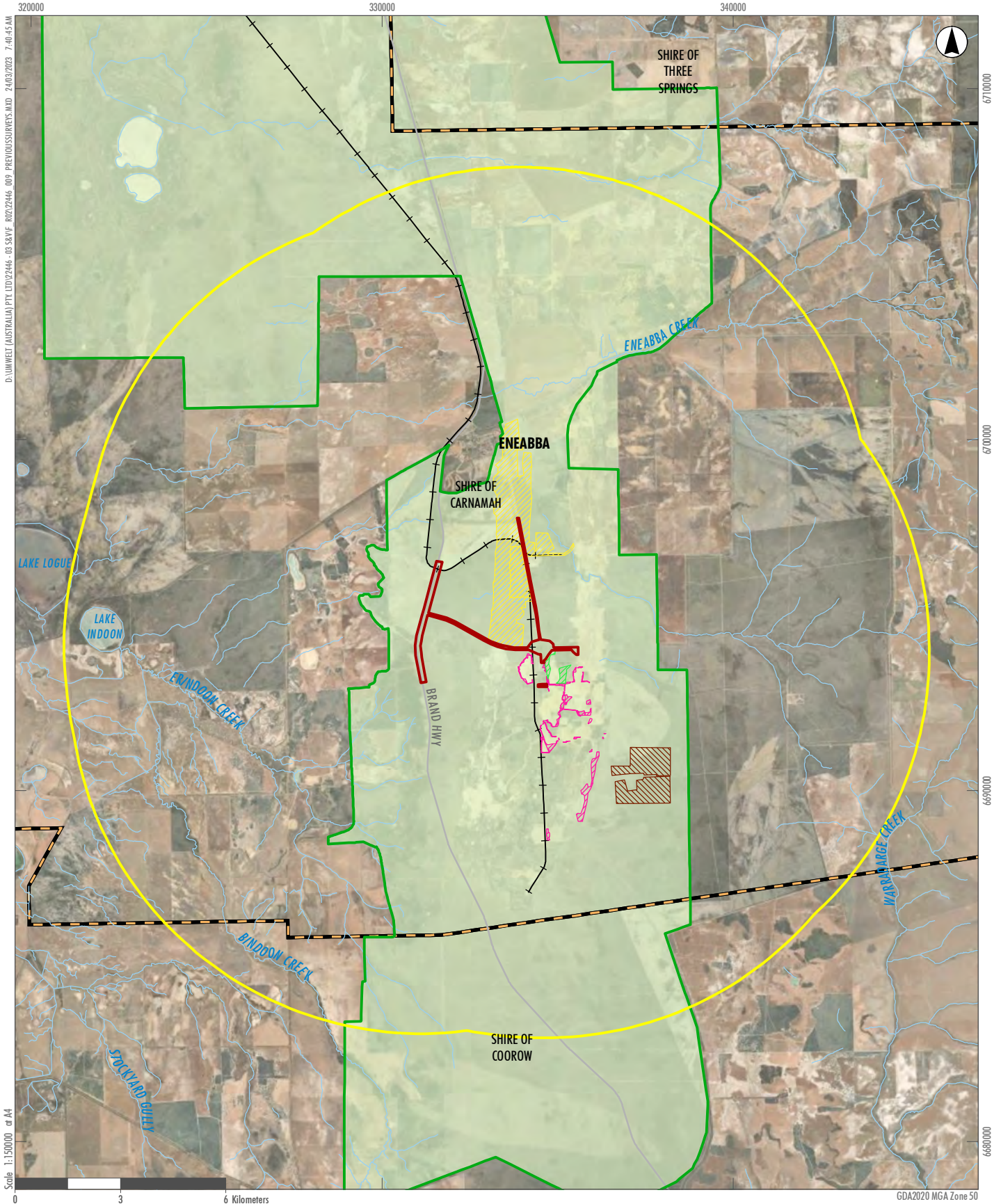
The lack of mapping also makes it challenging to assign new sites to the Tsakalos et al. (2018) vegetation communities, other than by rerunning a floristic analysis, which is beyond the scope of this assessment (refer to **Section 1.4**). It is presumed that in the context of this current assessment (Reconnaissance flora and vegetation assessment) this would be via manual comparison of flora and environmental data; this is likely to have been difficult, particularly given the sampling method employed by this current survey (unbound relevés recording dominant taxa only). Furthermore, the Tsakalos et al. CGs in MCG A share many species, and “the differentiation between those CGs is more quantitative (based on % constancy) than qualitative (occurrence of exclusive diagnostic species per CG)”. In addition, the “ecological differentiation between the CGs classified in MCG B is less clear. Disregarding the outlying and spatially poorly represented and monotypic CGs B4 and B5, the remaining CGs separate poorly (showing large overlaps) along axis 1.” It is not clear how the Tsakalos et al. study results could be confidently extrapolated to assign a community to a new site, and which of the 95 environmental variables would be required to be assessed; the paper states that “The total variance explained [by all environmental variables] is 29 %, hence leaving a large 71 % of variability unexplained”. Therefore, the communities defined by Tsakalos et al. (2018) have not been used in this current assessment.

Significant flora taxa recorded within or in the vicinity of the Survey Area by previous surveys that are not considered to occur in the Eneabba area are discussed in **Section 5.1.4**. These records are considered erroneous and are therefore not presented in **Table 5.3**, and the associated taxa are not mentioned further in this report. The identification of these entities cannot be confidently resolved without inspecting the original specimen material.

Table 5.3 Summary of Flora and Vegetation Surveys Previously Conducted Within and in the Vicinity of the Survey Area

Project and Author	Location and Scope	Assessment Parameters	Survey Timing	Flora Census	Significant Flora Taxa	Vegetation	Introduced Flora Taxa
Summary Report of Flora and Vegetation Studies 2001 to 2011 (Woodman Environmental, 2012)	Summary of Woodman Environmental (2009a, 2011) and subsequent studies. Study area occurs within Desktop Study Area and overlaps current Survey Area	425 quadrats analysed	NA	<ul style="list-style-type: none"> 1,012 taxa 75 families 	15 Threatened taxa indicated as having been recorded previously: <ul style="list-style-type: none"> <i>Eleocharis keigheryi</i> (T) <i>Eremophila glabra</i> subsp. <i>chlorella</i> (T) <i>Eucalyptus impensa</i> (T) <i>Eucalyptus johnsoniana</i> (T) <i>Eucalyptus suberea</i> (T) <i>Grevillea althoferorum</i> subsp. <i>althoferorum</i> (T) <i>Paracaleana dixonii</i> (T) <i>Styphelia longissima</i> (T) <i>Styphelia obtecta</i> (T) <i>Tetradlea nephelioides</i> (T) <i>Thelymitra stellata</i> (T) 79 Priority taxa indicated as having been recorded previously	<ul style="list-style-type: none"> 30 FCTs described and mapped Three FCTs (FCTs 12a, 12b and 15b) identified as being representative of the 'Ferricrete floristic community (Rocky Springs type)' TEC and two FCTs (FCTs 14 and 19) identified as possibly being representative of the TEC Nine FCTs (FCTs 10a, 12a, 12b, 13, 15b, 20, 22a, 24 and 25c) identified as being locally restricted One FCT (FCT 13) identified as being of high conservation significance due to being very locally restricted and containing a unique group of species on shale The majority of FCTs were identified as being of high conservation significance (rated 4 or 5 out of 5) due to combinations of low percentage of mapped area, being on a restricted landform, being unknown in conservation reserves, and providing habitat for conservation significant flora 	One Declared Pest indicated as having been recorded previously: <ul style="list-style-type: none"> <i>Echium plantagineum</i> 45 other introduced flora taxa indicated as having been recorded previously
Threatened and Priority Flora Survey of Proposed Drill Lines: IPL North (Woodman Environmental, 2013)	Targeted flora survey along drill lines at IPL North. Study area occurs within Desktop Study Area and overlaps current Survey Area	Targeted searching for significant flora taxa along drill lines	October to November 2012	NA	1 Threatened taxon recorded: <ul style="list-style-type: none"> <i>Paracaleana dixonii</i> (T) 10 Priority taxa recorded	NA	NA
Field Survey for <i>Thelymitra pulcherrima</i> (P2): IPL North (Woodman Environmental, 2014a)	Targeted survey for <i>Thelymitra pulcherrima</i> (P2) within IPL North. Study area occurs within Desktop Study Area and overlaps current Survey Area	Targeted searching for <i>Thelymitra pulcherrima</i> (P2) along transects at 50 m intervals	July 2013	NA	No Threatened taxa recorded 1 Priority taxon recorded	NA	NA
Survey of Potential Offset Areas for <i>Paracaleana dixonii</i> (Threatened – Declared Rare Flora) (Woodman Environmental, 2014b)	Targeted flora survey within Lot 10885 and Lot 10240 survey areas. Lot 10885 study area located within Desktop Study Area	Targeted searching for significant flora taxa	November 2013	NA	4 Threatened taxa recorded: <ul style="list-style-type: none"> <i>Eleocharis keigheryi</i> (T) <i>Eucalyptus johnsoniana</i> (T) <i>Hakea megalosperma</i> (T) <i>Paracaleana dixonii</i> (T) 36 Priority taxa recorded	NA	NA
Conservation Significant Flora Search: Yellow Dam Clearing Areas (Woodman Environmental, 2015a)	Targeted flora survey adjacent to Yellow Dam. Study area located within Desktop Study Area	Targeted searching for significant flora taxa along transects at 50 m intervals	November 2014	NA	No Threatened taxa recorded 8 Priority taxa recorded	NA	NA
Conservation Significant Flora Searching in Mulch Areas – Eneabba (Woodman Environmental, 2015b)	Targeted flora survey near South Tails. Study area occurs within Desktop Study Area	Targeted searching for significant flora taxa along transects at 50 m intervals	November 2014	NA	3 Threatened taxa recorded: <ul style="list-style-type: none"> <i>Eucalyptus impensa</i> (T) <i>Eucalyptus johnsoniana</i> (T) <i>Paracaleana dixonii</i> (T) 22 Priority taxa recorded	NA	NA

Project and Author	Location and Scope	Assessment Parameters	Survey Timing	Flora Census	Significant Flora Taxa	Vegetation	Introduced Flora Taxa
Eneabba Substation to Karara Mine: Tee-off Line Removal Threatened and Priority Flora Follow-up and Demarcation Survey (Woodman Environmental, 2015c)	Targeted searching for significant flora taxa within the easement of a transmission line. Demarcation of significant flora locations. Part of study area occurs within Desktop Study Area	Targeted searching for significant flora taxa along transects at 10 m intervals	October 2014	NA	3 Threatened taxa recorded: <ul style="list-style-type: none"> Hensmania chapmanii (T) Paracaleana dixonii (T) Verticordia albida (T) 27 Priority taxa recorded	<ul style="list-style-type: none"> One TEC recorded (Ferricrete floristic community (Rocky Springs type)) 	NA
Significant Flora Survey: Lake Logue Monitoring Bore (Woodman Environmental, 2015d)	Targeted flora survey at bore location in Lake Logue Nature Reserve. Study area occurs within Desktop Study Area	Targeted searching for significant flora taxa along transects at 5 to 10 m intervals	November 2015	NA	1 Threatened taxon recorded: <ul style="list-style-type: none"> Paracaleana dixonii (T) 2 Priority taxa recorded	NA	NA
Significant Flora Survey: South Mine Rehabilitation Clearing for Final Landform and Drainage (Woodman Environmental, 2016)	Targeted flora survey near South Mine rehabilitation area. Study area occurs within Desktop Study Area	Targeted searching for significant flora taxa along transects at 5 to 30 m intervals	November 2015	NA	No Threatened taxa recorded 16 Priority taxa recorded	NA	NA
Assessment of Analogue Sites and Rehabilitated Mining Areas from 2008, 2011, 2014 and 2016 (Mattiske, 2018)	Rehabilitation monitoring. Study area located within Desktop Study Area	Monitoring at 33 rehabilitation and analogue transects consisting of 20 quadrats each	October 2017	<ul style="list-style-type: none"> 348 taxa 136 genera 47 families 	No Threatened taxa recorded 13 Priority taxa recorded	NA	NA
Eneabba Banksia Camp Flora and Vegetation Survey (Umwelt, 2022)	Reconnaissance and Targeted flora and vegetation survey. Study area includes existing Iluka Banksia Village and surrounding vegetation. Study area occurs within Desktop Study Area	Six relevés and targeted searching for significant flora and vegetation along transects at 10 m intervals	November 2021	<ul style="list-style-type: none"> 102 taxa (and 1 putative hybrid) 62 genera 26 families 	1 Threatened taxon recorded: <ul style="list-style-type: none"> Grevillea curviloba (T) (presumed cultivated) 2 Priority taxa recorded	<ul style="list-style-type: none"> Three native and one planted vegetation type described and mapped No PECs/TECs recorded Vegetation in Very Good to Good condition 	13 introduced flora taxa recorded, none of which are Declared Pests or WoNS



Legend

- Desktop Study Area
- Survey Area
- ERMP Study Area
- Northern Sandplains Study Area
- Railways
- State Roads
- Drainage Lines
- Waterbodies
- LGA Boundary

- Previous Surveys**
- Field Survey for *Thelymitra pulcherrima* (P2): IPL North (Woodman Environmental 2014a)
 - Conservation Significant Flora Searching in Mulch Areas – Eneabba (Woodman Environmental 2015a)
 - Conservation Significant Flora Search: Yellow Dam Clearing Areas (Woodman Environmental 2015b)
 - Significant Flora Surveys: Lake Logue Monitoring Bore and South Mine Rehabilitation Clearing (Woodman Environmental 2015c, 2016)

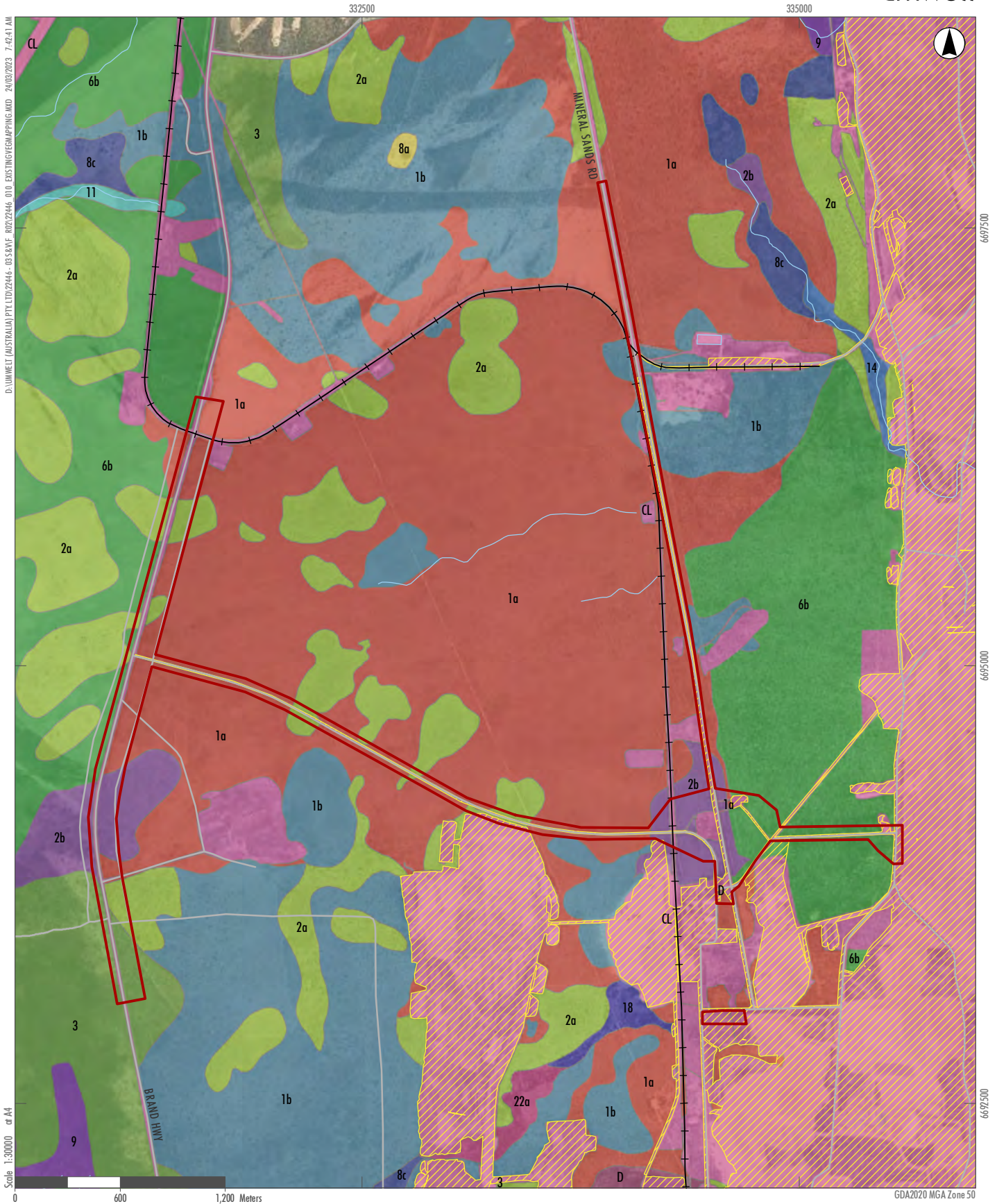
FIGURE 5.3

Flora and Vegetation Surveys Previously Conducted Within and in the Vicinity of the Survey Area

5.1.3 Local Vegetation

As described in **Section 5.1.1**, a total of 31 FCTs were described and mapped by Woodman Environmental (2011) within the ERMP study area. Of these, six FCTs have been mapped within the Survey Area. These are summarised below:

- FCT 1a: Open Low Woodland to Open Low Scrub of *Eucalyptus pleurocarpa* and/or *Eucalyptus todtiana* over mixed shrubs dominated by *Banksia* spp. and *Hakea* spp. over sedges on grey to brown sands with very occasional laterite influence on lower to mid slopes
- FCT 1b: Open Woodland to Scrub of *Eucalyptus* spp. and/or *Banksia* spp., with occasional *Xylomelum angustifolium*, over mixed shrubs dominated by myrtaceous spp., *Banksia* spp., and *Jacksonia* spp. on grey sand on mid to upper slopes. This FCT is generally restricted to upper slope and crest areas characterised by deep sands
- FCT 2a: Low Woodland of *Banksia attenuata* and occasional *Banksia menziesii* and *Xylomelum angustifolium* over Low Scrub of mixed species including *Banksia leptophylla* var. *leptophylla*, *Banksia candolleana*, *Melaleuca leuropoma* and *Hibbertia hypericoides* on brown or grey sand on upper slopes
- FCT 2b: Scrub of *Banksia attenuata*, with emergent *Eucalyptus todtiana* or *Eucalyptus pleurocarpa*, over Low Scrub dominated by *Banksia* spp. on predominantly yellow sands on mid and upper slopes
- FCT 3: Open Low Woodland to Heath of *Banksia* spp. over mixed shrubs commonly including *Melaleuca leuropoma*, *Eremaea beaufortoides* and *Scholtzia laxiflora* on grey or yellow sand on lower to mid slopes. This FCT is often adjacent to drainage lines or winter-wet areas, and is dominated by a number of *Banksia* species including *Banksia attenuata*, *B. candolleana*, *B. menziesii*, and *B. leptophylla*, with emergent *Eucalyptus todtiana*
- FCT 6b: Shrublands and Heaths, with occasional Low Woodland of *Eucalyptus pleurocarpa*. Common species include *Allocasuarina microstachya*, *Melaleuca leuropoma*, *Melaleuca trichophylla*, and *Verticordia* spp. over sedges on grey-brown sands, sandy clays and or gravel on flats, swales and lower slopes. This FCT was always associated with areas of FCT 2a.



D:\UMWELT (AUSTRALIA) PTY LTD\22446-03\S&KF_R02\22446_010_EXISTINGVEGETATION.MXD 24/03/2023 7:42:41 AM
 Scale 1:30000 at A4

Legend

- | | | |
|---------------------|-------------------------------------------|-----|
| Survey Area | Existing Floristic Community Types | 8c |
| Railways | 1a | 9 |
| Roads | 1b | 11 |
| Drainage Lines | 2a | 14 |
| Waterbodies | 2b | 18 |
| Rehabilitated Areas | 3 | 22a |
| | 6b | CL |
| | 8a | D |

FIGURE 5.4

Existing Vegetation Mapping of the Survey Area and Surrounds

Legend

Existing Floristic Community Types

- 1a Open Low Woodland to Open Low Scrub of *Eucalyptus pleurocarpa* and/or *Eucalyptus totidiana* over mixed shrubs dominated by *Banksia* spp. and *Hakea* spp. over sedges on grey to brown sands with very occasional laterite influence on lower to mid slopes
- 1b Open Woodland to Scrub of *Eucalyptus* spp. and/or *Banksia* spp., with occasional *Xylomelum angustifolium*, over mixed shrubs dominated by myrtaceous spp., *Banksia* spp., and *Jacksonia* spp. on grey sand on mid to upper slopes
- 2a Low Woodland of *Banksia attenuata* and occasional *Banksia menziesii* and *Xylomelum angustifolium* over Low Scrub of mixed species including *Banksia leptophylla* var. *leptophylla*, *Banksia candolleana*, *Melaleuca leuropoma* and *Hibbertia hypericoides* on brown or grey sand on upper slopes
- 2b Scrub of *Banksia attenuata*, with emergent *Eucalyptus totidiana* or *Eucalyptus pleurocarpa*, over Low Scrub dominated by *Banksia* spp. on predominantly yellow sands on mid and upper slopes
- 3 Open Low Woodland to Heath of *Banksia* spp. over mixed shrubs commonly including *Melaleuca leuropoma*, *Eremaea beaufortioides* and *Scholtzia laxiflora* on grey or yellow sand on lower to mid slopes
- 6b Shrublands and Heaths, with occasional Low Woodland of *Eucalyptus pleurocarpa*. Common species include *Allocasuarina microstachya*, *Melaleuca leuropoma*, *Melaleuca trichophylla*, and *Verticordia* spp. over sedges on grey-brown sands, sandy clays and or gravel on flats, swales and lower-slopes
- 8a Low Woodland of *Melaleuca raphiophylla* over a species poor understorey dominated by annuals, *Leptocarpus* spp. and *Conostylis aculeata* subsp. *breviflora* on sandy clay in wet depressions and drainage lines
- 8c Low Scrub of *Melaleuca leuropoma*, often with *Banksia leptophylla* var. *leptophylla* and *Melaleuca ciliosa* or *Melaleuca raphiophylla*, over low mixed shrubs including *Verticordia densiflora* and *Lyginia imberbis* on grey-brown sands in drainage lines and depressions
- 9 Shrublands and Thickets dominated by *Melaleuca* spp. and *Banksia* spp. on grey or brown sandy clays and sandy loams with some lateritic gravel on seasonally wet flats, depressions and creek-lines
- 11 Thickets of *Calothamnus hirsutus*, *Melaleuca* spp. and/or *Callitris pyramidalis* over *Thryptomene mucronulata* on sandy clay in seasonally inundated depressions
- 14 Low Woodland of *Eucalyptus accedens* over Open Low Scrub dominated by *Baeckea/Babingtonia* spp. and *Melaleuca* spp. on sandy gravels or sandy clay on flats and lower slopes
- 18 Thicket dominated by *Melaleuca viminea* subsp. *viminea*, with occasional *Eucalyptus loxophleba* subsp. *loxophleba* or *Eucalyptus camaldulensis* in clay flats
- 22a Low Woodland of *Melaleuca preissiana* over a sparse, often disturbed shrub layer of species including *Tecticornia pergranulata* subsp. *pergranulata* and *Rhagodia preissii* subsp. *obovata* on grey sandy clay in depressions and seasonally inundated basins
- CL Cleared Land
- D Degraded vegetation on private property

FIGURE 5.4

LEGEND: Existing Vegetation Mapping of the Survey Area and Surrounds

5.1.4 Significant Flora Taxa

The interrogation of the DBCA WA Herbarium Specimen Database and TPFL Database (DBCA, 2022c) returned a total of 98 listed significant vascular flora taxa that have records within the Desktop Study Area. Of these taxa, 16 are currently listed as Threatened under the EPBC Act and/or BC Act, and 82 are DBCA-classified Priority flora.

In addition to searches of DBCA databases, an interrogation of the DCCEEW SPRAT database with regard to MNES was also undertaken (DAWE, 2022). This search identified eight additional (giving a total of 24) Threatened flora species listed under the EPBC Act, or habitat for such species, that may occur within the Desktop Study Area (full results of this search presented in **Appendix B**). However, it is worthy of note that the SPRAT database search is based on Threatened flora taxa known from regional areas as opposed to actual records (as per the DBCA database searches) and includes provision of species and species habitat that are 'likely to occur' or 'may occur', as well as those that are 'known to occur' in such areas. Therefore, the interrogation of the SPRAT database returns flora taxa known from a wider area than the DBCA database searches.

A search of the Tronox-Iluka Significant Flora Database (Iluka, 2021) returned 12 additional listed significant flora taxa that have records from within the Desktop Study Area, all of which are classified by DBCA as Priority flora taxa.

Compilation of results of previous flora and vegetation surveys conducted in the local area, as summarised in **Section 5.1.2**, provided an additional four listed significant flora taxa that were not returned from any of the aforementioned database searches.

Significant flora taxa returned from the searches above that are not considered to occur in the Eneabba area are discussed in **Table 5.4**. These records are considered erroneous and are therefore not mentioned further in this report. Note that the identification of these entities cannot be confidently resolved without inspecting the original specimen material, which is unlikely to be available given the age of these surveys (specimens of these entities do not appear to have been lodged at the WA Herbarium).

Table 5.4 Taxa Returned from the Desktop Assessment that are Not Considered to Occur in the Desktop Study Area and its Vicinity

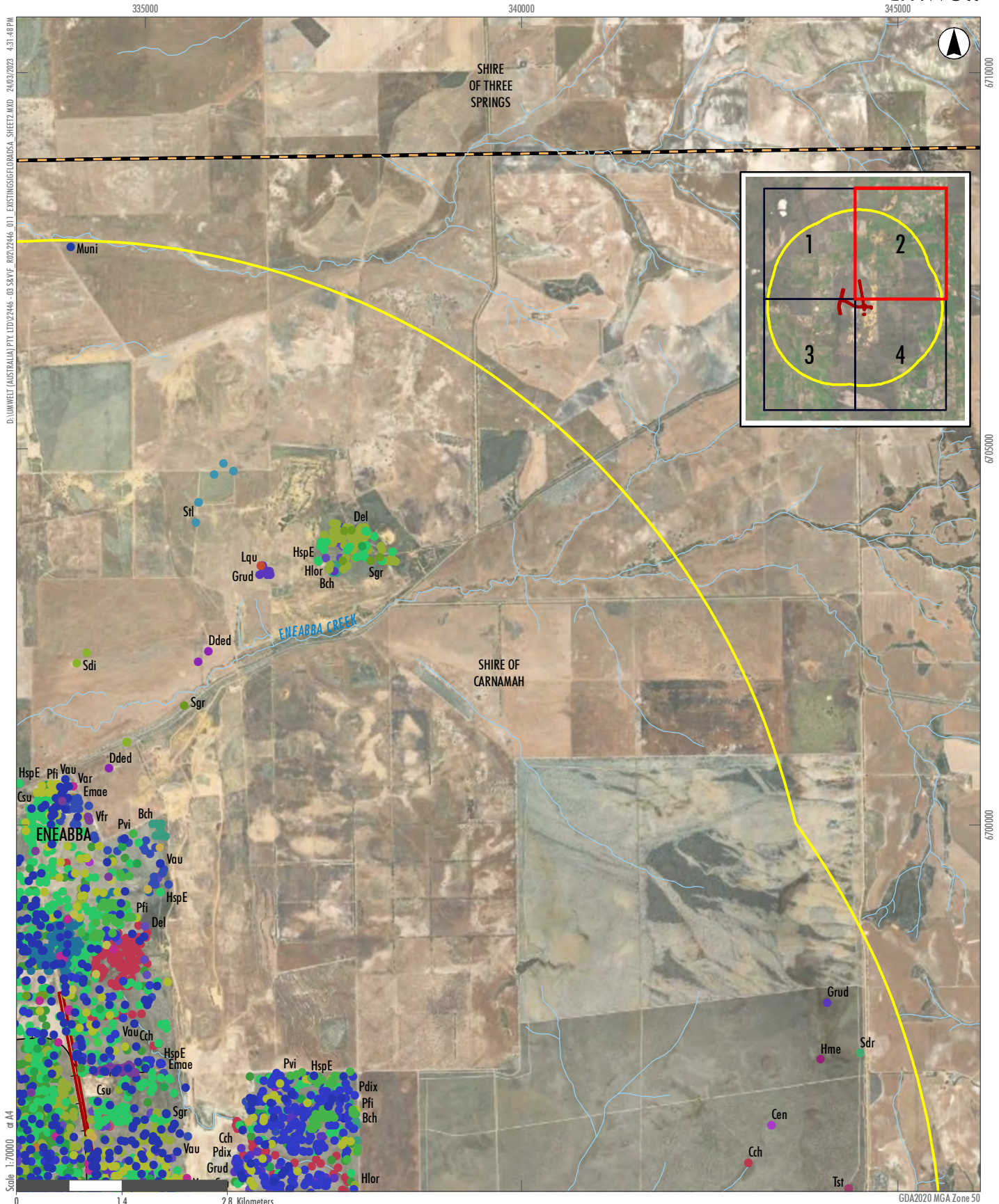
Taxon (Status, WA)	Source	Verified Distribution*	Comment
<i>Banksia cypholoba</i> (P3)	DBCA (2022c), Iluka (2021)	From near Arrino in the north to near Boothendarra in the south. Closest known record is approximately 15 km east of the Survey Area	Likely a misidentification of <i>Banksia dallanneyi</i> subsp. <i>media</i>
<i>Banksia scabrella</i> (P4)	Iluka (2021): Western Botanical 2008 Allied Tails Rehabilitation Monitoring	From near Walkaway in the north to east of Arrowsmith in the south. Closest known record is approximately 32 km north of the Survey Area	Likely a misidentification of another small-leaved <i>Banksia</i>
<i>Calothamnus arcuatus</i> (P2)	DBCA (2022c)	From around Arrowsmith East in the southwest to east of Yandanooka in the northeast. Closest known record is from Western Flora Caravan Park, approximately 25 km north of the Survey Area	Erroneous coordinates on DBCA record – original locality description says Western Flora Caravan Park, north of Eneabba, but coordinates represent Iluka Banksia Village in Eneabba
<i>Eremaea acutifolia</i> (P3)	Iluka (2021): Western Botanical 2008 Allied Tails Rehabilitation Monitoring	From near Kojarena in the north to just south of Mingenew in the south. Closest known record is approximately 55 km north-northeast of the Survey Area	Likely a misidentification; a number of other superficially similar <i>Eremaea</i> species occur at Eneabba
<i>Eremophila microtheca</i> (P4)	Iluka (2021): original data source unknown	Restricted to the Kalbarri and Port Gregory area. Closest known record is approximately 210 km north-northwest of the Survey Area	Represents a record of <i>Eremophila subangustifolia</i> (T), which is known from the Eneabba area, and was formerly considered to represent <i>E. microtheca</i>
<i>Grevillea curviloba</i> (T)	DAWE (2022), DBCA (2022c), Umwelt (2022)	Gingin area, approximately 180 km south of the Survey Area	Presumed planted in the Eneabba area
<i>Grevillea thyrsoides</i> subsp. <i>pustulata</i> (P3)	Iluka (2021): Woodman Environmental (2012)	From near Coorow in the northeast to near Dandaragan in the southwest. Closest known record is approximately 75 km east of the Survey Area	Possibly a misidentification of <i>Grevillea thyrsoides</i> subsp. <i>thyrsoides</i> (P3), which is known from the Eneabba area
<i>Stylidium hymenocraspedum</i> (P3)	Iluka (2021): Woodman Environmental (2012)	From Badgingarra in the north to near Cataby in the south. Closest known record is approximately 50 km south of the Survey Area	This taxon was published the same year as this record. Likely a misidentification of <i>Stylidium maitlandianum</i>

Based on the searches undertaken for the Desktop Study Area, and upon disregarding taxa presented in **Table 5.4**, a total of 116 listed significant flora taxa are known from, or potentially occur within, the Desktop Study Area; these taxa are presented in **Appendix C**. **Appendix C** also presents the flowering period and habitat for each taxon according to specimens lodged at the WA Herbarium (accessed via Florabase) (WA Herbarium, 1998-).

Of the 116 taxa identified by the desktop assessment, 24 are currently listed as Threatened under the EPBC Act and/or BC Act, and 92 are DBCA-classified Priority flora. A total of 16 significant flora taxa have known records within the Survey Area; these taxa are listed below:

- *Banksia chamaephyton* (P4)
- *Calytrix chrysantha* (P4)
- *Calytrix superba* (P4)
- *Desmocladius elongatus* (P4)
- *Eucalyptus macrocarpa* subsp. *elachantha* (P4)
- *Haemodorum loratum* (P3)
- *Hemiandra* sp. Eneabba (H. Demarz 3687) (P3)
- *Hypocalymma gardneri* (P3)
- *Paracaleana dixonii* (T)
- *Persoonia filiformis* (P3)
- *Schoenus griffinianus* (P4)
- *Stylidium carnosum* subsp. *Narrow leaves* (J.A. Wege 490) (P1)
- *Thelymitra pulcherrima* (P2)
- *Verticordia argentea* (P2)
- *Verticordia aurea* (P4)
- *Verticordia fragrans* (P3).

Figure 5.5 presents the known historical locations of listed significant flora from within the Desktop Study Area (subject to the availability of spatial data).

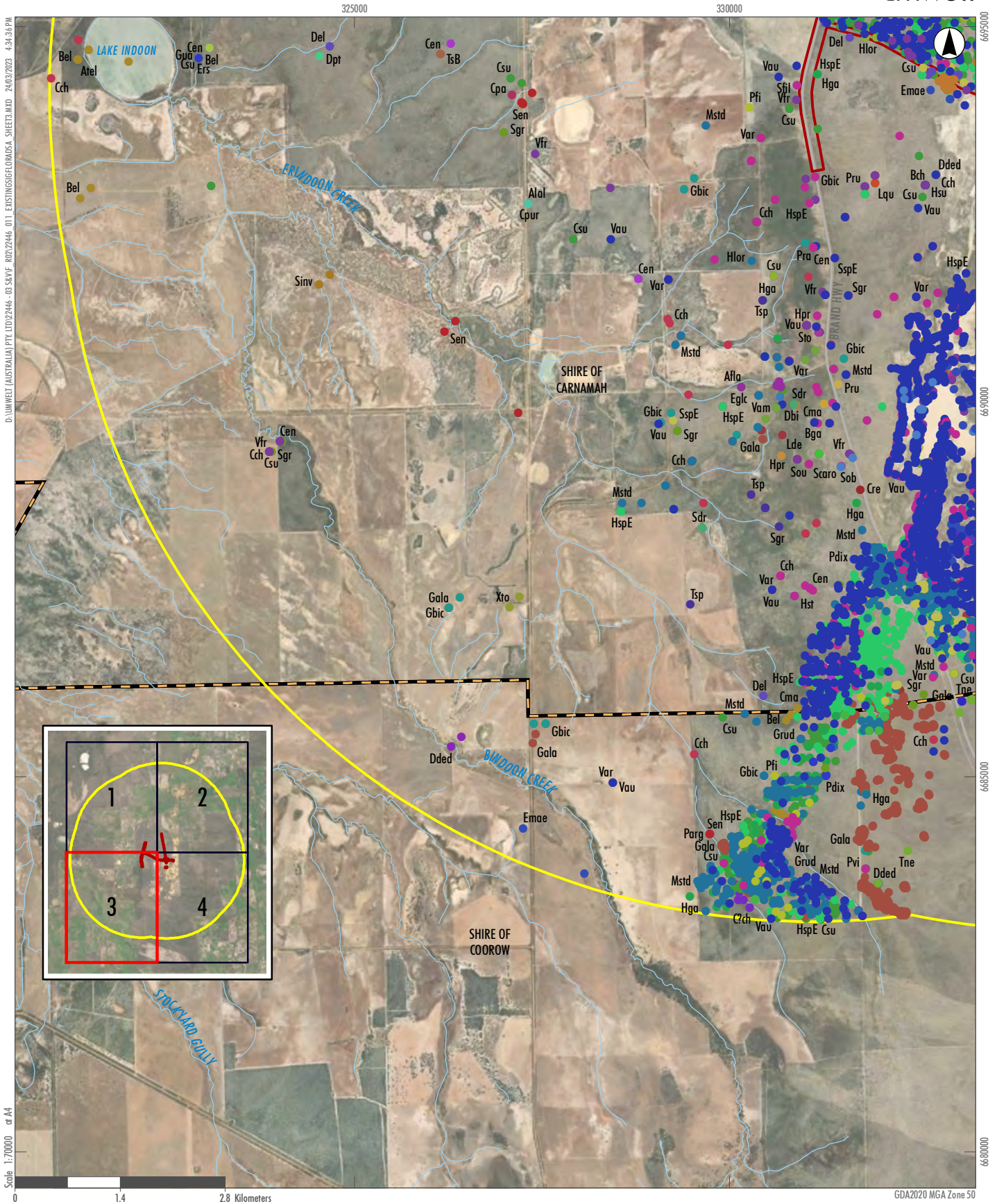


Legend

Desktop Study Area	Significant Flora Taxa	Csc	Grle	Lqu	Pvi	Stl
Survey Area	Bch	Dded	Grud	Mstd	Sgr	Tpu
Railways	Bel	Del	Hlor	Muni	SspE	Tst
Drainage Lines	Cch	Ejo	Hme	Pdix	Sdi	Var
LGA Boundary	Cen	Emae	HspE	Pfi	ScaN	Vau
	Csui	Gbic	Hga	Pru	Sdr	Vfr

FIGURE 5.5

Existing Significant Flora Records of the Desktop Study Area



D:\UMWELT (AUSTRALIA) PTY LTD\2446 - 03 SRV\F_R02\2446_011_EXISTINGSGF\ORDS.A_SHEET3.MXD 24/03/2023 4:34:36 PM
 Scale 1:70000 at A4

Legend

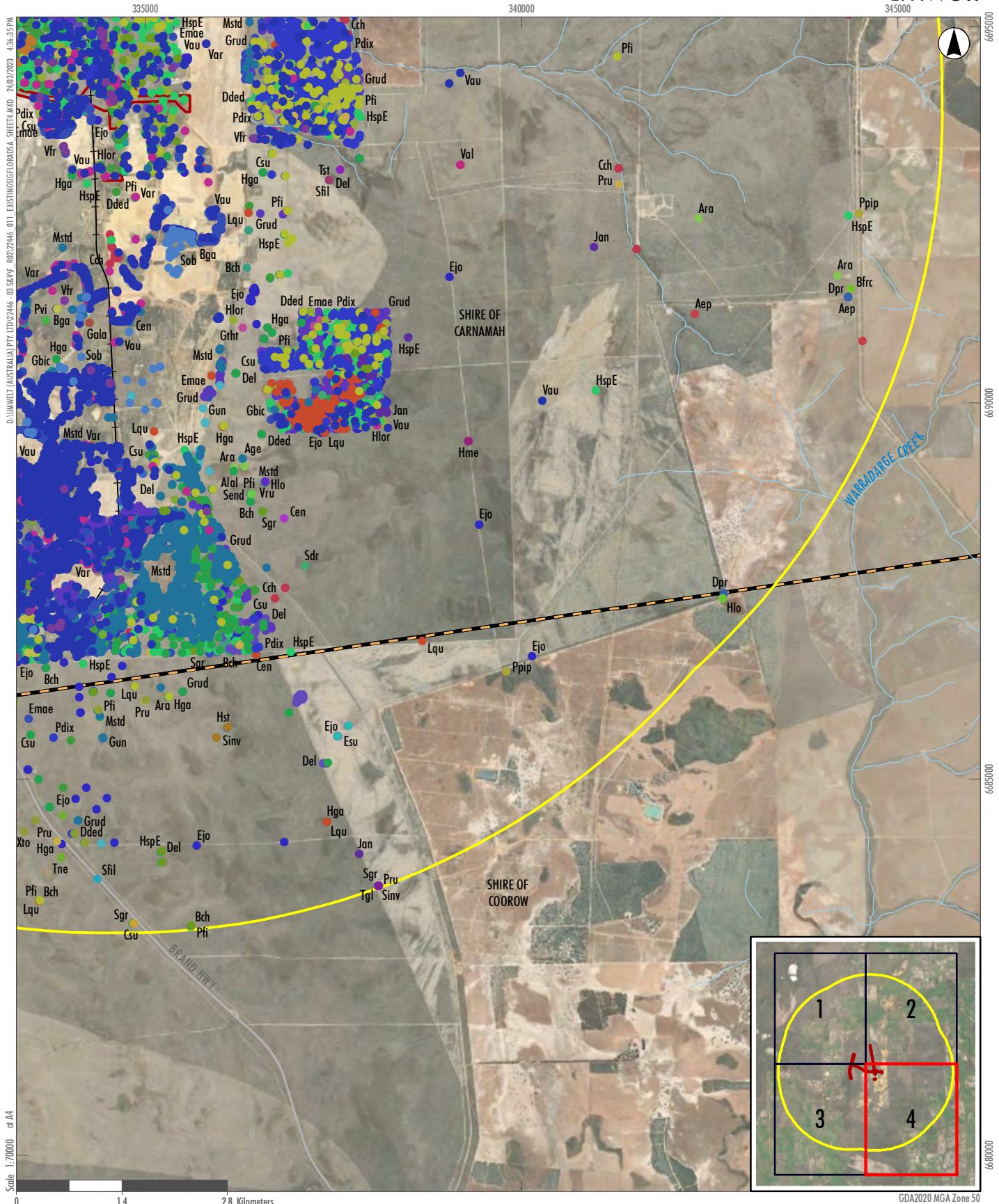
- Desktop Study Area
- Survey Area
- State Roads
- Drainage Lines
- Waterbodies
- LGA Boundary

Significant Flora Taxa

- | | | | | | | | |
|-------------------------------------------|--------------------------------------------|---------------------------------------------|--------------------------------------------|---------------------------------------------|--------------------------------------------|------------------------------------------------|---------------------------------------------|
| ● Afla | ● Cpa | ● Cma | ● Ejo | ● Hst | ● Pfi | ● Sto | ● Vam |
| ● Alal | ● Cch | ● Cchip | ● Emae | ● Hpr | ● Pru | ● Scaro | ● Var |
| ● Atel | ● Cen | ● Dded | ● Fgl | ● Hsu | ● Pvi | ● Sfil | ● Vau |
| ● Bch | ● Cpur | ● Dpt | ● Gala | ● Hga | ● Pra | ● Sob | ● Vfr |
| ● Bel | ● Csu | ● Dbi | ● Gbic | ● Lde | ● Sen | ● Sou | ● Vmum |
| ● Bga | ● C?ch | ● Del | ● Grud | ● Lqu | ● Sgr | ● Tne | ● Xto |
| ● Bsi | ● Cre | ● Eglc | ● Gua | ● Mstd | ● SspE | ● Tpu | |
| | ● Cgr | ● Ers | ● Hlor | ● Pdix | ● Sdr | ● Tsp | |
| | ● Crh | ● Ecrl | ● HspE | ● Parg | ● Sinv | ● Tsb | |

FIGURE 5.5

Existing Significant Flora Records of the Desktop Study Area



Legend		Significant Flora Taxa	
	Desktop Study Area		Aep
	Survey Area		Alal
	Railways		Age
	State Roads		Ara
	Drainage Lines		Bch
	LGA Boundary		Bfrc
			Bga
			Cch
			Cen
			Csu
			Cma
			Eui
			Gala
			Gama
			Del
			Dpr
			Eex
			Ejo
			Emae
			Esu
			Hlo
			Mstd
			Pdix
			Pfi
			Pru
			Ppip
			Sto
			Sfil
			Sob
			Send
			Tne
			Tpu
			Tst
			Tgl
			Val
			Vam
			Var
			Vau
			Vfr
			Vru
			Xto

FIGURE 5.5
Existing Significant Flora Records
of the Desktop Study Area
SHEET 4

Image Source: ESRI Basemap (2021) Data source: Iluka (2021), Landgate (2023), DBCA (2022c)

Legend

Significant Flora Taxa

● Aep <i>Acacia epacantha</i> (P3)	● Ejo <i>Eucalyptus johnsoniana</i> (T)	● Ppip <i>Phlebocarya pilosissima</i> subsp. <i>pilosissima</i> (P3)
● Afla <i>Acacia flabellifolia</i> (P3)	● Emae <i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i> (P4)	● Pvi <i>Pityrodia viscida</i> (P4)
● Alal <i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i> Cockleshell Gully variant (E.A. Griffin 2039) (P2)	● Erhr <i>Eucalyptus rhodantha</i> var. <i>rhodantha</i> (T)	● Pra <i>Platysace ramosissima</i> (P3)
● Atel <i>Acacia telmica</i> (P3)	● Esu <i>Eucalyptus suberea</i> (T)	● Pcli <i>Philotus clivicola</i> (P2)
● Avi <i>Acacia vittata</i> (P2)	● Eui <i>Eucalyptus x impensa</i> (T)	● Sen <i>Scaevola eneabba</i> (P2)
● Age <i>Allocauarina grevilleoides</i> (P3)	● Ezo <i>Eucalyptus zopherophloia</i> (P4)	● Sgr <i>Schoenus griffinianus</i> (P4)
● Ara <i>Allocauarina ramosissima</i> (P3)	● Fgl <i>Frankenia glomerata</i> (P4)	● SspE <i>Schoenus</i> sp. <i>Eneabba</i> (F. Obbens & C. Godden 1154) (P2)
● Bch <i>Banksia chamaephyton</i> (P4)	● Gala <i>Grevillea althoferorum</i> subsp. <i>althoferorum</i> (T)	● Sdi <i>Stawellia dimorphantha</i> (P4)
● Bel <i>Banksia elegans</i> (P4)	● Gama <i>Grevillea amplexans</i> subsp. <i>adpressa</i> (P1)	● ScaN <i>Stylidium camosum</i> subsp. <i>Narrow leaves</i> (J.A. Wege 490) (P1)
● Bfrc <i>Banksia fraseri</i> var. <i>crebra</i> (P3)	● Gbic <i>Grevillea biformis</i> subsp. <i>cymbiformis</i> (P3)	● Sdr <i>Stylidium drummondianum</i> (P3)
● Bkip <i>Banksia kippistiana</i> var. <i>paenepeccata</i> (P3)	● Gcur <i>Grevillea curviloba</i> (T)	● Sinv <i>Stylidium inversiflorum</i> (P4)
● Bga <i>Beyeria gardneri</i> (P3)	● Grle <i>Grevillea leptopoda</i> (P3)	● Sto <i>Stylidium torticapum</i> (P3)
● Bsi <i>Beyeria similis</i> (P2)	● Grud <i>Grevillea rudis</i> (P4)	● Scaro <i>Styphelia carolineae</i> (P2)
● Cpa <i>Calectasia palustris</i> (P2)	● Gtht <i>Grevillea thyrsoides</i> subsp. <i>thyrsoides</i> (P3)	● Sfil <i>Styphelia filamentosa</i> (P3)
● Cch <i>Calytrix chrysantha</i> (P4)	● Gun <i>Grevillea uniformis</i> (P3)	● Stil <i>Styphelia longissima</i> (T)
● Cen <i>Calytrix eneabbensis</i> (P4)	● Gua <i>Guichenotia alba</i> (P3)	● Sob <i>Styphelia obtecta</i> (T)
● Cpur <i>Calytrix purpurea</i> (P2)	● Hlor <i>Haemodorum loratum</i> (P3)	● Send <i>Synaphea endothrix</i> (P3)
● Csu <i>Calytrix superba</i> (P4)	● Hlo <i>Hakea longiflora</i> (P3)	● Sou <i>Synaphea oulopha</i> (P3)
● C?ch <i>Calytrix ?chrysantha</i> (P4)	● Hme <i>Hakea megalosperma</i> (T)	● Tne <i>Tetradthea nephelioides</i> (T)
● Cmil <i>Centrolepis milleri</i> (P3)	● HspE <i>Hemiandra</i> sp. <i>Eneabba</i> (H. Demarz 3687) (P3)	● Tpu <i>Thelymitra pulcherrima</i> (P2)
● Cre <i>Chordifex reseinans</i> (P2)	● Hst <i>Hensmania stoniella</i> (P3)	● Tst <i>Thelymitra stellata</i> (T)
● Cgr <i>Comesperma griffinii</i> (P2)	● Hpr <i>Hibbertia propinqua</i> (P4)	● Tsp <i>Thryptomene spicata</i> (P2)
● Crh <i>Comesperma rhadinocarpum</i> (P3)	● Hsu <i>Hibbertia subglabra</i> (P3)	● Tgl <i>Thysanotus glaucus</i> (P4)
● Csc <i>Conospermum scaposum</i> (P3)	● Hga <i>Hypocalymma gardneri</i> (P3)	● TsB <i>Thysanotus</i> sp. <i>Badgingarra</i> (E.A. Griffin 2511) (P2)
● Cma <i>Conostephium magnum</i> (P4)	● Jan <i>Jacksonia anthoclada</i> (P3)	● Val <i>Verticordia albida</i> (T)
● Cbip <i>Cristonia biloba</i> subsp. <i>pubescens</i> (P2)	● Kar <i>Korthalsella arthroclada</i> (P1)	● Vam <i>Verticordia amphigia</i> (P3)
● Dded <i>Daviesia debilior</i> subsp. <i>debilior</i> (P2)	● Lde <i>Lepidobolus densus</i> (P4)	● Var <i>Verticordia argentea</i> (P2)
● Dpt <i>Daviesia pteroclada</i> (P3)	● Lqu <i>Lepidobolus quadratus</i> (P3)	● Vau <i>Verticordia aurea</i> (P4)
● Dbi <i>Desmocladius biformis</i> (P3)	● Leo <i>Liparophyllum congestiflorum</i> (P4)	● Vder <i>Verticordia densiflora</i> var. <i>roseostella</i> (P3)
● Del <i>Desmocladius elongatus</i> (P4)	● Mstd <i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (P3)	● Vfr <i>Verticordia fragrans</i> (P3)
● Dpr <i>Drosera prophylla</i> (P3)	● Muni <i>Micromyrtus uniovulum</i> (P2)	● Vlur <i>Verticordia luteola</i> var. <i>rosea</i> (P1)
● Eglc <i>Eremophila glabra</i> subsp. <i>chlorella</i> (T)	● Pdix <i>Paracaleana dixonii</i> (T)	● Vmum <i>Verticordia muelleriana</i> subsp. <i>muelleriana</i> (P3)
● Ers <i>Eremophila subangustifolia</i> (T)	● Parg <i>Patersonia argyrea</i> (P3)	● Vpe <i>Verticordia penicillaris</i> (P4)
● Ecri <i>Eucalyptus crispata</i> (T)	● Pfi <i>Persoonia filiformis</i> (P3)	● Vru <i>Verticordia rutilastra</i> (P3)
● Eex <i>Eucalyptus exilis</i> (P4)	● Pru <i>Persoonia rudis</i> (P3)	● Wer <i>Walteranthus erectus</i> (P2)
	● Pse <i>Petrophile septemfida</i> (P3)	● Xto <i>Xanthosia tomentosa</i> (P4)

FIGURE 5.5

LEGEND: Existing Significant Flora Records of the Desktop Study Area

5.1.5 Introduced Flora Taxa

A list of introduced flora taxa known from the Survey Area and surrounds is presented in **Table 5.5**. This list has been taken from the results of the reports prepared by Woodman Environmental (2012) and Umwelt (2022), with these being the only surveys discussed in **Section 5.1.2** that have presented results related to introduced flora taxa. Also presented in **Table 5.5** are comments regarding the significance of each taxon, including ecological impact and invasiveness ratings as per *Ecological Impact and Invasiveness Ratings from the Department of Parks and Wildlife for the Midwest Region* (DBCA, 2014).

A total of 48 introduced flora taxa have been recorded by previous surveys in the Desktop Study Area. One Declared Pest flora taxon (*Echium plantagineum*) is known from within the vicinity of the Survey Area. According to the summary of previous flora and vegetation assessments presented in **Section 5.1.2**, no WoNS have been recorded in the Survey Area or its vicinity.

Table 5.5 Introduced Flora Taxa Known from the Survey Area and its Vicinity

Taxon	Common Name	Significance	Ecological Impact*	Invasiveness*
<i>Aira caryophyllea</i>	Silvery Hairgrass		High	Rapid
<i>Arctotheca calendula</i>	Cape Weed		High	Rapid
<i>Avellinia michelii</i>	Avellinia		High	Rapid
<i>Avena barbata</i>	Bearded Oat		High	Rapid
<i>Brassica tournefortii</i>	Mediterranean Turnip		High	Rapid
<i>Briza maxima</i>	Blowfly Grass		Unknown	Rapid
<i>Briza minor</i>	Shivery Grass		Unknown	Rapid
<i>Bromus diandrus</i>	Great Brome		High	Rapid
<i>Bromus ?rubens</i>	Red Brome		Unknown	Rapid
<i>Carpobrotus ?edulis</i>	Pigface		Unknown	Moderate
<i>Centaurea melitensis</i>	Maltese Cockspur		High	Rapid
<i>Centaureum pulchellum</i>	Lesser Centaury		Low	Slow
<i>Chamaecytisus palmensis</i>	Tagasaste		-	-
<i>Cotula coronopifolia</i>	Water Buttons		High	Rapid
<i>Dischisma arenarium</i>	Dischisma		Low	Rapid
<i>Echium plantagineum</i>	Paterson's Curse	Declared Pest	High	Rapid
<i>Ehrharta calycina</i>	Perennial Veldt Grass		High	Rapid
<i>Ehrharta longiflora</i>	Annual Veldt Grass		Unknown	Rapid
<i>Eragrostis curvula</i>	African Lovegrass		High	Rapid
<i>Erigeron sumatrensis</i>	Fleabane		Unknown	Rapid
<i>Erodium aureum</i>	-		Low	Rapid
<i>Erodium botrys</i>	Long Storksbill		Low	Rapid
<i>Hypochoeris glabra</i>	Flatweed		Low	Rapid
<i>Isolepis marginata</i>	Coarse Club-rush		Unknown	Rapid
<i>Lagurus ovatus</i>	Hare's Tail Grass		Unknown	Rapid
<i>Leontodon rhagadioloides</i>	Cretan Weed		High	Rapid
<i>Leptospermum laevigatum</i>	Coast Teatree		High	Moderate

Taxon	Common Name	Significance	Ecological Impact*	Invasiveness*
<i>Lolium rigidum</i>	Annual Ryegrass		Unknown	Rapid
<i>Lotus angustissimus</i>	Narrowleaf Trefoil		Unknown	Rapid
<i>Lupinus sp.</i>	Lupin		Medium	Moderate
<i>Lysimachia arvensis</i>	Scarlet/Blue Pimpernel		Low	Rapid
<i>Monoculus monstrosus</i>	Stinking Roger		Unknown	Rapid
<i>Parentucellia latifolia</i>	Common Bartsia		Medium	Rapid
<i>Pentameris airoides</i>	False Hairgrass		Unknown	Rapid
<i>Petrorhagia dubia</i>	Velvet Pink		Low	Rapid
<i>Polycarpon tetraphyllum</i>	Fourleaf Allseed		Low	Moderate
<i>Raphanus raphanistrum</i>	Wild Radish		High	Rapid
<i>Sagina sp.</i>	Pearlwort		Low	Moderate
<i>Silene gallica</i>	French Catchfly		Low	Rapid
<i>Sisymbrium orientale</i>	Indian Hedge Mustard		Unknown	Unknown
<i>Sonchus asper</i>	Rough Sowthistle		Unknown	Rapid
<i>Sonchus oleraceus</i>	Common Sowthistle		Unknown	Rapid
<i>Trifolium arvense var. arvense</i>	Haresfoot Clover		Unknown	Moderate
<i>Trifolium hirtum</i>	Rose Clove		Unknown	Moderate
<i>Ursinia anthemoides</i>	Ursinia		High	Rapid
<i>Vulpia muralis</i>	Wall Fescue		Unknown	Rapid
<i>Vulpia myuros</i>	Rat's Tail Fescue		Unknown	Rapid
<i>Wahlenbergia capensis</i>	Cape Bluebell		Unknown	Rapid

* Source: Ecological Impact and Invasiveness Ratings from the Department of Parks and Wildlife Midwest Region Species Prioritisation Process (DBCA, 2014).

5.1.6 Significant Vegetation

The interrogation of DBCA's TEC and PEC Database (DBCA, 2022b) returned two listed significant vegetation communities with records within the Desktop Study Area. Indicative locations of these communities are presented on **Figure 5.6**; these consist of DBCA-applied buffers surrounding known locations (as per the metadata from the DBCA Threatened and Priority Ecological Communities Database interrogation (DBCA, 2022b)). As such, these do not represent known extents of these communities.

Searches of the DCCEE SPRAT database with regard to MNES listed under the EPBC Act (DAWE, 2022) did not identify any Commonwealth-listed TECs as occurring or potentially occurring within the Desktop Study Area (**Appendix B**).

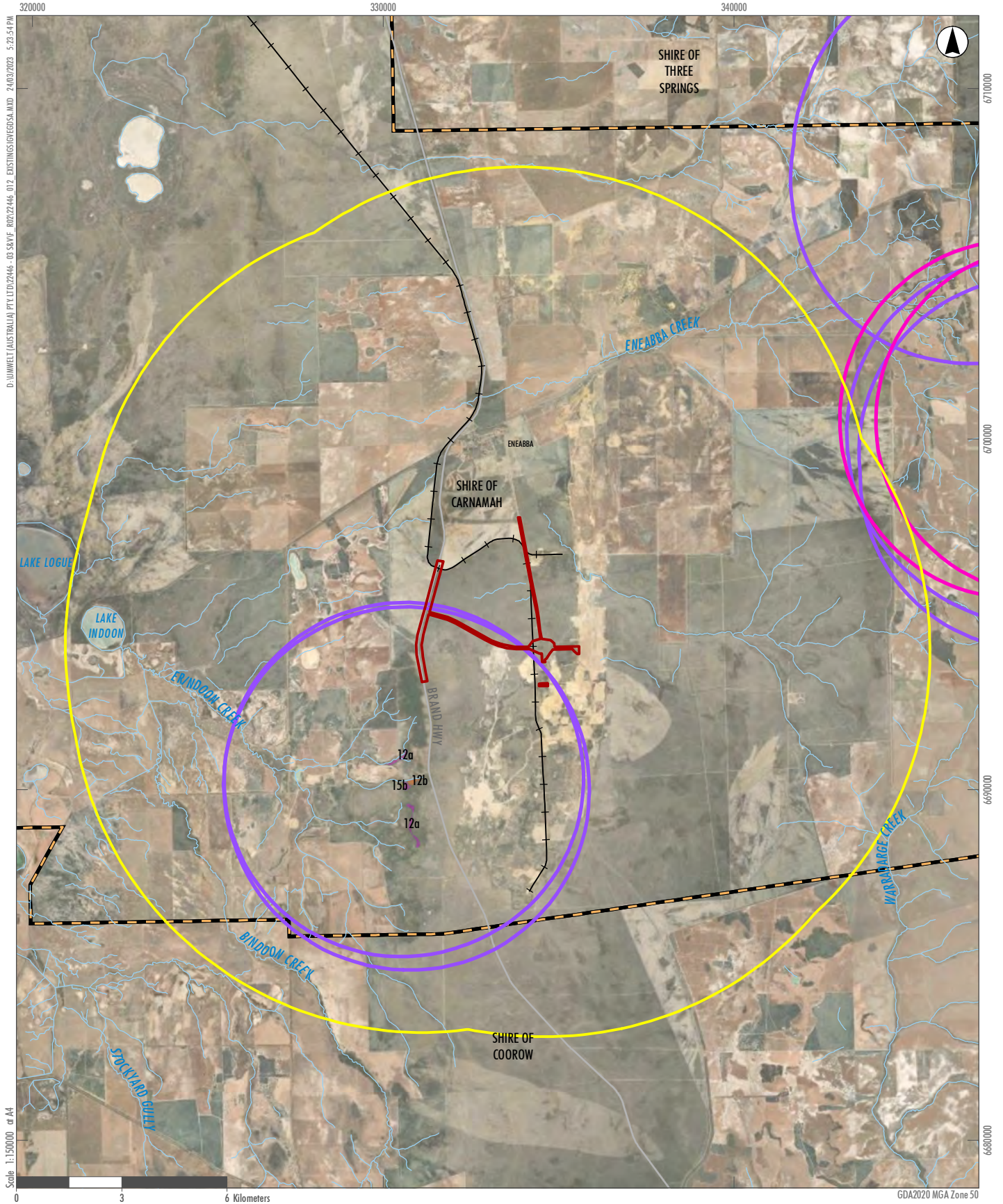
A manual review of current DBCA TEC and PEC lists (DBCA, 2018b, 2022e) did not identify any additional significant vegetation communities within, or having the potential to occur within, the Desktop Study Area. Similarly, a review of DBCA's TEC and PEC records spatial database (DBCA-038) (DBCA, 2017b) did not identify any additional significant vegetation communities within the Desktop Study Area.

A summary of the significant vegetation communities identified by the desktop assessment is presented in **Table 5.6**. These two communities are listed as TECs in WA, but are not listed under the Commonwealth

EPBC Act. One of these communities, the 'Ferricrete floristic community (Rocky Springs type)' TEC (shaded in blue in **Table 5.6**), has buffer polygons that intersect the Survey Area.

Table 5.6 Significant Vegetation Communities Known from the Desktop Study Area

Vegetation Community	Source	Description	Comment
Ferricrete floristic community (Rocky Springs type) (WA TEC - Vulnerable)	<ul style="list-style-type: none"> • DBCA TEC/PEC Databases (2017b, 2022b) • DBCA TEC/PEC Lists (2018b, 2022e) • Woodman Environmental (2011, 2012, 2015c) 	This tall shrubland is located on irregularly inundated red brown sandy loams over ferricrete dominated by <i>Acacia blakelyi</i> , <i>Allocasuarina campestris</i> , <i>Banksia strictifolia</i> and <i>Labichea lanceolata</i> subsp. <i>lanceolata</i> . Associated species include <i>Alyogyne hakeifolia</i> , <i>Borya sphaerocephala</i> , <i>Isotoma hypocrateriformis</i> , <i>Petrophile seminuda</i> , <i>Stylidium dichotomum</i> , <i>Thysanotus patersonii</i> and <i>Waitzia paniculata</i> (CALM, 2004)	Southwestern part of the Survey Area intersects buffer polygons of this TEC
Assemblages of the organic mound springs of the Three Springs area (WA TEC - Endangered)	<ul style="list-style-type: none"> • DBCA TEC/PEC Databases (2017b, 2022b) • DBCA TEC/PEC Lists (2018b, 2022e) 	The habitat of this community is characterised by continuous discharge of groundwater in raised areas of peat. The peat and surrounds provide a stable, permanently moist series of micro-habitats. There is a high level of heterogeneity of invertebrate fauna assemblages between occurrences, and all are associated with a rich and healthy fauna. The vegetation component of the community contains many moisture loving species including an overstorey of <i>Melaleuca preissiana</i> trees. <i>Eucalyptus camaldulensis</i> and <i>Eucalyptus rudis</i> are also found in a number of the mound springs. The shrub layer often includes <i>Hypocalymma angustifolium</i> and <i>Acacia saligna</i> over <i>Machaerina vaginalis</i> and other sedges. The herbaceous <i>Patersonia occidentalis</i> (swamp variant) was recorded at several mound springs (CALM, 2005)	Buffer polygons intersect eastern extent of the Desktop Study Area



Legend

- | | |
|--------------------|----------------------------------------------------------------|
| Desktop Study Area | Significant Vegetation (DBCA 2022b) |
| Survey Area | Assemblages of organic mound springs of the Three Springs area |
| Railways | Ferricrete floristic community (Rocky Springs type) |
| State Roads | Existing Floristic Community Types |
| Drainage Lines | 12a |
| Waterbodies | 12b |
| LGA Boundary | 15b |

FIGURE 5.6

Existing Significant Vegetation Records of the Desktop Study Area

5.1.7 Groundwater and Surface Water Values

5.1.7.1 Groundwater

Phreatophytes are usually deep-rooted perennial taxa that rely on groundwater sources for water uptake. These taxa are often (but not always) found within the riparian zones of permanent and ephemeral rivers, creeks and wetlands where water tables are often very close to the ground surface. Phreatophytes are divided into two main groups:

- **Obligate:** taxa are completely reliant on access to groundwater to survive. This reliance can be continual, seasonal or episodic and is often highly sensitive to alterations in groundwater regimes. Obligate phreatophytes occur in areas where the land surface is close to the groundwater table and directly access groundwater all year round. They can be either supralittoral (generally shallow rooted as groundwater is at a shallow depth under average conditions, for example *Banksia littoralis*), or phreatic (at higher elevations where groundwater is at a greater depth and deeper root systems are required to draw water from the capillary fringe, for example *Banksia ilicifolia*) (Sommer & Froend, 2010). Other taxa in the Northern Sandplains that are obligate phreatophytes include *Melaleuca raphiophylla* and occasionally *Melaleuca preissiana*.
- **Facultative:** taxa that rely on groundwater only during extended periods of drought and are generally deep-rooted species occurring on floodplains and higher in the landscape away from very shallow groundwater aquifers. These species tend to be less sensitive to changes in groundwater regimes, however, may suffer stress during prolonged periods of drought. Such taxa can include those with shallow root systems that can survive periods of dryness, as well as periods of inundation and waterlogged soils (for example, *Eucalyptus rudis*), or can survive on soil moisture when available in winter and spring and utilise groundwater only during drier periods or higher elevations (phreatic facultative phreatophytes). Other taxa that are representative of facultative phreatophytes in the Northern Sandplains include *Banksia attenuata* and *Banksia menziesii* (see below; dependence on groundwater depends on the local situation), *Regelia ciliata*, *Hypocalymma angustifolium*, etc.

Depth-to-groundwater can be used as a potential indicator of groundwater dependence by vegetation. Studies on the Northern Sandplains have shown that there is reduced reliance on groundwater by vegetation where depth to groundwater exceeds 10 m (Eamus et al. (2004) in Froend & Loomes (2004); Froend et al. (2011)). Research on *Banksia* species on the Gngangara Mound groundwater system north of Perth and elsewhere in the South-west of Western Australia (Froend & Loomes, 2004, 2006) proposed three main categories of phreatophytic (groundwater dependent) vegetation: 0–3 m, 3–6 m and 6–10 m depth to groundwater, all of which are assumed to utilise groundwater to some extent. The highest groundwater usage is in the 0–3 m and 3–6 m categories. Studies have shown that *Banksia* tree species (including *Banksia attenuata* and *Banksia menziesii*) have the capacity to access groundwater via their deep root systems and in some cases can be dependent on groundwater to some extent (Groom et al., 2000). *Banksia attenuata* and *Banksia menziesii* are known to be groundwater dependent at groundwater depths of 6–7 m (Dodd & Bell, 1993), and these taxa are unlikely to access groundwater at depths of more than 10 m. However, it is worthy of note that in the Northern Sandplains, including in the Eneabba area, *Banksia attenuata* is typically present in ‘dwarf’ form (appearing as a lignotuberous shrub as opposed to a tree), and *Banksia menziesii* is generally present as a low tree. This is likely a response to the low rainfall and low soil moisture levels of the deep sands of this area. Consequently, these forms of these two taxa generally do not access groundwater and are not indicators of GDV.

The BoM GDE Atlas (BoM, 2023b) is a national dataset of Australian GDEs to inform groundwater planning and management. The Atlas was interrogated using the Desktop Study Area boundary to obtain locations and information about two types of GDEs:

- Aquatic GDEs: ecosystems that rely on the surface expression of groundwater – this includes surface water ecosystems that may have a groundwater component, such as rivers, wetlands and springs. Note that marine and estuarine ecosystems can also be groundwater dependent, but these are not mapped in the Atlas.
- Terrestrial GDEs: ecosystems that rely on the subsurface presence of groundwater – this includes all vegetation ecosystems.

The Survey Area intersects four ‘low’ and three ‘moderate’ potential terrestrial GDEs as per the national assessment, which have been mapped across the majority of the Survey Area. These are areas of shrublands classified as ‘scrub-heath on lateritic sandplain in the central Geraldton Sandplain Region’ and ‘mixed heath’. Several high potential aquatic and terrestrial GDEs occur within the Desktop Study Area in the vicinity of the Survey Area (BoM, 2023b). Note that as per the metadata for the BoM GDE Atlas, the national assessment data is taken from a ‘national-scale analysis based on a set of rules that describe potential for groundwater/ecosystem interaction and available GIS data’. Known GDEs and their locations were extrapolated to regional scales using a process that relied on the integration of expert opinion, remote sensing data obtained between 2000 and 2010, and GIS analysis (Doody et al., 2017). Therefore, the national assessment data provides only an indication of potential GDEs in an area, and groundwater data is required to confirm the presence of GDEs.

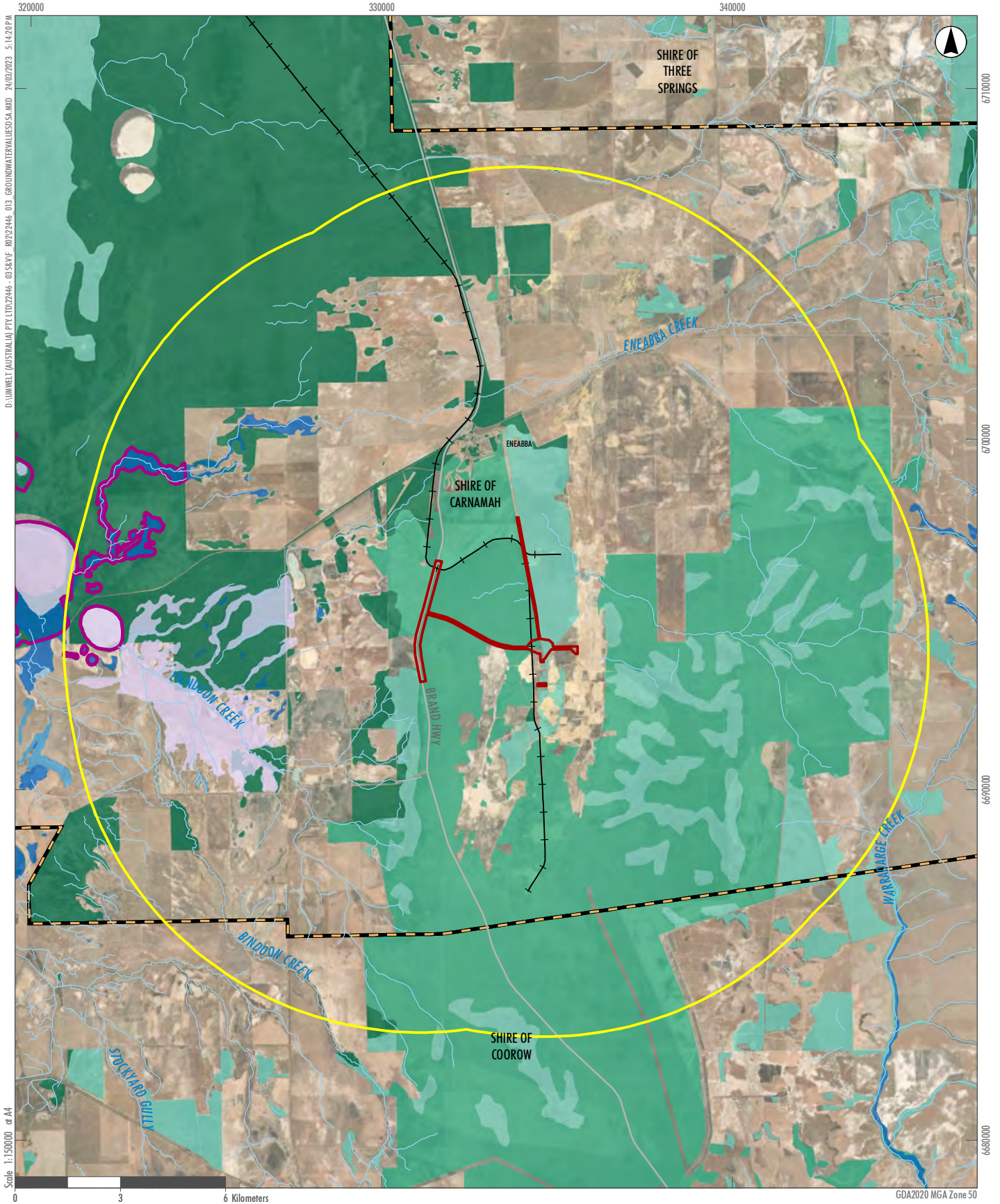
The search of the DCCEEW SPRAT Database with regard to MNES listed under the EPBC Act identified one Nationally Important Wetland within the Desktop Study Area, being the Lake Logue / Indoon System (DAWE, 2022) (**Appendix B**). Lakes Logue and Indoon are the largest components of a northerly trending chain of ephemeral wetlands that sit upon extensive aeolian sands at the junction of partly consolidated Pleistocene dunes which lie to the west and the sandy fluvial plain in the east. Lake Logue is a large seasonal freshwater lake covering an area of 425 ha and Lake Indoon is a smaller permanent brackish lake covering an area of 104 ha. Lakes Logue and Indoon are linked by groundwater. The system also includes smaller shallow ephemeral wetlands to the north and south of Lake Logue, as well as intermittent creeks and drainage lines. The Lake Logue / Indoon area acts as a major feeding stop-over, staging area for dispersal and a drought refuge for waterbirds. A population of the Threatened plant *Eremophila subangustifolia* occurs on seasonally waterlogged flats (DAWE, 2019). These wetlands occur approximately 8.4 km west of the Survey Area (DBCA, 2018a).

5.1.7.2 Surface Water

According to the Landgate water features spatial dataset (Landgate, 2022), the Survey Area does not intersect any watercourses. However, two unnamed, natural non-perennial minor rivers occur in close proximity to the northern part of the Survey Area along Mineral Sands Road.

The geomorphic wetlands in the Cervantes Eneabba area have been mapped by V & C Semeniuk Research Group in 2006. This dataset was updated by DBCA (then Department of Environment and Conservation) and Department of Water and Environmental Regulation (then Department of Water) in 2010 (DEC, 2011) and the spatial dataset made available in 2017 (DBCA, 2017a). Wetlands are classified according to their host landform and hydroperiod. Evaluation of conservation significance is not included in this dataset.

A total of 32 wetlands occur within the Desktop Study Area, but none within the Survey Area. The closest mapped wetland is an occurrence of a sumpland (seasonally inundated basin) approximately 2.8 km west of the Survey Area.

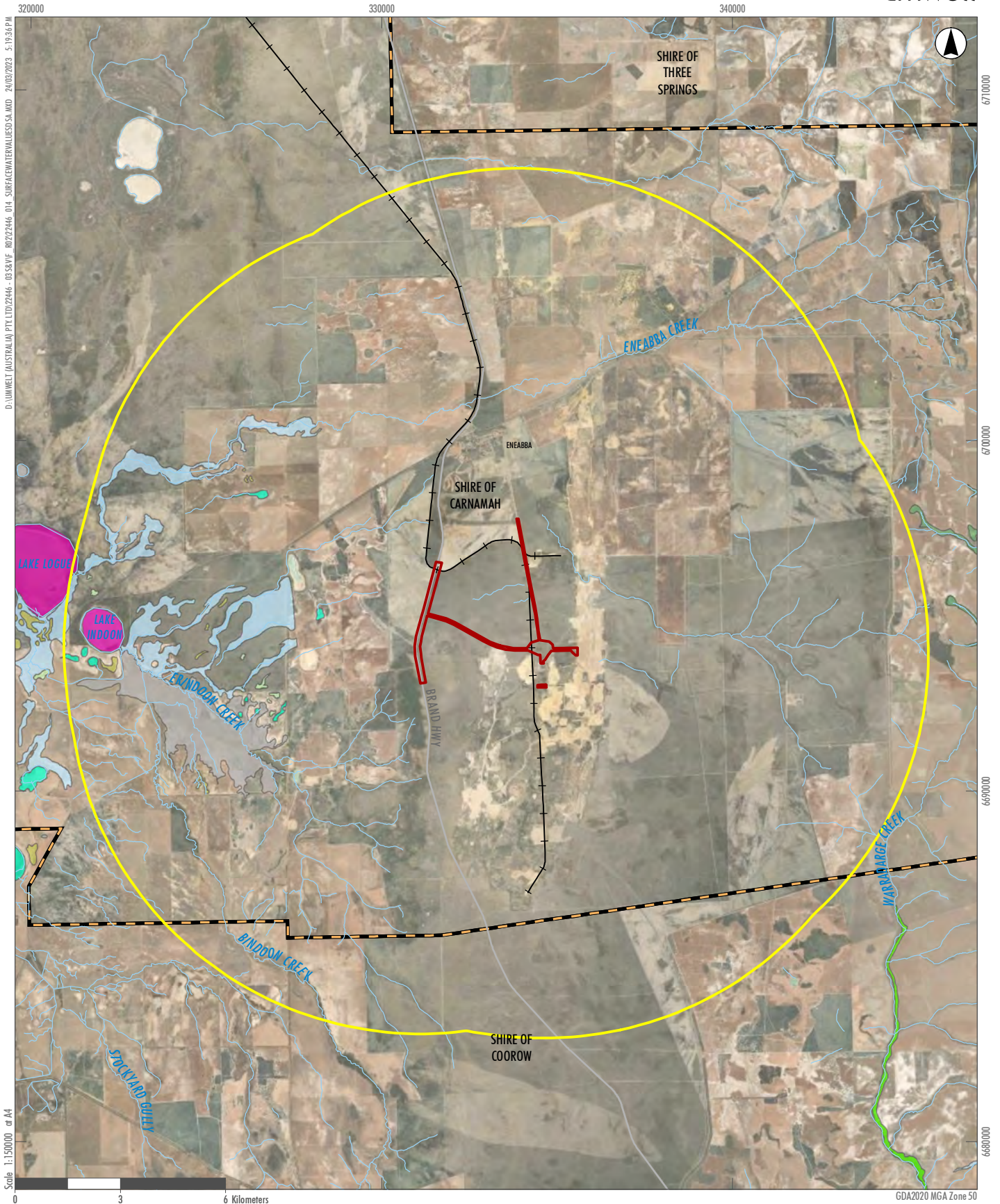


- Legend**
- Desktop Study Area
 - Survey Area
 - Railways
 - State Roads
 - Drainage Lines
 - LGA Boundary
 - Nationally Important Wetlands

- Aquatic GDEs**
- Unclassified potential GDE - from regional studies
 - High potential GDE - from national assessment
 - Moderate potential GDE - from national assessment
 - Low potential GDE - from national assessment
- Terrestrial GDEs**
- High potential GDE - from national assessment
 - Moderate potential GDE - from national assessment
 - Low potential GDE - from national assessment

FIGURE 5.7

Groundwater Values of the Desktop Study Area



D:\UMWELT (AUSTRALIA) PTY LTD\2446 - 03.SAVF - R0722446 - 04 SURFACEWATERVALUES SA.MXD 24/03/2023 5:19:36 PM
 Scale 1:150000 or A4

Legend

- | | |
|--------------------|----------------------------|
| Desktop Study Area | Geomorphic Wetlands |
| Survey Area | Barkarra |
| Railways | Dampland |
| State Roads | Floodplain |
| Drainage Lines | Lake |
| Waterbodies | Palusplain |
| LGA Boundary | Playa |
| | Sumpland |
| | Not classified |

FIGURE 5.8

Surface Water Values of the Desktop Study Area

5.2 Field Survey Results

5.2.1 Vascular Flora Census

A total of 134 discrete vascular flora taxa were recorded in the Survey Area by the 2022 survey, representing 32 families and 74 genera. The most well-represented families were Myrtaceae (41 taxa) and Proteaceae (32 taxa). Of the 134 flora taxa recorded, four are introduced taxa, six are annual taxa and nine are ephemeral. Note that as discussed in **Section 1.3**, this was a Reconnaissance assessment and therefore a full census of all vascular flora taxa that occur in the Survey Area was not undertaken.

A full list of flora taxa recorded by the 2022 survey in the Survey Area is presented in **Appendix D**. Raw relevé data and parameters from sites assessed in the Survey Area in 2022 are presented in **Appendix E**.

Note that several collections could not be identified to species level due to poor material. Some are known to be distinct taxa relative to other taxa recorded by the survey, and therefore have been included in the totals presented above and in **Appendix D** (e.g. *Crassula* sp.). Other collections may represent distinct taxa relative to other taxa recorded by the survey; however, it is more likely that they represent taxa already recorded elsewhere, with the quality of the material such that this distinction cannot be made (e.g. *Thysanotus* ?sp. Twining Wheatbelt (N.H. Brittan 81/29)). Such collections are not included in the totals above or presented in **Appendix D**. None of these collections are considered to represent significant flora taxa.

5.2.2 Significant Flora Taxa

Table 5.7 presents a summary of data relating to significant flora taxa recorded in the Survey Area. A total of 23 significant flora taxa were recorded, including the Threatened flora taxon *Paracaleana dixonii*, and 22 DBCA-listed Priority flora taxa.

Table 5.7 also includes a summary of the FCTs within which each significant flora taxon was recorded in the survey area by the 2022 survey. Preferred habitat for each taxon has been determined based on proportional location representation and landforms/soils and is indicated with '^' (using location and FCT data from the 2022 survey only). However, it is worthy of note that some taxa recorded by the 2022 survey were recorded from few locations, and therefore there may not be sufficient data to confidently assign preferred habitat for these taxa (e.g. *Conostephium magnum* (P4), *Stylidium carnosum* subsp. Narrow leaves (J.A. Wege 490) (P1), *Verticordia amphigia* (P3)).

Note that many taxa recorded in the Survey Area by the 2022 survey have records within areas mapped as cleared land. In some instances, this makes the record appear as though it occurs on a road. This is likely due to the actual record being located close to the road or on the verge, coinciding with poor satellite connection, resulting in low GPS accuracy. However, all surveys were conducted within vegetation, and similarly all plant locations occur within vegetation. For those records that plot erroneously on roads, the FCT of the vegetation adjacent to the road where the record is located is considered to represent its habitat when preparing the 'FCT' column in **Table 5.7**.

Banksia chamaephyton (P4) was only recorded by the 2022 survey in rehabilitation, and consequently does not have a preferred habitat designation in **Table 5.7**. However, this taxon has been previously recorded in the surrounding area in FCTs 1a, 1b, 2a, 2b and 7 (Woodman Environmental, 2011).

Locations of significant flora taxa recorded in the Survey Area by the 2022 survey are presented on **Figure 5.9**, with detailed figures in **Appendix F**. A detailed description and summary of information for each taxon recorded in the Survey Area is provided in **Appendix G**, photos of each taxon are presented in **Appendix H**, and specific location details are presented in **Appendix I**.

Table 5.7 Summary of Significant Flora Taxa Recorded Within and Immediately Outside the Survey Area

Taxon	Status (WA)	Status (EPBC)	Survey Area		Outside Survey Area		Total		FCTS*
			Number of Locations	Number of Individuals	Number of Locations	Number of Individuals	Number of Locations	Number of Individuals	
<i>Banksia chamaephyton</i>	P4		11	45	-	-	11	45	-
<i>Calytrix chrysantha</i>	P4		94	800	4	43	98	843	2a, 2b, 3^
<i>Calytrix eneabensis</i>	P4		148	1,995	-	-	148	1,995	1a, 2a, 2b^, 3^
<i>Calytrix superba</i>	P4		998	3,217	8	29	1,006	3,246	1a^, 1b^, 2a, 2b^, 6b, R
<i>Conostephium magnum</i>	P4		8	8	-	-	8	8	1a^, 1b^, 3^
<i>Desmocladius elongatus</i>	P4		98	227	-	-	98	227	1a^, 2a, 2b, 3, 6b^, R
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4		90	178	-	-	90	178	1a^, 2a, 2b, 6b, R
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3		55	241	-	-	55	241	1a^, 2a, 2b, 6b
<i>Grevillea rudis</i>	P4		11	19	-	-	11	19	1a^, 1b^
<i>Haemodorum loratum</i>	P3		207	284	2	3	209	287	1a^, 1b, 2a, 2b^, 6b^, R
<i>Hemiandra</i> sp. <i>Eneabba</i> (H. Demarz 3687)	P3		310	506	4	5	314	511	1a^, 1b, 2a^, 2b^, 3^, 6b, R
<i>Hypocalymma gardneri</i>	P3		48	60	-	-	48	60	1a^, 1b, 2a, 2b, 6b, R
<i>Paracaleana dixonii</i>	T	EN	39	61	-	-	39	61	1a^, 2a^, 2b
<i>Persoonia filiformis</i>	P3		14	16	-	-	14	16	1a, 1b, 2b^, 6b
<i>Schoenus griffinianus</i>	P4		28	196	2	9	30	205	1a, 2a, 2b, 6b^, R

Taxon	Status (WA)	Status (EPBC)	Survey Area		Outside Survey Area		Total		FCTs*
			Number of Locations	Number of Individuals	Number of Locations	Number of Individuals	Number of Locations	Number of Individuals	
<i>Stylidium carnosum</i> subsp. Narrow leaves (J.A. Wege 490)	P1		1	1	-	-	1	1	1a^
<i>Styphelia filamentosa</i>	P3		94	187	-	-	94	187	1a^, 2a, 2b^, 6b
<i>Thelymitra pulcherrima</i>	P2		19	21	5	6	24	27	1a^, 2b, 6b
<i>Thryptomene spicata</i>	P2		61	1,731	-	-	61	1,731	1a, 2a, 2b, 3^
<i>Verticordia amphigia</i>	P3		1	1	-	-	1	1	1a^
<i>Verticordia argentea</i>	P2		209	996	4	151	213	1,147	1a^, 2a^, 2b^, 3^, 6b, R
<i>Verticordia aurea</i>	P4		562	3,761	2	5	564	3,766	1a^, 1b, 2a^, 2b^, 3, 6b, R
<i>Verticordia fragrans</i>	P3		337	2,587	1	7	338	2,594	1a^, 1b, 2a, 2b^, 3^, 6b, R

* Refer to **Section 5.2.6** for FCT descriptions.

^ Designates preferred habitat, based on proportional location representation and landforms/soils.

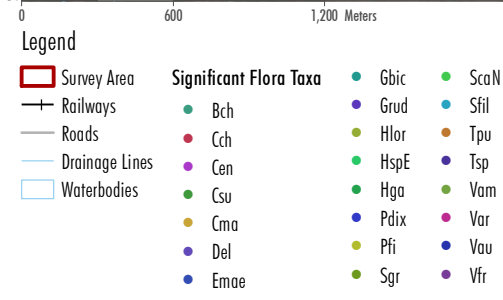
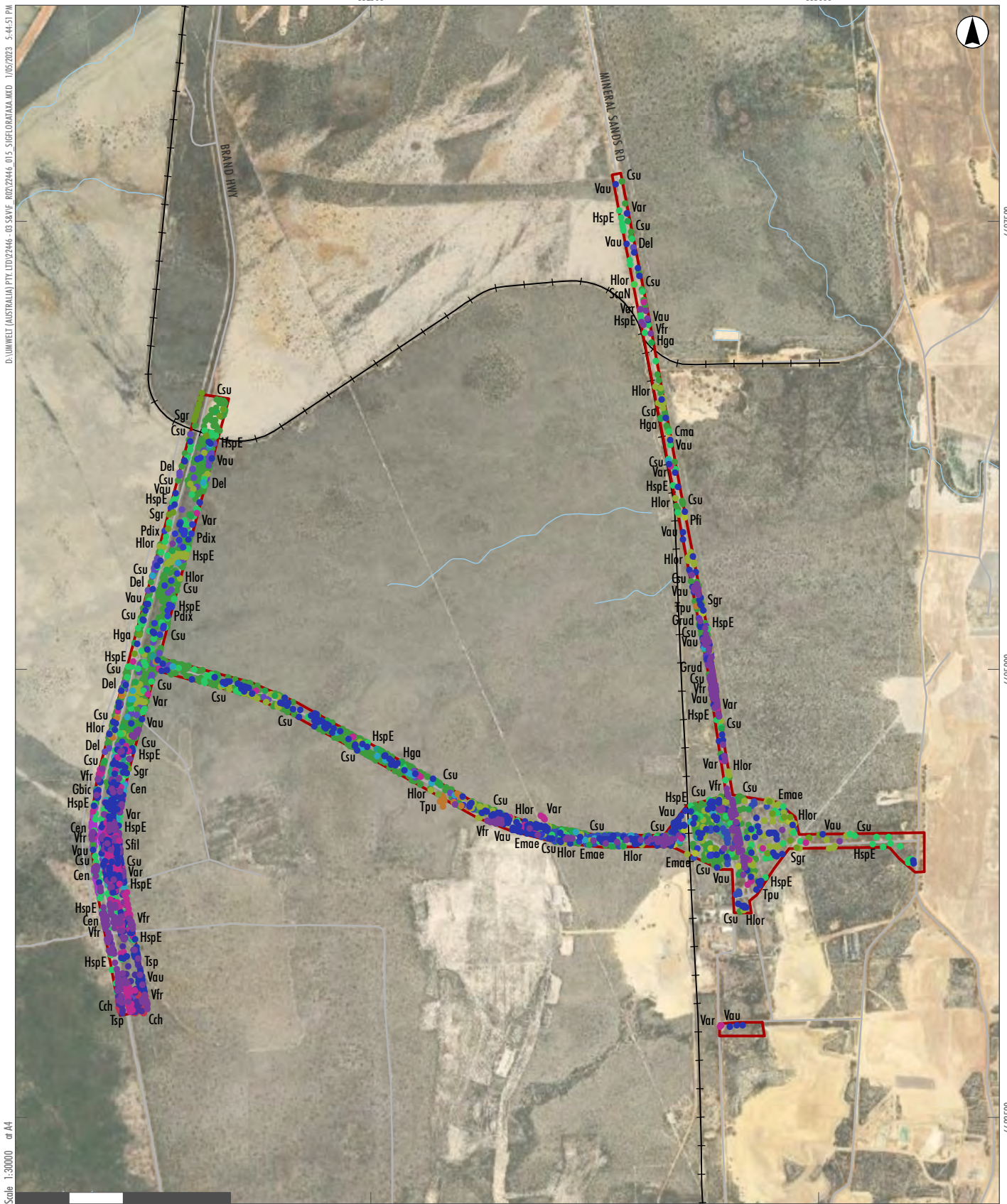


FIGURE 5.9

Significant Flora Taxa Recorded in the Survey Area

Legend

Significant Flora Taxa

- Bch *Banksia chamaephyton* (P4)
- Cch *Calytrix chrysantha* (P4)
- Cen *Calytrix eneabensis* (P4)
- Csu *Calytrix superba* (P4)
- Cma *Conostephium magnum* (P4)
- Del *Desmocladius elongatus* (P4)
- Emae *Eucalyptus macrocarpa* subsp. *elachantha* (P4)
- Gbic *Grevillea biformis* subsp. *cymbiformis* (P3)
- Grud *Grevillea rudis* (P4)
- Hlor *Haemodorum loratum* (P3)
- HspE *Hemiandra* sp. *Eneabba* (H. Demarz 3687) (P3)
- Hga *Hypocalymma gardneri* (P3)
- Pdix *Paracaleana dixonii* (T)
- Pfi *Persoonia filiformis* (P3)
- Sgr *Schoenus griffinianus* (P4)
- ScaN *Stylidium camosum* subsp. *Narrow leaves* (J.A. Wege 490) (P1)
- Sfil *Styphelia filamentosa* (P3)
- Tpu *Thelymitra pulcherrima* (P2)
- Tsp *Thryptomene spicata* (P2)
- Vam *Verticordia amphigia* (P3)
- Var *Verticordia argentea* (P2)
- Vau *Verticordia aurea* (P4)
- Vfr *Verticordia fragrans* (P3)

FIGURE 5.9

LEGEND: Significant Flora Taxa
Recorded in the Survey Area

5.2.3 Distribution Extensions

A collection of *Banksia stenoprion* was made in the Study Area by the 2022 survey. This collection represents a minor range extension to the known distribution of this taxon (according to Florabase (WA Herbarium, 1998-)) by approximately 22 km to north. While this taxon had been recorded previously in the area by Woodman Environmental (2011), material of this taxon was not submitted to the WA Herbarium. Specimen material of this taxon will be lodged at the WA Herbarium by Umwelt as per the requirements of EPA (2016b), where such material is of sufficient quality.

Note that although collections of taxa that are ‘representative of the range of a species (particularly, at the extremes of range, recently discovered range extensions, or isolated outliers of the main range)’ can be considered significant taxa as per EPA guidance (2016a, 2016b), *Banksia stenoprion* is not considered to be a significant taxon in this context. This taxon has a relatively wide distribution, occurring over 170 km from Cockleshell Gully to Calingiri (WA Herbarium, 1998-). It is locally common and therefore has likely been overlooked in terms of collecting and submitting material to the WA Herbarium. Furthermore, it is also considered possible that this taxon has been historically misidentified as the common, widespread, superficially similar *Banksia dallanneyi*.

5.2.4 Likelihood of Occurrence of Further Significant Flora Taxa

As discussed in **Section 5.1.4**, a total of 115 significant flora taxa were identified as occurring (or potentially occurring) within the Desktop Study Area prior to survey, including 23 taxa listed as Threatened under the EPBC and/or BC Acts. Of the 115 taxa identified by the desktop assessment, 23 were recorded within the Survey Area by the 2022 survey (**Section 5.2.2**). **Appendix J** presents an assessment of the likelihood of the remaining 92 taxa occurring in the Survey Area. This assessment considered whether a taxon was identifiable at the time of survey, the known range of the taxon and proximity of known records to the Survey Area when determining the potential for a taxon to occur in the Survey Area.

To assist with determining whether suitable habitat may be present in the Survey Area, **Appendix J** presents information on the FCTs within which known locations of significant flora taxa have been recorded (significant flora locations data from DBCA (2022c) and Iluka (2021)). Note that many significant flora records are located within areas that have not been mapped; therefore, this data is not intended to be definitive, but rather is intended to assist where habitat information from WA Herbarium (1998-) is insufficient. Where FCT information is available for taxa in **Appendix J**, preferred habitat is indicated by ‘^’, and FCTs that occur within the Survey Area are indicated by ‘~’. Note that some taxa locations represent historical records that were recorded prior to clearing of remnant vegetation; therefore, the FCT within which these records are located cannot be determined.

It is considered that all of the remaining 92 taxa were identifiable during the 2022 survey, either because the survey period coincides with the taxon’s flowering period, or the taxon can be identified reliably when in fruit or sterile. However, it is considered unlikely that any of these taxa could potentially still occur in the Survey Area; this is because the Survey Area occurs outside the species’ known ranges, and/or potential habitat is not considered to be present, and/or intensive survey conducted for the 2022 survey did not record these taxa (**Appendix J**).

5.2.5 Introduced Flora Taxa

The vegetation of the Survey Area was generally in Excellent condition (discussed further in **Section 5.2.9**), and no introduced flora taxa were recorded within relevés by the Reconnaissance survey. Weeds were only observed along road and track edges, and were generally present in low numbers.

A total of six introduced flora taxa were recorded opportunistically by the 2022 survey of the Study Area. These taxa are listed in **Table 5.8**, together with ecological impact and invasiveness ratings for each introduced taxon under the *Ecological Impact and Invasiveness Ratings from the Department of Parks and Wildlife for the Midwest Region* (DBCA, 2014). No Declared Pests listed under the BAM Act or WoNS were recorded.

Of the six introduced flora taxa recorded in the Survey Area, three have not been rated for ecological impact by DBCA (2014) (**Table 5.8**). As noted above, none of these taxa are listed as Declared Pests or WoNS, and according to Hussey et al. (2007), while many of these weeds are common and widespread in WA, they are not noted as being serious environmental weeds.

Three introduced flora taxa recorded in the Survey Area are rated as having ‘High’ ecological impact (**Table 5.8**). Taxa with this ecological impact rating are considered significant weeds capable of causing acute disruption of ecological processes, as well as dominating and/or significantly altering the vegetation structure, composition and function of ecosystems (DBCA, 2014). Hussey et al. (2007) notes that **Arctotheca calendula* is a major weed that dominates pastures and also displaces native taxa, but while **Avena barbata* and **Brassica tournefortii* are described as being abundant and widespread, they are otherwise not noted as being serious environmental weeds.

All six introduced flora taxa recorded in the Survey Area by the current survey are rated as having ‘Rapid’ invasiveness in native vegetation (**Table 5.8**). This describes the rate of spread of a weed in native vegetation, encompassing factors of establishment (including the ability to outcompete and the requirement for disturbance to establish), reproduction factors (including time to seeding and seed/vegetative production) and long distance dispersal mechanisms (> 100 m) (DBCA, 2014). Taxa with ‘Rapid’ invasiveness ratings are typically disturbance opportunists and are relatively common around disturbance areas, on road verges, and along drainage lines and other areas of periodic inundation.

Table 5.8 Introduced Flora Taxa Recorded in the Study Area

Taxon	Common Name	Ecological Impact*	Invasiveness*
<i>Arctotheca calendula</i>	Capeweed	High	Rapid
<i>Avena barbata</i>	Bearded Oat	High	Rapid
<i>Brassica tournefortii</i>	Prickly Turnip	High	Rapid
<i>Briza maxima</i>	Blowfly Grass	Unknown	Rapid
<i>Ehrharta longifolia</i>	Annual Veldt Grass	Unknown	Rapid
<i>Monoculus monstrosus</i>	Stinking Roger	Unknown	Rapid

* Source: Ecological Impact and Invasiveness Ratings from the Department of Parks and Wildlife Midwest Region Species Prioritisation Process (DBCA, 2014).

5.2.6 Vegetation of the Survey Area

The review of the relevé data did not identify any FCTs additional to those described by Woodman Environmental (2011) in the Survey Area. Relevé sites were therefore assigned to previously defined FCTs, following detailed investigation of their species composition, topography, soils, geographic location, and previous FCT mapping. A review was conducted of relevé locations and vegetation mapping notes taken during the 2022 survey (presented in **Appendix K**) in conjunction with examination of aerial photography and previous FCT mapping boundaries; this process determined that no major changes to FCT mapping was required across the Survey Area. However, the FCT mapping across the Survey Area was revised slightly to capture changes in cleared and rehabilitated areas since the mapping dataset was prepared in 2010 (discussed further below).

In summary, a total of six native vegetation FCTs have been mapped across the Survey Area by the Reconnaissance survey. These FCTs belong to Super Group 1 as defined by Woodman Environmental (2011), being woodlands, thickets and heaths on well drained sandy soils and sandy clays, occasionally over lateritic gravel. Within Super Group 1, the FCTs belong to four groups, as described below (note ‘Species Group’ refers to flora species classified into groups by agglomerative hierarchical clustering analysis (refer to Woodman Environmental (2011) for further detail on the analysis and each species group)):

- **Group 1:** Species typically from Species Group 23 (including *Hibbertia hypericoides*, *Pileanthus filifolius*, *Melaleuca leuropoma* and *Mesomelaena pseudostygia*) (FCTs 1a and 1b)
- **Group 2:** Species typically from Species Group 11 (including *Adenanthos cygnorum*, *Banksia tortifolia* and *Blancoa canescens*) and Species Group 23 (including *Conospermum wycherleyi*, *Jacksonia floribunda* and *Chordifex sinuosus*) (FCTs 2a and 2b)
- **Group 3:** Species typically from Species Group 12 (including *Macarthuria australis*, *Platysace xerophila* and *Scholtzia* sp. Wongonderrah (M.E. & M.R. Trudgen MET 12000) and Species Group 23 (including *Eremaea beaufortoides* and *Pileanthus filifolius*) (FCT 3)
- **Group 6:** Species typically from Species Group 20 (including *Hakea neospathulata* and *Babingtonia camphorosmae*) and Species Group 24 (including *Allocasuarina microstachya*, *Hakea incrassata* and *Melaleuca trichophylla*)

Note that two FCTs (2b and 3) were sampled by only two relevés in the Survey Area; however, these FCTs occurred across very small areas in the Survey Area, therefore limiting the ability to replicate sampling

within this vegetation in the Survey Area. However, these FCTs were sampled by 43 and 33 quadrats, respectively, in the original vegetation assessment undertaken by Woodman Environmental (2011).

Table 5.9 presents a description of each of the FCTs recorded in the Survey Area, including location in the Survey Area, area mapped, relevés sampling each FCT, significant flora recorded by the current survey in each FCT ('^' denotes preferred habitat for a significant taxon, using location and FCT data from the 2022 survey only), and average taxon richness. The symbol '*' indicates data or information taken from the assessment by Woodman Environmental (2011). Note that the average taxon richness per quadrat relates to a quadrat size of 10 m x 10 m (i.e. an area of 100 m²). **Figure 5.10** presents an overview of the distribution of FCTs, and detailed FCT mapping is presented in **Appendix L** along with locations of relevés and vegetation mapping notes established and surveyed in the Survey Area by the 2022 survey. Raw relevé data and parameters are presented in **Appendix E**, and **Appendix M** presents a taxon-FCT matrix (taxa from the current survey only). More detailed information about each FCT and their extents in the wider area is presented by Woodman Environmental (2011).

Areas where natural vegetation has been completely removed have been mapped as 'Cleared Land' (CL) (where discernible at 1:10,000 scale). This includes roads (and associated infrastructure including culverts), tracks and laydown areas. A total of 23.3 ha of 'Cleared Land' was mapped, representing 18.0 % of the Survey Area (**Figure 5.10**). In addition, 5.4 ha (representing 4.2 % of the Survey Area) was mapped as 'Rehabilitated Land' (R) (**Figure 5.10**). Note that Iluka provided spatial data that delineated the majority of rehabilitation in the area; this data was used in conjunction with aerial imagery interpretation to map the boundaries of rehabilitated land in the Survey Area.

Table 5.9 Summary of FCTs in the Survey Area






FCT	Summary	Representative Photo
1a	<p>*Description: Open Low Woodland to Open Low Scrub of <i>Eucalyptus pleurocarpa</i> and/or <i>Eucalyptus tottiana</i> over mixed shrubs dominated by <i>Banksia</i> spp. and <i>Hakea</i> spp. over sedges on grey to brown sands with very occasional laterite influence on lower to mid slopes</p> <p>Location: Mapped widely across the entire Survey Area</p> <p>Area Mapped in Survey Area (Proportion of Survey Area): 43.2 ha (33.47 %)</p> <p>Sampling: Six relevés (MAR01, MAR03, MAR06, MAR09, MAR14, MAR16)</p> <p>*Average Taxon Richness per Quadrat: 59.6 ± 1.3</p> <p>*Indicator Taxa: <i>Banksia tridentata</i>, <i>Conothamnus trinervis</i>, <i>Hakea eneabba</i>, <i>Hakea flabellifolia</i></p> <p>Significant Flora Taxa: <i>Calytrix eneabbensis</i> (P4), <i>Calytrix superba</i> (P4)^, <i>Conostephium magnum</i> (P4)^, <i>Desmocladius elongatus</i> (P4)^, <i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i> (P4)^, <i>Grevillea biformis</i> subsp. <i>cymbiformis</i> (P3)^, <i>Grevillea rudis</i> (P4)^, <i>Haemodorum loratum</i> (P3)^, <i>Hemiandra</i> sp. Eneabba (H. Demarz 3687) (P3)^, <i>Hypocalymma gardneri</i> (P3)^, <i>Paracaleana dixonii</i> (T)^, <i>Persoonia filiformis</i> (P3), <i>Schoenus griffinianus</i> (P4), <i>Stylidium carnosum</i> subsp. <i>Narrow leaves</i> (J.A. Wege 490) (P1)^, <i>Styphelia filamentosa</i> (P3)^, <i>Thelymitra pulcherrima</i> (P2)^, <i>Thryptomene spicata</i> (P2), <i>Verticordia amphigia</i> (P3)^, <i>Verticordia argentea</i> (P2)^, <i>Verticordia aurea</i> (P4)^, <i>Verticordia fragrans</i> (P3)^</p>	


Photo 5.1 FCT 1a (Relevé MAR03)

FCT	Summary	Representative Photo
1b	<p>*Description: Open Woodland to Scrub of <i>Eucalyptus</i> spp. and/or <i>Banksia</i> spp., with occasional <i>Xylomelum angustifolium</i>, over mixed shrubs dominated by myrtaceous spp., <i>Banksia</i> spp., and <i>Jacksonia</i> spp. on grey sand on mid to upper slopes. This FCT is generally restricted to upper slope and crest areas characterised by deep sands</p> <p>Location: Mapped in three locations in the Survey Area; the eastern end of Mine Access Road and in two locations along Mineral Sands Road</p> <p>Area Mapped in Survey Area (Proportion of Survey Area): 2.2 ha (1.71 %)</p> <p>Sampling: Three relevés (MAR02, MAR04, MAR10)</p> <p>*Average Taxon Richness per Quadrat: 42.3 ± 1.5</p> <p>*Indicator Taxa: <i>Drosera eneabba</i>, <i>Schoenus brevisetis</i>, <i>Styphelia xerophylla</i></p> <p>Significant Flora Taxa: <i>Calytrix superba</i> (P4)^, <i>Conostephium magnum</i> (P4)^, <i>Grevillea rudis</i> (P4)^, <i>Haemodorum loratum</i> (P3), <i>Hemiandra</i> sp. Eneabba (H. Demarz 3687) (P3), <i>Hypocalymma gardneri</i> (P3), <i>Persoonia filiformis</i> (P3), <i>Verticordia aurea</i> (P4), <i>Verticordia fragrans</i> (P3)</p>	 <p>Photo 5.2 FCT 1b (Relevé MAR04)</p>

FCT	Summary	Representative Photo
2a	<p>*Description: Low Woodland of <i>Banksia attenuata</i> and occasional <i>Banksia menziesii</i> and <i>Xylomelum angustifolium</i> over Low Scrub of mixed species including <i>Banksia leptophylla</i> var. <i>leptophylla</i>, <i>Banksia candolleana</i>, <i>Melaleuca leuropoma</i> and <i>Hibbertia hypericoides</i> on brown or grey sand on upper slopes</p> <p>Location: Mapped across a number of patches in the western side of the Survey Area</p> <p>Area Mapped in Survey Area (Proportion of Survey Area): 11.4 ha (8.81 %)</p> <p>Sampling: Five relevés (MAR11, MAR12, MAR13, MAR17, MAR20)</p> <p>*Average Taxon Richness per Quadrat: 47.3 ± 1.0</p> <p>*Indicator Taxa: <i>Conospermum wycherleyi</i>, <i>Jacksonia floribunda</i>, <i>Xylomelum angustifolium</i>, <i>Verticordia grandis</i></p> <p>Significant Flora Taxa: <i>Calytrix chrysantha</i> (P4), <i>Calytrix eneabensis</i> (P4), <i>Calytrix superba</i> (P4), <i>Desmocladius elongatus</i> (P4), <i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i> (P4), <i>Grevillea biformis</i> subsp. <i>cymbiformis</i> (P3), <i>Haemodorum loratum</i> (P3), <i>Hemiandra</i> sp. Eneabba (H. Demarz 3687) (P3)^, <i>Hypocalymma gardneri</i> (P3), <i>Paracaleana dixonii</i> (T)^, <i>Schoenus griffinianus</i> (P4), <i>Styphelia filamentosa</i> (P3), <i>Thryptomene spicata</i> (P2), <i>Verticordia argentea</i> (P2)^, <i>Verticordia aurea</i> (P4)^, <i>Verticordia fragrans</i> (P3)</p>	 <p>Photo 5.3 FCT 2a (Relevé MAR13)</p>

FCT	Summary	Representative Photo
2b	<p>*Description: Scrub of <i>Banksia attenuata</i>, with emergent <i>Eucalyptus tottiana</i> or <i>Eucalyptus pleurocarpa</i>, over Low Scrub dominated by <i>Banksia</i> spp. on predominantly yellow sands on mid and upper slopes</p> <p>Location: Mapped in two locations in the Survey Area; across Brand Highway south of the intersection with Mine Access Road, and near the intersection of Mine Access Road and Mineral Sands Road</p> <p>Area Mapped in Survey Area (Proportion of Survey Area): 20.0 ha (15.51 %)</p> <p>Sampling: Two relevés (MAR08, MAR19)</p> <p>*Average Taxon Richness per Quadrat: 56.6 ± 1.7</p> <p>*Indicator Taxa: <i>Blancoa canescens</i>, <i>Banksia tortifolia</i>, <i>Johnsonia pubescens</i> subsp. <i>pubescens</i>, <i>Conospermum unilaterale</i></p> <p>Significant Flora Taxa: <i>Calytrix chrysantha</i> (P4), <i>Calytrix eneabbensis</i> (P4)^, <i>Calytrix superba</i> (P4)^, <i>Desmocladius elongatus</i> (P4), <i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i> (P4), <i>Grevillea biformis</i> subsp. <i>cymbiformis</i> (P3), <i>Haemodorum loratum</i> (P3)^, <i>Hemiandra</i> sp. Eneabba (H. Demarz 3687) (P3)^, <i>Hypocalymma gardneri</i> (P3), <i>Paracaleana dixonii</i> (T), <i>Persoonia filiformis</i> (P3)^, <i>Schoenus griffinianus</i> (P4), <i>Styphelia filamentosa</i> (P3)^, <i>Thelymitra pulcherrima</i> (P2), <i>Thryptomene spicata</i> (P2), <i>Verticordia argentea</i> (P2)^, <i>Verticordia aurea</i> (P4)^, <i>Verticordia fragrans</i> (P3)^</p>	 <p data-bbox="1458 719 2069 746">Photo 5.4 FCT 2b (Relevé MAR19)</p>

FCT	Summary	Representative Photo
3	<p>*Description: Open Low Woodland to Heath of <i>Banksia</i> spp. over mixed shrubs commonly including <i>Melaleuca leuropoma</i>, <i>Eremaea beaufortioides</i> and <i>Scholtzia laxiflora</i> on grey or yellow sand on lower to mid slopes. This FCT is often adjacent to drainage lines or winter-wet areas, and is dominated by a number of <i>Banksia</i> species including <i>Banksia attenuata</i>, <i>Banksia candolleana</i>, <i>Banksia menziesii</i> and <i>Banksia leptophylla</i> with emergent <i>Eucalyptus tottiana</i></p> <p>Location: Mapped in one location along the Brand Highway segment of the Survey Area, south of the intersection with Mine Access Road</p> <p>Area Mapped in Survey Area (Proportion of Survey Area): 6.8 ha (5.30 %)</p> <p>Sampling: Two relevés (MAR21, MAR22)</p> <p>*Average Taxon Richness per Quadrat: 38.5 ± 2.0</p> <p>*Indicator Taxa: <i>Stachystemon axillaris</i></p> <p>Significant Flora Taxa: <i>Calytrix chrysantha</i> (P4)^, <i>Calytrix eneabbensis</i> (P4)^, <i>Conostephium magnum</i> (P4)^, <i>Desmocladus elongatus</i> (P4), <i>Hemiandra</i> sp. Eneabba (H. Demarz 3687) (P3)^, <i>Thryptomene spicata</i> (P2)^, <i>Verticordia argentea</i> (P2)^, <i>Verticordia aurea</i> (P4), <i>Verticordia fragrans</i> (P3)^</p>	 <p data-bbox="1458 719 2069 746">Photo 5.5 FCT 3 (Relevé MAR21)</p>

FCT	Summary	Representative Photo
6b	<p>*Description: Shrublands and Heaths, with occasional Low Woodland of <i>Eucalyptus pleurocarpa</i>. Common species include <i>Allocasuarina microstachya</i>, <i>Melaleuca leuropoma</i>, <i>Melaleuca trichophylla</i>, and <i>Verticordia</i> spp. over sedges on grey-brown sands, sandy clays and or gravel on flats, swales and lower slopes. This FCT was always associated with areas of FCT 2a</p> <p>Location: Mapped along the eastern and western parts of the Survey Area</p> <p>Area Mapped in Survey Area (Proportion of Survey Area): 16.8 ha (12.99 %)</p> <p>Sampling: Four relevés (MAR05, MAR07, MAR15, MAR18)</p> <p>*Average Taxon Richness per Quadrat: 43.4 ± 2.2</p> <p>*Indicator Taxa: <i>Mesomelaena tetragona</i>, <i>Verticordia pennigera</i></p> <p>Significant Flora Taxa: <i>Calytrix superba</i> (P4), <i>Desmocladius elongatus</i> (P4)^, <i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i> (P4), <i>Grevillea biformis</i> subsp. <i>cymbiformis</i> (P3), <i>Haemodorum loratum</i> (P3)^, <i>Hemiandra</i> sp. <i>Eneabba</i> (H. Demarz 3687) (P3), <i>Hypocalymma gardneri</i> (P3), <i>Persoonia filiformis</i> (P3), <i>Schoenus griffinianus</i> (P4)^, <i>Styphelia filamentosa</i> (P3), <i>Thelymitra pulcherrima</i> (P2), <i>Verticordia argentea</i> (P2), <i>Verticordia aurea</i> (P4), <i>Verticordia fragrans</i> (P3)</p>	 <p>Photo 5.6 FCT 6b (Relevé MAR07)</p>

* Source: 'Spring 2009 Re-assessment of FCT Quadrats Established at Eneabba between 2001-2007' (Woodman Environmental, 2011).



Legend	
	Survey Area
	Railways
	Roads
	Drainage Lines
	Waterbodies
Floristic Community Type	
	1a
	1b
	2a
	2b
	3
	6b
	CL
	R

FIGURE 5.10
Vegetation of the Survey Area

Legend

Floristic Community Type

- 1a Open Low Woodland to Open Low Scrub of *Eucalyptus pleurocarpa* and/or *Eucalyptus tottiana* over mixed shrubs dominated by *Banksia* spp. and *Hakea* spp. over sedges on grey to brown sands with very occasional laterite influence on lower to mid slopes
- 1b Open Woodland to Scrub of *Eucalyptus* spp. and/or *Banksia* spp., with occasional *Xylomelum angustifolium*, over mixed shrubs dominated by myrtaceous spp., *Banksia* spp., and *Jacksonia* spp. on grey sand on mid to upper slopes
- 2a Low Woodland of *Banksia attenuata* and occasional *Banksia menziesii* and *Xylomelum angustifolium* over Low Scrub of mixed species including *Banksia leptophylla* var. *leptophylla*, *Banksia candolleana*, *Melaleuca leuropoma* and *Hibbertia hypericoides* on brown or grey sand on upper slopes
- 2b Scrub of *Banksia attenuata*, with emergent *Eucalyptus tottiana* or *Eucalyptus pleurocarpa*, over Low Scrub dominated by *Banksia* spp. on predominantly yellow sands on mid and upper slopes
- 3 Open Low Woodland to Heath of *Banksia* spp. over mixed shrubs commonly including *Melaleuca leuropoma*, *Eremaea beaufortioides* and *Scholtzia laxiflora* on grey or yellow sand on lower to mid slopes
- 6b Shrublands and Heaths, with occasional Low Woodland of *Eucalyptus pleurocarpa*. Common species include *Allocasuarina microstachya*, *Melaleuca leuropoma*, *Melaleuca trichophylla*, and *Verticordia* spp. over sedges on grey-brown sands, sandy clays and or gravel on flats, swales and lower-slopes
- CL Cleared Land
- R Rehabilitated Land

FIGURE 5.10

LEGEND: Vegetation of the Survey Area

5.2.7 Significant Vegetation

As discussed in **Section 5.1.6**, two significant vegetation communities were identified as potentially occurring in the Desktop Study Area. **Table 5.10** presents an assessment of the potential presence of these significant vegetation communities in the Survey Area. Neither of these TECs are considered to occur in the Survey Area; this is due to a lack of suitable habitat in the Survey Area, with both TECs having relatively distinctive habitat characteristics (ferricrete soils in the case of the first, and permanently moist peat areas in the case of the second) (**Table 5.10**).

None of the FCTs mapped in the Survey Area are considered to represent any other formally listed TECs or PECs. Furthermore, all FCTs were mapped over relatively large areas by Woodman Environmental (2011) in both the EMRP Study Area and the wider Northern Sandplains Study Area, with the mapped extents in the Survey Area representing small proportions of the total mapped extents regionally ($\leq 1.81\%$; **Table 5.11**). It is also considered that none of the mapped FCTs in the Survey Area are significant for any other reasons as per EPA guidance (2016a, 2016b).

Table 5.10 Potential Presence of Significant Vegetation Communities in the Survey Area

Vegetation Community	Description	Nearest Known Location to Survey Area*	Potential Presence in Survey Area
<p>Ferricrete floristic community (Rocky Springs type) (WA TEC - Vulnerable)</p>	<p>This tall shrubland is located on irregularly inundated red brown sandy loams over ferricrete dominated by <i>Acacia blakelyi</i>, <i>Allocasuarina campestris</i>, <i>Banksia strictifolia</i> and <i>Labichea lanceolata</i> subsp. <i>lanceolata</i>. Associated species include <i>Alyogyne hakeifolia</i>, <i>Borya sphaerocephala</i>, <i>Isotoma hypocrateriformis</i>, <i>Petrophile seminuda</i>, <i>Stylidium dichotomum</i>, <i>Thysanotus patersonii</i> and <i>Waitzia paniculata</i> (CALM, 2004).</p> <p>This community is defined by the presence of ferricrete and derived substrates that underlie the distinctive vegetation. Ferricrete is formed in the soil profile at the water-table when iron-oxides accumulate and cement together to form a gravely or nodule-rich band. This community occurs on infrequently inundated red and brown sandy loams over ferricrete. Ferricrete substrate is extremely restricted in distribution in the Eneabba region. The floral composition of the Ferricrete community varies with substrate types and depths. The Rocky Springs sites lie within the 'Rocky Springs complex' - a combination of exposures of a ferruginous layer and Mesozoic sediments with varying amounts of shallow sand and gravel mantle. Community occurs over range of 45 km between Arrino and Eneabba in the Northern Perth Basin (DBCA, 2022d).</p>	<p>Southwestern part of the Survey Area intersects buffer polygons of this TEC</p>	<p>Not considered to be present</p> <p>DBCA (2022d) refers to comparison of key substrate characteristics, and associated assemblages to descriptions in key references.</p> <p>No areas of ferricrete or ferricrete-derived soils were recorded in the Survey Area. Of the dominant and associated taxa discussed in the interim recovery plan (CALM, 2004), only <i>Acacia blakelyi</i> was recorded in the Survey Area; this was at a single location in a historically rehabilitated area on brown sand (relevé MAR05). Of the flora taxa that have been recorded in occurrences of this TEC (Appendix 1 of the interim recovery plan; CALM (2004)), only <i>Hibbertia striata</i> (previously <i>Hibbertia huegelii</i>), <i>Petrophile brevifolia</i>, <i>Scholtzia laxiflora</i> and <i>Verticordia densiflora</i> were recorded in the Survey Area. However, these taxa are common in a range of habitats and vegetation types in the area, and are not considered characteristic of ferricrete areas.</p> <p>The areas of FCTs 12a, 12b and 15b mapped by Woodman Environmental (2011) (which is considered to represent the extent of this TEC at the known occurrence southwest of the Survey Area) occur on soil landscape units 221En_4 and 221En_8a. The former is described as 'Complex of seasonally waterlogged depressions and sandy rises. Salt crusts common in the lower-lying areas', while the latter is described as 'Rises and slopes in areas of regional groundwater discharge, possible fault zones; soils high in iron' (DPIRD, 2022b). Neither of these soil landscape units occur in the Survey Area (Section 0).</p>

Vegetation Community	Description	Nearest Known Location to Survey Area*	Potential Presence in Survey Area
Assemblages of the organic mound springs of the Three Springs area (WA TEC - Endangered)	The habitat of this community is characterised by continuous discharge of groundwater in raised areas of peat. The peat and surrounds provide a stable, permanently moist series of micro-habitats. There is a high level of heterogeneity of invertebrate fauna assemblages between occurrences, and all are associated with a rich and healthy fauna. The vegetation component of the community contains many moisture loving species including an overstorey of <i>Melaleuca preissiana</i> trees. <i>Eucalyptus camaldulensis</i> and <i>Eucalyptus rudis</i> are also found in a number of the mound springs. The shrub layer often includes <i>Hypocalymma angustifolium</i> and <i>Acacia saligna</i> over <i>Machaerina vaginalis</i> and other sedges. The herbaceous <i>Patersonia occidentalis</i> (swamp variant) was recorded at several mound springs (CALM, 2005)	Buffer polygons intersect eastern extent of the Desktop Study Area	<p>Not considered to be present</p> <p>DBCA (2022d) refers to determination if the habitat contains permanently moist peat mounds, and if associated flora and aquatic fauna assemblages are present.</p> <p>While evaluation of fauna assemblages are outside the scope of this assessment, no areas of peat or permanently moist areas were recorded in the Survey Area. Furthermore, none of the flora taxa characteristic of and common to this TEC (Appendix 1 of the interim recovery plan; CALM (2005)) were recorded in the Survey Area.</p> <p>The DBCA buffer polygon of this TEC east of the Survey Area appears to correspond to soil landscape unit 200Co_4b, which is described as 'plain, bog iron ore accumulations contained by Co1; red shallow sands and loams over bog iron' (DPIRD, 2022b). This soil landscape unit does not occur in the Survey Area (Section 0).</p>

* Source: Interrogation of DBCA TEC and PEC Database (DBCA, 2022b).

Table 5.11 Regional Extents of FCTs of the Survey Area

FCT	Extent (ha)		Proportion of Northern Sandplains Study Area (%)
	Survey Area	Northern Sandplains Study Area	
1a	43.2	2,540.6	1.70
1b	2.2	1,411.8	0.16
2a	11.4	6,172.2	0.18
2b	20.0	4,802.5	0.42
3	6.8	1,421.9	0.48
6b	16.8	926.2	1.81

Source: 'Spring 2009 Re-assessment of FCT Quadrats Established at Eneabba between 2001-2007' (Woodman Environmental, 2011).

Woodman Environmental (2011, 2012) identified 29 FCTs of the ERMP Study Area as being of high conservation significance (rated 4 or 5 out of 5 in a ranking scale developed by Woodman Environmental (2009b)) due to combinations of low percentage of local mapped area (< 1 %), being on a restricted landform, being unknown in conservation reserves, and providing habitat for conservation significant flora. Five of the six FCTs occurring in the Survey Area were ranked 4 (FCTs 1a, 1b, 2a, 2b and 6b), while FCT 3 was given a lower ranking of 3 (**Table 5.12**). In the case of FCTs 1a, 1b, 2a, 2b and 6b, the higher conservation significance rankings were given purely based on these FCTs providing habitat for Threatened flora taxa. None of the six FCTs were considered to have restricted extents in the ERMP Study Area, and all were considered to be represented (or possibly represented) in conservation reserves (**Table 5.12**). However, this current assessment does not consider any of the Survey Area FCTs to represent significant vegetation. The conservation significance ranking system used by Woodman Environmental (2011, 2012) was developed prior to the publication of the current EPA Technical Guidance (EPA, 2016b), with which this assessment complies. The EPA definition of significant vegetation (**Section 3.8.2**) does not consider the provision of habitat for Threatened flora taxa as being adequate justification for representing significant vegetation. Furthermore, as previously discussed, it is considered that none of the vegetation in the Survey Area meets any of the EPA definitions for significant vegetation, or is otherwise considered to be significant.

Table 5.12 Woodman Environmental Conservation Significance Rankings of Survey Area FCTs

FCT	Conservation Ranking	Reasoning
1a	4	9.3 % of ERMP Study Area and present within Nature Reserves but higher ranking due to presence of Threatened flora
1b	4	5.2 % of ERMP Study Area and present within Nature Reserves but higher ranking due to presence of Threatened flora
2a	4	21.7 % of ERMP Study Area and present within Nature Reserves but higher ranking due to presence of Threatened flora
2b	4	17.7 % of ERMP Study Area and present within Nature Reserves but higher ranking due to presence of Threatened flora
3	3	> 1 % of ERMP Study Area and represented within South Eneabba and un-named Nature Reserves
6b	4	3.4 % of ERMP Study Area and possibly present within Tathra National Park but higher ranking due to presence of Threatened flora

Source: 'Eneabba Environmental Review and Management Programme Flora and Vegetation Studies' (Woodman Environmental, 2009b).

5.2.8 Groundwater and Surface Water Dependent Vegetation

As per **Section 5.1.7.1**, large areas of the Survey Area have been mapped by a national assessment as being ‘low’ and ‘moderate’ potential terrestrial GDEs (BoM, 2023b). However, the depth to groundwater in the area within which the Survey Area is located is approximately 20 m (Ben Kraft, Iluka Resources Limited, pers. comm., 2023). Studies on the Northern Sandplains have shown that there is reduced reliance on groundwater by vegetation where depth to groundwater exceeds 10 m (Eamus et al. (2004) in Froend & Loomes (2004); Froend et al. (2011)). While *Banksia attenuata* and *Banksia menziesii* are present in the Survey Area (facultative phreatophytes that may access groundwater if the depth to groundwater is less than 10 m), these taxa were present in dwarf and low tree forms on deep sand soils, and are therefore unlikely to be capable of accessing groundwater and are not considered to be indicators of GDV. Furthermore, there was an absence of obligate phreatophytic taxa (e.g. *Melaleuca raphiophylla*, *Melaleuca preissiana*), and thus it is unlikely that any of the vegetation in the Survey Area is accessing or is reliant on groundwater.

FCT 6b occurs on flats, swales and lower slopes, sometimes with a clay component. While some parts of FCT 6b may be seasonally wet, and the mapped occurrences of this FCT correspond with ‘low’ and ‘moderate’ potential terrestrial GDEs as per the BoM GDE Atlas (2023b), the vegetation of this FCT is unlikely to be groundwater dependent. This FCT is subject to seasonal waterlogging simply due to its low point in the landscape. All other FCTs in the Survey Area occur on well-drained sandy soils on slopes, undulating plains and crests, and are characteristic of dryland vegetation.

While no watercourses or geomorphic wetlands occur in the Survey Area (**Section 5.1.7.2**), there are two watercourses and a small number of geomorphic wetlands that occur in proximity to the Survey Area. These generally occur west of the Survey Area, with the surface elevation gradually decreasing from east to west (DPIRD, 2019a). It is possible that surface water flows from the vegetation of the Survey Area contribute to these watercourses and wetlands. However, the sub-catchment and catchment within which the Survey Area is located (Lake Indoon sub-catchment and Indoon-Logue catchment, respectively) are relatively large (40,771 ha and 137,412 ha, respectively) (DWER, 2018), and therefore it is unlikely that any such contributions are significant to the maintenance of these watercourses and wetlands.

5.2.9 Vegetation Condition

Table 5.13 presents the area (ha) of each FCT and corresponding condition rating (as per EPA (2016b); **Appendix A**) mapped in the Survey Area by the 2022 survey. Vegetation condition mapping described by the 2022 survey is presented in **Figure 5.11**.

Vegetation condition mapping was performed for 77.8 % (or 100.4 ha) of the Survey Area, corresponding to the area of native vegetation in the Survey Area (i.e. mapped FCTs). Of this mapped area, 99.5 % (or 99.9 ha) was rated as being in ‘Excellent’ condition (**Table 5.13, Figure 5.11**); these areas had intact vegetation structure, very low levels of non-aggressive introduced flora taxa, and occasional vehicle tracks. While vegetation adjacent to roads or major tracks occasionally had slightly greater weed levels, the area of affected vegetation was very narrow, and it would not be possible to map this as a different vegetation condition rating at 1:5,000 scale.

A very small proportion of the Survey Area was mapped as being in ‘Degraded’ condition (0.5 ha, representing 0.5 % of the Survey Area) (**Table 5.13, Figure 5.11**). This corresponds to five small patches of

vegetation near the washdown bay that had moderate weed levels and altered vegetation structure compared to the surrounding 'Excellent' vegetation.

Areas that were mapped as 'Cleared Land' or 'Rehabilitated Land', or small patches of vegetation isolated within large occurrences of Cleared Land, were all rated as 'Not Assessed' (NA) and comprise 22.2 % (or 28.7 ha) of the entire Survey Area (**Figure 5.11**).

Table 5.13 Vegetation Condition Ratings for FCTs Mapped in the Survey Area

FCT	Excellent	Degraded	Total
1a	43.0	0.2	43.2
1b	2.2	-	2.2
2a	11.4	-	11.4
2b	19.9	0.1	20.0
3	6.8	-	6.8
6b	16.6	0.2	16.8
Total	99.9	0.5	100.4



- Legend**
- Survey Area
 - Railways
 - Roads
 - Drainage Lines
 - Waterbodies
- Vegetation Condition**
- Excellent
 - Degraded
 - Not Assessed

FIGURE 5.11
Vegetation Condition of the Survey Area

6.0 Discussion and Conclusions

The Eneabba Sandplains is known to have high diversity of both flora taxa and vegetation types, as well as a high level of endemism. However, given the small size of the Survey Area, only a small number of FCTs and taxa were sampled by the 2022 survey.

Extensive searching for all significant flora taxa considered to potentially occur within the Survey Area was undertaken across the entirety of the Survey Area within the most appropriate time to survey in the Geraldton Sandplains region. Targeted survey for taxa that are only visible/identifiable at certain times was specifically aligned with the appropriate time to survey for these taxa. A total of 23 significant flora taxa were recorded in the Survey Area, including the Threatened taxon *Paracaleana dixonii*, and 22 DBCA-listed Priority taxa. According to DBCA and ALA databases, all 23 taxa are endemic to WA, with *Schoenus griffinianus* (P4) having the largest known range (approximately 560 km from Geraldton to Lake Grace), and *Thryptomene spicata* (P2) having the smallest (approximately 14 km from Eneabba to Warradarge). *Thryptomene spicata* (P2) is also known from the fewest regional populations (six), while *Grevillea rudis* (P4) is known from approximately 51 (WA Herbarium, 1998-). All significant flora taxa recorded by the 2022 survey were identified by the desktop assessment.

A likelihood of occurrence assessment was undertaken for the remaining significant flora taxa that were returned by the desktop assessment but not recorded by the 2022 survey. This assessment identified that all of the remaining taxa were identifiable during the 2022 survey, either because the survey period coincides with the taxon's flowering period, or the taxon can be identified reliably when in fruit or sterile. However, it was considered unlikely that any of these taxa could potentially still occur in the Survey Area; this is because the Survey Area occurs outside the species' known ranges, and/or potential habitat is not considered to be present, and/or intensive survey conducted for the 2022 survey did not record these taxa.

A collection of *Banksia stenoprion* made in the Study Area by the 2022 survey represents a minor range extension to the known distribution of this taxon by approximately 22 km. This taxon has a relatively wide distribution, occurring over 170 km, and is locally common and therefore has likely been overlooked in terms of collecting and submitting material to the WA Herbarium. Furthermore, it is also considered possible that this taxon has been historically misidentified as the common, widespread, superficially similar *Banksia dallanneyi*. The taxon is therefore more common than DBCA databases indicate.

A total of six FCTs previously defined by Woodman Environmental (2011) were mapped across the Survey Area. While no major changes to the existing FCT mapping were required, it was revised slightly to capture changes in cleared and rehabilitated areas since the mapping dataset was prepared in 2010. All six FCTs mapped in the Survey Area belong to Super Group 1 as defined by Woodman Environmental (2011), being woodlands, thickets and heaths on well drained sandy soils and sandy clays, occasionally over lateritic gravel.

None of the FCTs mapped in the Survey Area are considered to represent any formally listed TECs or PECs. Furthermore, all FCTs were mapped over relatively large areas by Woodman Environmental (2011) in both the EMRP Study Area and the wider Northern Sandplains Study Area, with the mapped extents in the Survey Area representing small proportions of the total mapped extents regionally. It is also considered that none of the mapped FCTs in the Survey Area are significant for any other reasons as per EPA guidance (2016a, 2016b).

Large areas of the Survey Area have been mapped by a national assessment as being 'low' and 'moderate' potential terrestrial GDEs (BoM, 2023b). However, the depth to groundwater in the area within which the Survey Area is located is approximately 20 m. While *Banksia attenuata* and *Banksia menziesii* are present in the Survey Area, these taxa were present in dwarf and low tree forms on deep sand soils, and are therefore unlikely to be capable of accessing groundwater and are not considered to be indicators of GDV. Furthermore, there was an absence of obligate phreatophytic taxa (e.g. *Melaleuca raphiophylla*, *Melaleuca preissiana*). Therefore, it is unlikely that any of the vegetation in the Survey Area is accessing or is reliant on groundwater.

FCT 6b occurs on flats, swales and lower slopes, sometimes with a clay component. In the Survey Area, this FCT is subject to seasonal waterlogging due to its low point in the landscape. All other FCTs in the Survey Area occur on well-drained sandy soils on slopes, undulating plains and crests, and are characteristic of dryland vegetation. It is possible that surface water flows from the vegetation of the Survey Area contribute to the watercourses and wetlands west of the Survey Area. However, the sub-catchment and catchment within which the Survey Area is located (Lake Indoon sub-catchment and Indoon-Logue catchment, respectively) are relatively large (40,771 ha and 137,412 ha, respectively) (DWER, 2018), and therefore it is unlikely that any such contributions are significant to the maintenance of these watercourses and wetlands.

The majority of the vegetation in the Survey Area was rated and mapped as being in 'Excellent' condition, with no obvious evidence of impact to vegetation composition as a result of human activities, and no (or very low levels) of introduced flora taxa. While vegetation adjacent to roads or tracks occasionally had minor weed levels, the area of affected vegetation was very narrow, and it would not be possible to map this as a different vegetation condition rating at 1:5,000 scale. A very small proportion of the Survey Area was mapped as being in 'Degraded' condition, corresponding to five small patches of vegetation near the washdown bay that had moderate weed levels and altered vegetation structure compared to the surrounding 'Excellent' vegetation.

There were no survey limitations that are considered to have significantly influenced the results of the current survey. Personnel involved in all aspects of the survey have significant previous experience, or guided less experienced personnel throughout the survey where necessary. Reasonable contextual information for the Survey Area was available prior to the 2022 survey. No constraints prevented appropriate sampling techniques (relevé establishment, foot traverses) being employed. All areas were relatively easy to access using available access roads and tracks. Data reliability is therefore considered to be relatively high. At least one reference specimen of all recorded significant flora taxa was collected for verification and identification purposes. Two FCTs (2b and 3) were sampled by only two relevés in the Survey Area, as they occurred across very small areas in the Survey Area. However, these FCTs were sampled by 43 and 33 quadrats, respectively, in the original vegetation assessment undertaken by Woodman Environmental (2011). A recent fire (May 2021) had affected a small area in the northern part of the Survey Area on the eastern side of Brand Highway (approximately 220 m long and 100 m wide). However, this was not a limitation of the Reconnaissance survey, as the western side of Brand Highway was unaffected and long-unburnt, and hence a relevé was established here instead. Further, this was not a limitation of the Targeted flora and vegetation survey, as most taxa had already matured sufficiently to allow confident identification, and the abundance of target taxa was similar in burnt areas compared to unburnt areas.

7.0 References

- ALA. (2023). *Atlas of Living Australia – Open access to Australia’s biodiversity data*. Atlas of Living Australia (ALA). <https://www.ala.org.au/>
- Beard, J. S. (2015). *Plant Life of Western Australia* (A. S. George & N. Gibson, Eds.; 2nd ed.). Rosenberg Publishing. Kenthurst, New South Wales.
- Beard, J. S., Beeston, G. R., Harvey, J. M., Hopkins, A. J. M., & Shepherd, D. P. (2013). The vegetation of Western Australia at the 1:3,000,000 scale. Explanatory memoir. Second Edition. *Conservation Science Western Australia*, 9(3), 1–152.
- BoM. (2023a). *Bureau of Meteorology Climate Data Online*. Commonwealth of Australia, Bureau of Meteorology (BoM). <http://www.bom.gov.au/climate/data/>
- BoM. (2023b). *Groundwater Dependent Ecosystems Atlas*. Commonwealth of Australia, Bureau of Meteorology (BoM); corporateName=Bureau of Meteorology. <http://www.bom.gov.au/water/groundwater/gde>
- CALM. (2004). *Ferricrete floristic community (Rocky Springs type) Interim Recovery Plan 2004-2009* (Interim Recovery Plan No. 154, p. 18). Sheila Hamilton-Brown, Gina Broun & Rosemarie Rees, Department of Conservation and Land Management (CALM). Wanneroo, Western Australia.
- CALM. (2005). *Assemblages of Organic Mound Springs of the Three Springs Area Interim Recovery Plan 2005-2010* (Interim Recovery Plan No. 196, p. 22). Rosemarie Rees & Gina Broun, Department of Conservation and Land Management (CALM). Wanneroo, Western Australia.
- CISS. (2023). *Weeds Australia*. Centre for Invasive Species Solutions (CISS). <https://weeds.org.au/weeds-profiles/>
- DAWE. (2019). *Australian Wetlands Database—Directory of Important Wetlands*. Last Updated 14 June 2019. Department of Agriculture, Water and Environment (DAWE). <https://www.environment.gov.au/cgi-bin/wetlands/search.pl?smode=DOIW>
- DAWE. (2022). *Protected Matters Search Tool: Interactive Map*. Interrogation of Species Profile and Threats (SPRAT) Database Using Protected Matters Search Tool. Department of Agriculture, Water and the Environment (DAWE). <https://www.environment.gov.au/epbc/protected-matters-search-tool>
- DBCA. (2014). *Ecological Impact and Invasiveness Ratings from the Department of Parks and Wildlife Midwest Region Species Prioritisation Process 2014*. Department of Biodiversity, Conservation and Attractions (DBCA). <https://www.dbca.wa.gov.au/parks-and-wildlife-service/threat-management/plant-diseases/weeds>
- DBCA. (2017a). *Geomorphic Wetlands Cervantes Eneabba (DBCA-015)*. Spatial data. Last updated 13 September 2017. Department of Biodiversity, Conservation and Attractions (DBCA). <https://catalogue.data.wa.gov.au/dataset/geomorphic-wetlands-cervantes-eneabba>

- DBCA. (2017b). *Threatened Ecological Communities (DBCA-038)*. Spatial data. Last updated 13 September 2017. Department of Biodiversity, Conservation and Attractions (DBCA). <https://catalogue.data.wa.gov.au/dataset/geomorphic-wetlands-cervantes-eneabba>
- DBCA. (2018a). *Directory of Important Wetlands in Australia—Western Australia (DBCA-045)*. Spatial data. Last updated 27 April 2018. Department of Biodiversity, Conservation and Attractions (DBCA). <https://catalogue.data.wa.gov.au/dataset/directory-of-important-wetlands-in-western-australia>
- DBCA. (2018b). *List of Threatened Ecological Communities (TECs) endorsed by the Western Australian Minister for Environment*. Species and Communities Branch, 28 June 2018. Department of Biodiversity, Conservation and Attractions (DBCA). <https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/wa-s-threatened-ecological-communities>
- DBCA. (2019). *2018 Statewide Vegetation Statistics (formerly the CAR Reserve Analysis): Full Report*. Last updated 30 April 2019. Remote Sensing and Spatial Analysis Program, Department of Biodiversity, Conservation and Attractions (DBCA). <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>
- DBCA. (2020). *Conservation Codes for Western Australian Flora and Fauna*. Last updated 10 December 2020. Department of Biodiversity, Conservation and Attractions (DBCA). <https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities>
- DBCA. (2022a). *DBCA - Legislated Lands and Waters (DBCA-011)*. Spatial data. Last updated 11 July 2022. Department of Biodiversity, Conservation and Attractions (DBCA). <https://catalogue.data.wa.gov.au/dataset/dbca-legislated-lands-and-waters>
- DBCA. (2022b). *DBCA Threatened and Priority Ecological Communities Database*. Database interrogation. Department of Biodiversity, Conservation and Attractions (DBCA).
- DBCA. (2022c). *DBCA WA Herbarium Specimen and Threatened and Priority Flora (TPFL) Databases*. Database interrogation. Department of Biodiversity, Conservation and Attractions (DBCA).
- DBCA. (2022d). *Methods for survey and identification of Western Australian threatened ecological communities (Draft version 3, 14 April 2022)*. Department of Biodiversity, Conservation and Attractions (DBCA), Species and Communities Program. <https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/wa-s-threatened-ecological-communities>
- DBCA. (2022e). *Priority Ecological Communities for Western Australia Version 34*. Species and Communities Program, 21 December 2022. Department of Biodiversity, Conservation and Attractions (DBCA). <https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/wa-s-threatened-ecological-communities>
- DCCEEW. (2021). *Australia's Bioregions (IBRA)*. Department of Climate Change, Energy, the Environment and Water (DCCEEW). <https://www.dcceew.gov.au/environment/land/nrs/science/ibra>
- DEC. (2011). *Project summary: Geomorphic Wetlands Cervantes Eneabba Stage 1 project (p. 7)*. Department of Environment and Conservation (DEC). <https://www.dpaw.wa.gov.au/management/wetlands/mapping-and-monitoring/220-wetlands-mapping?showall=1>

- DEC. (2013). *Definitions, Categories and Criteria for Threatened and Priority Ecological Communities*. January 2013. Department of Environment and Conservation (DEC). <https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/wa-s-threatened-ecological-communities>
- Desmond, A., & Chant, A. (2002). *Geraldton Sandplain 3 (GS3—Lesueur Sandplain subregion)* (A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002, p. 21). Department of Conservation and Land Management. <https://www.dpaw.wa.gov.au/about-us/science-and-research/biological-surveys/117-a-biodiversity-audit-of-wa>
- DEWHA. (2008). *Approved Conservation Advice for Paracaleana dixonii Hopper & A.P.Br. Nom. Inval. (Sandplain Duck Orchid)* (p. 3). Department of the Environment, Water, Heritage and the Arts (DEWHA). Canberra, Australian Capital Territory. http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=86882
- Dodd, J., & Bell, D. T. (1993). Water relations of the canopy species in a Banksia woodland, Swan Coastal Plain, Western Australia. *Australian Journal of Ecology*, 18(3), 281–293. <https://doi.org/10.1111/j.1442-9993.1993.tb00456.x>
- Doody, T. M., Barron, O. V., Dowsley, K., Emelyanova, I., Fawcett, J., Overton, I. C., Pritchard, J. L., Van Dijk, A. I. J. M., & Warren, G. (2017). Continental mapping of groundwater dependent ecosystems: A methodological framework to integrate diverse data and expert opinion. *Journal of Hydrology: Regional Studies*, 10, 61–81. <https://doi.org/10.1016/j.ejrh.2017.01.003>
- DPIRD. (2019a). *2 metre contours (DPIRD-072)*. Spatial data. Last updated 4 April 2019. Department of Primary Industries and Regional Development (DPIRD). <https://catalogue.data.wa.gov.au/dataset/dpird-2-metre-contours>
- DPIRD. (2019b). *Pre-European Vegetation (DPIRD-006)*. Spatial data. Last updated 23 July 2019. Department of Primary Industries and Regional Development (DPIRD). <https://catalogue.data.wa.gov.au/dataset/pre-european-dpird-006>
- DPIRD. (2022a). *Soil Landscape Land Quality—Zones (DPIRD-017)*. Spatial data. Last updated 18 July 2022. Department of Primary Industries and Regional Development (DPIRD). <https://catalogue.data.wa.gov.au/dataset/soil-landscape-land-quality-zones>
- DPIRD. (2022b). *Soil Landscape Mapping—Best Available (DPIRD-027)*. Spatial data. Last updated 13 July 2022. Department of Primary Industries and Regional Development (DPIRD). <https://catalogue.data.wa.gov.au/dataset/soil-landscape-mapping-best-available>
- DPIRD. (2023a). *DPIRD Weather Stations*. Department of Primary Industries and Regional Development (DPIRD). <https://weather.agric.wa.gov.au/>
- DPIRD. (2023b). *Western Australian Organism List*. Department of Primary Industries and Regional Development (DPIRD). <https://www.agric.wa.gov.au/organisms>
- DWER. (2018). *Hydrographic Catchments—Subcatchments (DWER-030)*. Spatial data. Last updated 20 June 2018. Department of Water and Environmental Regulation (DWER). <https://catalogue.data.wa.gov.au/dataset/hydrographic-catchments-subcatchments>

- DWER. (2022). *Index of Biodiversity Surveys for Assessments (IBSA)*. Department of Water and Environmental Regulation (DWER). <https://biocollect.ala.org.au/ibsa/>
- EPA. (2016a). *Environmental Factor Guideline—Flora and Vegetation* (p. 6). December 2016. Environmental Protection Authority (EPA). <https://www.epa.wa.gov.au/policies-guidance/environmental-factor-guideline-flora-and-vegetation>
- EPA. (2016b). *Technical Guidance—Flora and Vegetation Surveys for Environmental Impact Assessment* (p. 42). December 2016. Environmental Protection Authority (EPA). <https://www.epa.wa.gov.au/policies-guidance/technical-guidance-flora-and-vegetation-surveys-environmental-impact-assessment>
- ESCAVI. (2003). *Australian Vegetation Attribute Manual: National Vegetation Information System, Version 6.0*. Executive Steering Committee for Australian Vegetation Information (ESCAVI). Department of the Environment and Heritage. Canberra, Australian Capital Territory.
- Froend, R., Boyd, T., & Scott, P. (2011). *Tiwest Dongara Mineral Sands Project Groundwater Dependent Ecosystem Impact Assessment* (Report prepared for Tiwest Pty Ltd). Froend, Bowen and Associates and Preston Consulting.
- Froend, R., & Loomes, R. (2004). *Approach to determination of Ecological Water Requirements of groundwater-dependent ecosystems in Western Australia* (Report (CEM2004-12) prepared for the Department of Environment). Centre for Ecosystem Management, Edith Cowan University.
- Froend, R., & Loomes, R. (2006). *Determination of ecological water requirements for groundwater-dependent ecosystems – southern Blackwood and eastern Scott Coastal Plain* (Report (CEM2005-07) prepared for the Department of Water; p. 147). Centre for Ecosystem Management, Edith Cowan University.
- Griffin, E. A., Hopkins, A. J. M., & Hnatiuk, R. J. (1983). Regional variation in mediterranean-type shrublands near Eneabba, south-western Australia. *Vegetatio*, 52(2), 103–127. <https://doi.org/10.1007/BF00037768>
- Groom, P. K., Froend, R. H., & Mattiske, E. M. (2000). Impact of groundwater abstraction on a Banksia woodland, Swan Coastal Plain, Western Australia. *Ecological Management and Restoration*, 1(2), 117–124. <https://doi.org/10.1046/j.1442-8903.2000.00033.x>
- Hussey, B. M. J., Keighery, G. J., Dodd, J., Lloyd, S. G., & Cousens, R. D. (2007). *Western Weeds: A Guide to the Weeds of Western Australia* (2nd ed.). Wildflower Society of WA (Inc.). Victoria Park, Western Australia.
- Iluka. (2021). *Tronox-Iluka Significant Flora Database*. Provided by Ben Kraft, Senior Environmental Advisor, 16 June 2021. Iluka Resources Limited (Iluka).
- Landgate. (2022). *Medium Scale Topo Water (Line) (LGATE-018)*. Spatial data. Last updated 31 December 2022. Western Australian Land Information Authority. <https://catalogue.data.wa.gov.au/dataset/medium-scale-topo-water-line-lgate-018>
- Mattiske. (2018). *Assessment of Analogue Sites and Rehabilitated Mining Areas from 2008, 2011, 2014 and 2016* (Report (MBS1902/72/19, Final, January 2018) prepared for MBS Environmental Pty Ltd; p. 101). Mattiske Consulting Pty Limited (Mattiske).

Muir, B. G. (1977). *Biological Survey of the Western Australian Wheatbelt, Part 2: Vegetation and Habitat of Bendering Reserve*. Western Australian Museum. Frands Street, Perth, Western Australia.

Schoknecht, N. R., Tille, P. J., & Purdie, B. R. (2004). *Soil-landscape mapping in south-Western Australia: An overview of methodology and outputs* (No. 280; Resource Management Technical Report, p. 62). Department of Agriculture and Food.

Sommer, B., & Froend, R. (2010). *Gnangara Mound Ecohydrological Study (RFT 0037-2008)* (Report (CEM2010-20) prepared for the Western Australian Government Department of Water; p. 105). Centre for Ecosystem Management, Edith Cowan University.

Tsakalos, J. L., Renton, M., Dobrowolski, M. P., Feoli, E., Macintyre, P. D., Veneklaas, E. J., & Mucina, L. (2018). Community patterns and environmental drivers in hyper-diverse kwongan scrub vegetation of Western Australia. *Applied Vegetation Science*, 21(4), 694–734. <https://doi.org/10.1111/avsc.12399>

TSSC. (2017). *Guidelines for nominating and assessing the eligibility for listing of ecological communities as threatened according to the Environment Protection and Biodiversity Conservation Act 1999 and the EPBC Regulations 2000*. Threatened Species Scientific Committee (TSSC), Department of Agriculture, Water and the Environment. Canberra, Australian Capital Territory. <https://www.dcceew.gov.au/environment/biodiversity/threatened/nominations/forms-and-guidelines#threatened-species>

TSSC. (2021). *Guidelines for assessing the conservation status of native species according to the Environment Protection and Biodiversity Conservation Act 1999 and Environment Protection and Biodiversity Conservation Regulations 2000*. Threatened Species Scientific Committee (TSSC), Department of Agriculture, Water and the Environment. Canberra, Australian Capital Territory. <https://www.dcceew.gov.au/environment/biodiversity/threatened/nominations/forms-and-guidelines#threatened-species>

Umwelt. (2022). *Eneabba Banksia Camp: Flora and Vegetation Survey* (Report (21867/R01, Final, April 2022) prepared for Iluka Resources Limited; p. 80). Umwelt (Australia) Pty Limited (Umwelt).

WA Herbarium. (2020). *How to Collect Herbarium Vascular Plant Specimens* (p. 11). Department of Biodiversity, Conservation and Attractions. Western Australian Herbarium (WA Herbarium). <https://www.dpaw.wa.gov.au/plants-and-animals/wa-herbarium>

WA Herbarium. (1998-). *Florabase: The Western Australian Flora*. Department of Biodiversity, Conservation and Attractions. Western Australian Herbarium (WA Herbarium). <https://florabase.dpaw.wa.gov.au/>

Woodman Environmental. (2009a). *Dongara Tenements: Flora and Vegetation Studies Regional FCT Analysis* (Report (Tiwest07-36, Rev 0, October 2009) prepared for Tiwest Pty Limited; p. 148). Woodman Environmental Consulting Pty Limited (Woodman Environmental).

Woodman Environmental. (2009b). *Eneabba Environmental Review and Management Programme Flora and Vegetation Studies* (Report (Iluka07-19-01, Rev 2, April 2009) prepared for Iluka Resources Limited; p. 217). Woodman Environmental Consulting Pty Limited (Woodman Environmental).

Woodman Environmental. (2011). *Spring 2009 Re-assessment of FCT Quadrats Established at Eneabba between 2001-2007* (Report (Iluka09-43-01, Rev 0, February 2011) prepared for Iluka Resources Limited; p. 99). Woodman Environmental Consulting Pty Limited (Woodman Environmental).

Woodman Environmental. (2012). *Summary Report of Flora and Vegetation Studies 2001 to 2011* (Report (Iluka12-16, Rev 0, April 2012) prepared for Iluka Resources Limited; p. 148). Woodman Environmental Consulting Pty Limited (Woodman Environmental).

Woodman Environmental. (2013). *Threatened and Priority Flora Survey of Proposed Drill Lines: IPL North* (Report (Iluka12-21-01, Rev 0) prepared for Iluka Resources Ltd; p. 32). Woodman Environmental Consulting Pty Ltd (Woodman Environmental).

Woodman Environmental. (2014a). *Field Survey for Thelymitra pulcherrima (P2): IPL North* (Report (Iluka13-15-01, Rev 0) prepared for Iluka Resources Ltd; p. 13). Woodman Environmental Consulting Pty Ltd (Woodman Environmental).

Woodman Environmental. (2014b). *Survey of Potential Offset Areas for Paracaleana dixonii (Threatened – Declared Rare Flora)* (Report (Iluka13-14-01, Rev 1) prepared for Iluka Resources Ltd; p. 53). Woodman Environmental Consulting Pty Ltd (Woodman Environmental).

Woodman Environmental. (2015a). *Conservation Significant Flora Search: Yellow Dam Clearing Areas* (Report (Iluka14-45-01, Rev 0) prepared for Iluka Resources Ltd; p. 16). Woodman Environmental Consulting Pty Ltd (Woodman Environmental).

Woodman Environmental. (2015b). *Conservation Significant Flora Searching in Mulch Areas – Eneabba* (Report (Iluka14-42-01, Rev 0) prepared for Iluka Resources Ltd; p. 33). Woodman Environmental Consulting Pty Ltd (Woodman Environmental).

Woodman Environmental. (2015c). *Eneabba Substation to Karara Mine: Tee-Off Line Removal Threatened and Priority Flora Follow-up and Demarcation Survey* (Report (WP14-31-01, Rev 0, January 2015) prepared for Western Power; p. 66). Woodman Environmental Consulting Pty Limited (Woodman Environmental).

Woodman Environmental. (2015d). *Significant Flora Survey: Lake Logue Monitoring Bore* (Report (Iluka15-36-01, Rev 0) prepared for Iluka Resources Ltd; p. 15). Woodman Environmental Consulting Pty Ltd (Woodman Environmental).

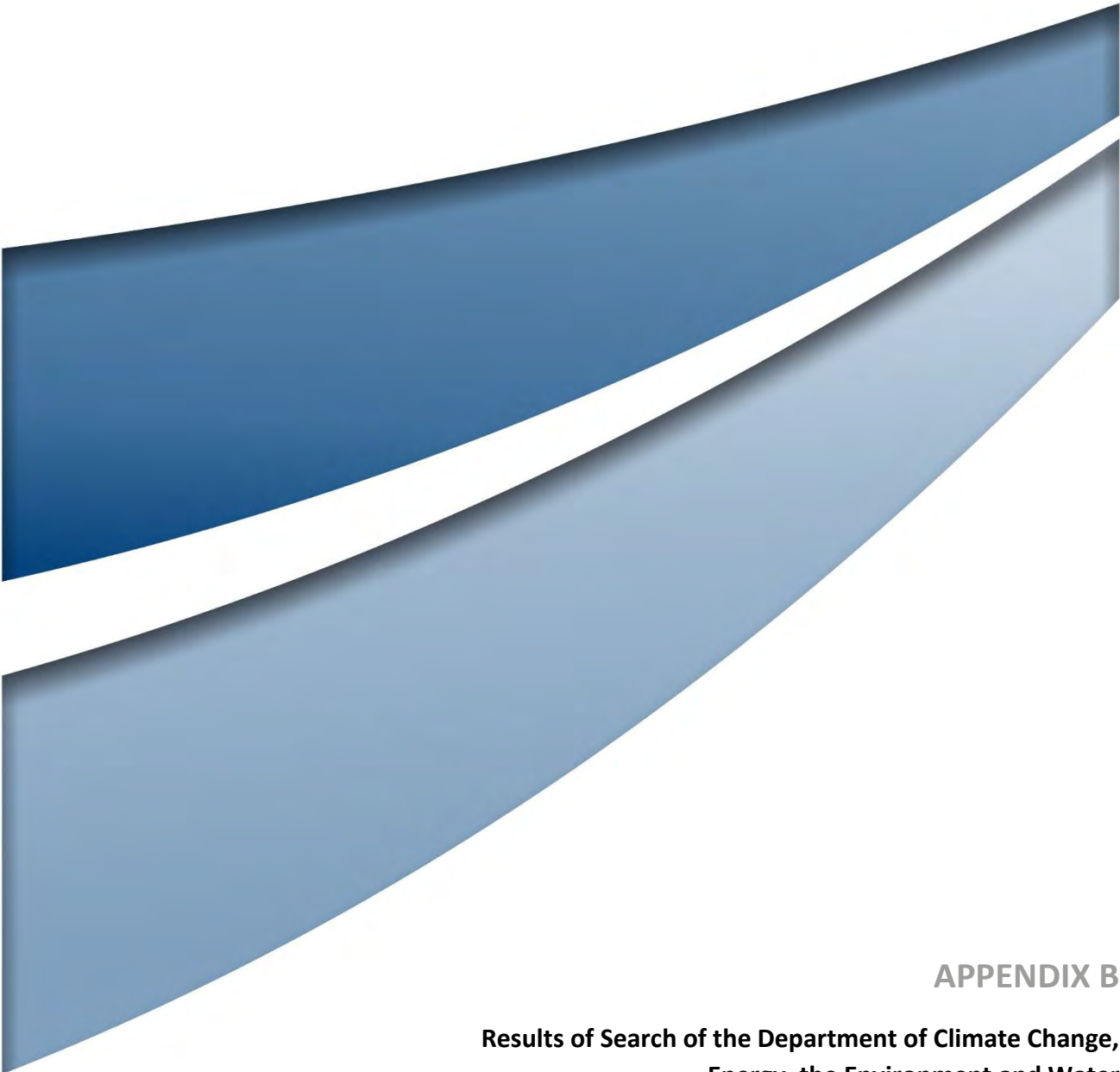
Woodman Environmental. (2016). *Significant Flora Survey: South Mine Rehabilitation Clearing for Final Landform and Drainage* (Report (Iluka15-36-02, Rev 0) prepared for Iluka Resources Ltd; p. 31). Woodman Environmental Consulting Pty Ltd (Woodman Environmental).



APPENDIX A

**Vegetation Condition Scale for the South West
and Interzone Botanical Provinces (EPA, 2016b)**

Condition Rating	Condition Rating Description
Pristine (P)	Pristine or nearly so, no obvious signs of disturbance or damage caused by human activities since European settlement.
Excellent (E)	Vegetation structure intact, disturbance affecting individual species and weeds are nonaggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.
Very Good (VG)	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.
Good (G)	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Degraded (D)	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.
Completely Degraded (CD)	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees and shrubs.



APPENDIX B

**Results of Search of the Department of Climate Change,
Energy, the Environment and Water
Species Profile and Threats Database (DAWE, 2022)**



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: 23-Aug-2022

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

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:	None
Listed Threatened Species:	33
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

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 <http://www.environment.gov.au/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:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	14
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:	4
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	11
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 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			
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	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
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 feature area
Zanda latirostris listed as Calyptorhynchus latirostris Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Breeding known to occur within area	In feature area
MAMMAL			
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Parantechinus apicalis Dibbler [313]	Endangered	Species or species habitat may occur within area	In feature area
PLANT			
Acacia wilsonii Wilson's Wattle [65228]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area	In feature area
Daviesia speciosa Beautiful Daviesia [56698]	Endangered	Species or species habitat likely to occur within area	In feature area
Eleocharis keigheryi Keighery's Eleocharis [64893]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Eremophila glabra subsp. chlorella [84927]	Endangered	Species or species habitat known to occur within area	In feature area
Eremophila sp. Narrow leaves (J.D.Start D12-150) [89307]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Eucalyptus crispata Yandanooka Mallee [24268]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Eucalyptus impensa Eneabba Mallee [56711]	Endangered	Species or species habitat known to occur within area	In feature area
Eucalyptus johnsoniana Johnson's Mallee [14516]	Vulnerable	Species or species habitat known to occur within area	In feature area
Eucalyptus leprophloia Scaly Butt Mallee, Scaly-butt Mallee [56712]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Eucalyptus rhodantha Rose Mallee [9362]	Vulnerable	Species or species habitat may occur within area	In feature area
Grevillea althoferorum [64906]	Endangered	Species or species habitat likely to occur within area	In feature area
Grevillea curviloba subsp. incurva Narrow curved-leaf Grevillea [64909]	Endangered	Species or species habitat known to occur within area	In feature area
Grevillea humifusa Spreading Grevillea [61182]	Endangered	Species or species habitat may occur within area	In buffer area only
Hakea megalosperma Lesueur Hakea [10505]	Vulnerable	Species or species habitat known to occur within area	In feature area
Hemiandra gardneri Red Snakebush [7945]	Endangered	Species or species habitat likely to occur within area	In feature area
Leucopogon obtectus Hidden Beard-heath [19614]	Endangered	Species or species habitat known to occur within area	In feature area
Paracaleana dixonii Sandplain Duck Orchid [86882]	Endangered	Species or species habitat known to occur within area	In feature area
Spirogardnera rubescens Spiral Bush [15667]	Endangered	Species or species habitat may occur within area	In buffer area only
Styphelia longissima [89333]	Critically Endangered	Species or species habitat known to occur within area	In buffer area only
Tetratheca nephelioides [83217]	Critically Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thelymitra stellata Star Sun-orchid [7060]	Endangered	Species or species habitat known to occur within area	In feature area
Verticordia albida White Featherflower [55635]	Endangered	Species or species habitat likely to occur within area	In feature area

REPTILE

Egernia stokesii badia Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink [64483]	Endangered	Species or species habitat known to occur within area	In feature area
----------------------------------------------------------------------------------------------------------------	------------	-------------------------------------------------------	-----------------

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 known to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to 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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands [\[Resource Information \]](#)

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Unknown		
Commonwealth Land - [51485]	WA	In buffer area only

Listed Marine Species [\[Resource Information \]](#)

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to 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]		Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known 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
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may 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 feature area
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat may occur within area overfly marine area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area overfly marine area	In buffer area only

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Lake Logue	Nature Reserve	WA	In buffer area only
South Eneabba	Nature Reserve	WA	In feature area
Unnamed WA26001	Nature Reserve	WA	In buffer area only
Unnamed WA39744	Nature Reserve	WA	In buffer area only

Nationally Important Wetlands		[Resource Information]
Wetland Name	State	Buffer Status
Lake Logue/Indoon System	WA	In buffer area only

EPBC Act Referrals					[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status	
Controlled action					
Central West Coal Project near Enneabba, WA	2007/3869	Controlled Action	Completed	In buffer area only	
Coolimba Coal Power Project	2007/3876	Controlled Action	Completed	In buffer area only	
Expansion of mineral sand mine	2008/4192	Controlled Action	Completed	In feature area	
IPL North Project - Eneabba Mineral Sands Mine, WA	2012/6408	Controlled Action	Proposed Decision	In feature area	
Ocean Hill 3D seismic survey, Eneabba, WA	2017/7970	Controlled Action	Referral Decision	In buffer area only	
Zemira 3D Seismic Survey	2020/8658	Controlled Action	Assessment Approach	In buffer area only	
Not controlled action					
Iluka Eneabba Rare Earth Refinery	2021/9096	Not Controlled Action	Completed	In feature area	
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area	
Northern Looping project, Karratha to Gingin	2005/2251	Not Controlled Action	Completed	In buffer area only	
Not controlled action (particular manner)					
Transmission Line Rebuild and Extension	2009/5105	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only	

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Referral decision				
Transmission Line Rebuild and Extension	2009/4972	Referral Decision	Completed	In buffer area only

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.

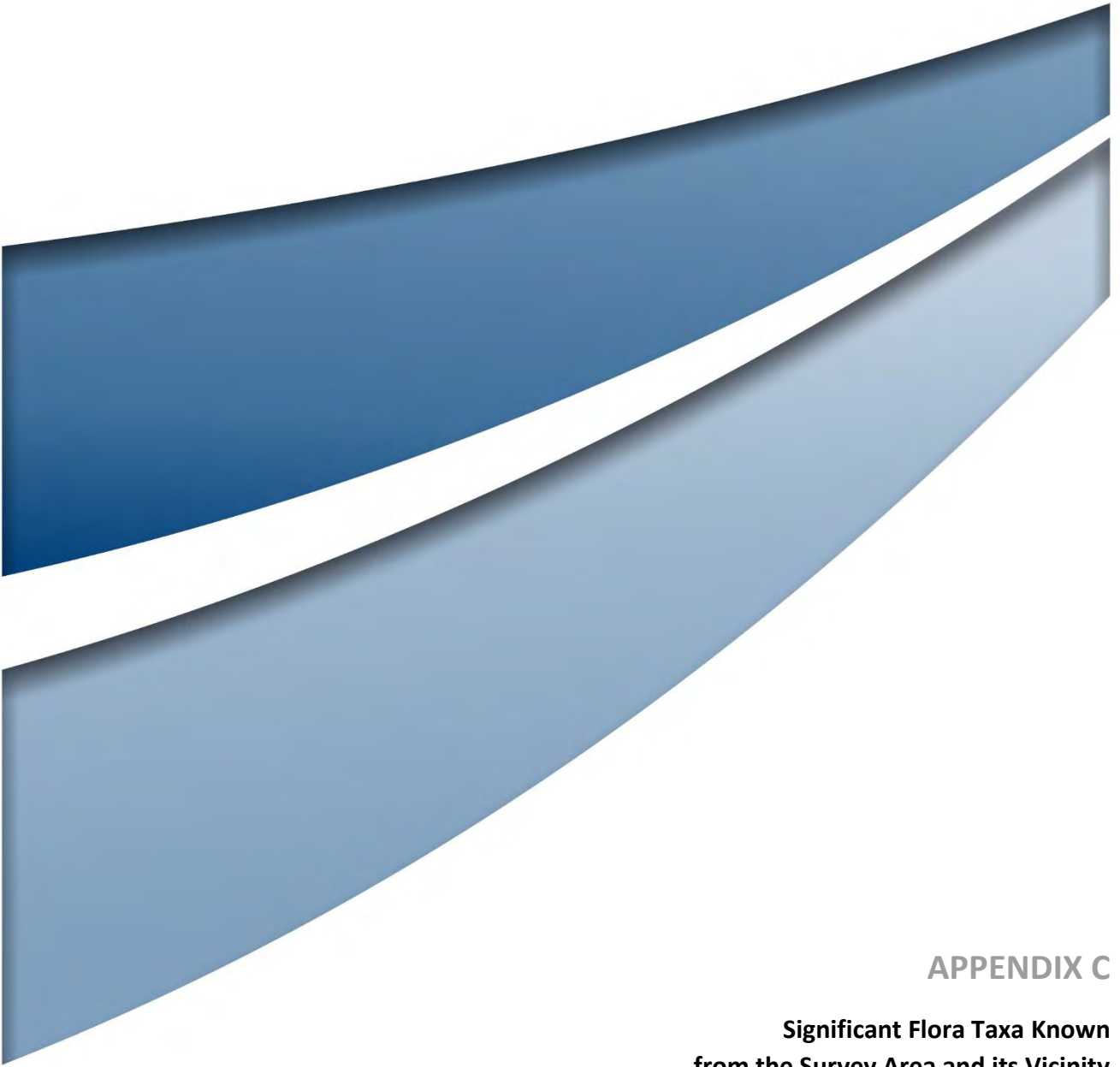
[© Commonwealth of Australia](#)

Department of Agriculture Water and the Environment

GPO Box 858

Canberra City ACT 2601 Australia

+61 2 6274 1111



APPENDIX C

**Significant Flora Taxa Known
from the Survey Area and its Vicinity**

Note: taxa shaded in blue have known records within the Survey Area. Symbols and sources are defined at the end of this appendix.

Taxon	Status (WA)	Status (EPBC)	Source*	Flowering Period	Habitat
<i>Acacia epacantha</i>	P3		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	July–August	Breakaways, slopes, flats and along drainage lines with gravelly sand or clay loam over laterite
<i>Acacia flabellifolia</i>	P3		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	August–September	Low hills and ridges with rocky loam, lateritic gravelly soils
<i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i> Cockleshell Gully variant (E.A. Griffin 2039)	P2		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	August–October	Undulating sandplains, flats and breakaways with grey-yellow sand and laterite
<i>Acacia retrorsa</i>	P2		<ul style="list-style-type: none"> • Tronox-Iluka 	August–September	Slopes, gullies and flats with grey or brown sand, sandy loam or clay loam over laterite, gravelly and sometimes rocky. Eucalyptus or Corymbia calophylla woodland
<i>Acacia telmica</i>	P3		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka 	July–September	Low-lying seasonally moist areas on sand, loam or loamy clay
<i>Acacia vittata</i>	P2		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka 	June–August, November	Margins of seasonal lakes with grey or brown sand or sandy clay
<i>Acacia wilsonii</i>	T	EN	<ul style="list-style-type: none"> • DAWE~ 	November–March	Hilltops, slopes and breakaways with gravelly brown, grey or yellow sand or clay loam over laterite or occasionally sandstone
<i>Allocasuarina grevilleoides</i>	P3		<ul style="list-style-type: none"> • Tronox-Iluka • WEC 	September–November	Slopes, outcrops and plains with rocky or gravelly brown sand or clay loam over laterite or granite
<i>Allocasuarina ramosissima</i>	P3		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	May–September	Breakaways, slopes and plains with gravelly grey, brown or white sand or loam over laterite
<i>Andersonia gracilis</i>	T	EN	<ul style="list-style-type: none"> • DAWE^ 	August–November	Winter-wet areas, near swamps. White-grey sand, sandy clay and gravelly loam
<i>Banksia chamaephyton</i>	P4		<ul style="list-style-type: none"> • DBCA • Matisse • Tronox-Iluka • WEC 	October–December	Slopes, breakaways and flats with grey or white sand over laterite

Taxon	Status (WA)	Status (EPBC)	Source*	Flowering Period	Habitat
<i>Banksia elegans</i>	P4		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	October–November	Sandplains, low consolidated dunes with yellow sand
<i>Banksia fraseri</i> var. <i>crebra</i>	P3		<ul style="list-style-type: none"> • DBCA 	July–August	Lateritic hilltops, slopes, plains and valleys with yellow, grey or brown gravelly sand over laterite
<i>Banksia kippistiana</i> var. <i>paenepeccata</i>	P3		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka 	October–November	Hills and slopes with white-yellow or grey sand over laterite
<i>Banksia nana</i>	P3		<ul style="list-style-type: none"> • Tronox-Iluka 	October	Hills with white/grey sand and/or gravel over laterite
<i>Beyeria gardneri</i>	P3		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	August–September	Sandplains and hillsides with yellow sand
<i>Beyeria similis</i>	P2		<ul style="list-style-type: none"> • DBCA • WEC 	August–September	Sandplains, slopes or sandstone ridges with white, yellow or red clayey sand
<i>Calytrix chrysantha</i>	P4		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	December–February	Sandplains and flats with white, grey or yellow-brown sand
<i>Calytrix eneabbensis</i>	P4		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	July–October	Sandplains and flats with white, grey or yellow sand over laterite
<i>Calytrix purpurea</i>	P2		<ul style="list-style-type: none"> • DBCA 	September–December	Sandplains and sand dunes with white, grey or yellow sand, often over laterite
<i>Calytrix superba</i>	P4		<ul style="list-style-type: none"> • DBCA • Mattiske • Tronox-Iluka • WEC 	December–February	Sandplains and flats with white-grey sand over laterite
<i>Caustis gigas</i>	P2		<ul style="list-style-type: none"> • Tronox-Iluka 	May	Flats and depressions with white or grey sand
<i>Centrolepis milleri</i>	P3		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka 	September–October	Sandplains with grey-white sand or sandy clay
<i>Chordifex reseminans</i>	P2		<ul style="list-style-type: none"> • DBCA • WEC 	March–May	Flats and winter-wet depressions with white-grey sand over laterite
<i>Comesperma griffinii</i>	P2		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	August–January	Slopes, plains, open depressions and flats with grey or brown sand or light clay, sometimes with laterite
<i>Comesperma rhadinocarpum</i>	P3		<ul style="list-style-type: none"> • DBCA • WEC 	October–November	Undulating plains, valley slopes and flats with grey, brown or yellow sandy loam or sand

Taxon	Status (WA)	Status (EPBC)	Source*	Flowering Period	Habitat
<i>Conospermum scaposum</i>	P3		<ul style="list-style-type: none"> • Tronox-Iluka • WEC 	September–February	Winter-wet flats and depressions with white, brown or grey sand
<i>Conostephium magnum</i>	P4		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	July–September	Sand dunes and slopes with white-grey sand
<i>Cristonia biloba</i> subsp. <i>pubescens</i>	P2		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka 	June–July	Hillslopes and ridges with white sand or brown loam and gravel
<i>Daviesia debilior</i> subsp. <i>debilior</i>	P2		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	May–July	Plains with white-grey sand over laterite
<i>Daviesia pteroclada</i>	P3		<ul style="list-style-type: none"> • DBCA 	July–August	Hills and slopes with sandy or clay gravelly soils over laterite
<i>Daviesia speciosa</i>	T	EN	<ul style="list-style-type: none"> • DAWE~ 	April–December	Breakaways, hilltops, and slopes with gravelly grey, brown or white sand or clay loam over laterite
<i>Desmocladius bififormis</i>	P3		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka 	September–October	Hills, slopes and undulating plains with white or brown sand or sandy clay over laterite
<i>Desmocladius elongatus</i>	P4		<ul style="list-style-type: none"> • DBCA • Matiske • Tronox-Iluka • WEC 	August–December	Slopes, plains and uplands with white or grey sand over laterite
<i>Drosera prophylla</i>	P3		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka 	June–July	Hilltops, lateritic breakaways and ridges and slopes with gravelly sand over laterite
<i>Eleocharis keigheryi</i>	T	VU	<ul style="list-style-type: none"> • DAWE^ 	August–November	Emergent in freshwater: creeks and claypans with clay or sandy loam
<i>Eremophila glabra</i> subsp. <i>chlorella</i>	T	EN	<ul style="list-style-type: none"> • DAWE# • DBCA • Tronox-Iluka • WEC 	July–November	Winter-wet depressions, lake edges and flats with grey-white sandy clay or sand
<i>Eremophila subangustifolia</i>	T	CR	<ul style="list-style-type: none"> • DAWE# • DBCA 	August–September	Lake/creek edges, claypans and winter wet flats with brown, white or grey sand, sandy clay or sandy loam
<i>Eucalyptus crispata</i>	T	VU	<ul style="list-style-type: none"> • DAWE~ • DBCA 	March–June	Lateritic breakaways and slopes with brown-grey sand or loam with lateritic gravel
<i>Eucalyptus exilis</i>	P4		<ul style="list-style-type: none"> • Tronox-Iluka 	August–October	Hills, breakaways and slopes with grey or yellow gravelly sand or clay loam

Taxon	Status (WA)	Status (EPBC)	Source*	Flowering Period	Habitat
<i>Eucalyptus ×impensa</i>	T	EN	<ul style="list-style-type: none"> • DAWE[#] • DBCA • Tronox-Iluka • WEC 	August–November	Hilltops, slopes and plains with grey, brown or white gravelly clay loam over laterite
<i>Eucalyptus johnsoniana</i>	T	VU	<ul style="list-style-type: none"> • DAWE[#] • DBCA • Tronox-Iluka • WEC 	July–May	Sandplains and lateritic breakaways with white-grey sand with lateritic gravel
<i>Eucalyptus leprophloia</i>	T	EN	<ul style="list-style-type: none"> • DAWE[~] 	July, November	Breakaways and slopes with grey or white sand or sandy clay over laterite
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	August–December	Hillslopes, ridges, sandplains with white or grey sand over laterite
<i>Eucalyptus rhodantha</i> var. <i>rhodantha</i>	T	VU	<ul style="list-style-type: none"> • DAWE[^] • DBCA • Tronox-Iluka 	July–January	Hillslopes, breakaways and gentle slopes with grey, yellow or brown sand, sometimes over laterite
<i>Eucalyptus suberea</i>	T	VU	<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	November–March	Breakaways and slopes with white gravelly sand over laterite
<i>Eucalyptus zopherophloia</i>	P4		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka 	October–January	Slopes and dunes with brown, grey or white sand with and over limestone. Often in coastal areas
<i>Frankenia glomerata</i>	P4		<ul style="list-style-type: none"> • DBCA 	November	Salt lake edges, watercourses and flats with white sand or grey-brown sandy loam
<i>Grevillea althoferorum</i> subsp. <i>althoferorum</i>	T	EN	<ul style="list-style-type: none"> • DAWE[~] • DBCA • Tronox-Iluka • WEC 	September–November	Low rises and slopes with yellow-brown or grey sand
<i>Grevillea amplexans</i> subsp. <i>adpressa</i>	P1		<ul style="list-style-type: none"> • Tronox-Iluka 	September	Slopes with yellow or white sand, sometimes over laterite
<i>Grevillea bififormis</i> subsp. <i>cymbiformis</i>	P3		<ul style="list-style-type: none"> • DBCA • Matisse • Tronox-Iluka • WEC 	October	Flats, slopes and hills with yellow-white sand
<i>Grevillea humifusa</i>	T	EN	<ul style="list-style-type: none"> • DAWE[~] 	May, September–November	Slopes with brown gravelly loam over laterite
<i>Grevillea leptopoda</i>	P3		<ul style="list-style-type: none"> • Tronox-Iluka 	June–October	Hills and slopes with brown, red or yellow sand or clay loam, sometimes over laterite or occasionally granite

Taxon	Status (WA)	Status (EPBC)	Source*	Flowering Period	Habitat
<i>Grevillea olivacea</i>	P4		<ul style="list-style-type: none"> Umwelt 	June–September	Coastal dunes and limestone rocks with white or grey sand
<i>Grevillea rudis</i>	P4		<ul style="list-style-type: none"> DBCA Mattiske Tronox-Iluka WEC 	April–January	Hills and slopes with white, grey, yellow or red sand, often with gravel and laterite
<i>Grevillea thyrsoides</i> subsp. <i>thyrsoides</i>	P3		<ul style="list-style-type: none"> DBCA Tronox-Iluka WEC 	February, August–September	Hills and plains with grey, white or brown sand or clay loam, often with laterite
<i>Grevillea uniformis</i>	P3		<ul style="list-style-type: none"> DBCA Mattiske Tronox-Iluka WEC 	July–November	Hills, slopes and breakaways with grey or brown sand or sandy loam with sandstone or laterite
<i>Guichenotia alba</i>	P3		<ul style="list-style-type: none"> DBCA Tronox-Iluka WEC 	July–August	Low-lying flats and depressions with brown sandy and gravelly soils
<i>Haemodorum loratum</i>	P3		<ul style="list-style-type: none"> DBCA Tronox-Iluka WEC 	November	Uplands and sandplains with grey, white or yellow sand and gravel
<i>Hakea longiflora</i>	P3		<ul style="list-style-type: none"> DBCA Tronox-Iluka WEC 	June–July	High in landscape; hills, breakaways and plains with white, grey or yellow gravelly sand or sandy loam over laterite or occasionally sandstone
<i>Hakea megalosperma</i>	T	VU	<ul style="list-style-type: none"> DAWE[#] DBCA Tronox-Iluka WEC 	April–June	High in landscape; hills, breakaways, slopes and flats with white, grey or brown sand or sandy loam over laterite
<i>Hemiandra gardneri</i>	T	EN	<ul style="list-style-type: none"> DAWE[~] 	August–November	Plains with yellow or grey sand or clayey sand
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3		<ul style="list-style-type: none"> DBCA Mattiske Tronox-Iluka WEC 	February	Sandplains with white, grey or yellow sand
<i>Hensmania stoniella</i>	P3		<ul style="list-style-type: none"> DBCA Tronox-Iluka WEC 	September–November	Sandplains, flats and slopes with white, grey or lateritic sand
<i>Hibbertia propinqua</i>	P4		<ul style="list-style-type: none"> DBCA Tronox-Iluka WEC 	August–September	Slopes and breakaways with grey-brown sand with laterite or sandstone
<i>Hibbertia subglabra</i>	P3		<ul style="list-style-type: none"> DBCA Tronox-Iluka 	September–October	Slopes of hills with grey or white sand and lateritic gravel

Taxon	Status (WA)	Status (EPBC)	Source*	Flowering Period	Habitat
<i>Hypocalymma gardneri</i>	P3		<ul style="list-style-type: none"> • DBCA • Matisse • Tronox-Iluka • WEC 	August–September	Sandplains, upper slopes and heathland with grey-brown sand and laterite
<i>Jacksonia anthoclada</i>	P3		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	November	Slopes with brown, yellow or white sand over laterite
<i>Lepidobolus densus</i>	P4		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	August	Sandplains, lake edges and slopes with brown or yellow sand
<i>Lepidobolus quadratus</i>	P3		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	August–September	Dry kwongan, hillslopes and rises with grey-white sand and lateritic gravel
<i>Liparophyllum congestiflorum</i>	P4		<ul style="list-style-type: none"> • DBCA • WEC 	September–November	Flats, swamps and drainage lines with grey sandy clay or sand
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	P3		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	March–October	Sandplains and slopes with white-grey lateritic sand or clay
<i>Micromyrtus uniovulum</i>	P2		<ul style="list-style-type: none"> • DBCA 	November	Ridges, hilltops and slopes with grey or brown sand or clay loam over laterite
<i>Paracaleana dixonii</i>	T	EN	<ul style="list-style-type: none"> • DAWE# • DBCA • Tronox-Iluka • WEC 	October–January	Undulating plains, flats and slopes with gravelly grey sand
<i>Paterosonia argyrea</i>	P3		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka 	September–November	Hills, slopes and plains with grey sand and lateritic gravel
<i>Persoonia filiformis</i>	P3		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	November–December	Sandplains with yellow or white sand over laterite
<i>Persoonia rudis</i>	P3		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	September–January	Sandplains and flats with white, grey or yellow sand, often over laterite
<i>Petrophile septemfida</i>	P3		<ul style="list-style-type: none"> • DBCA • WEC 	July–September	Hillsides, uplands and plains with grey-white sand, often over laterite
<i>Phlebocarya pilosissima</i> subsp. <i>pilosissima</i>	P3		<ul style="list-style-type: none"> • DBCA • WEC 	August–October	Slopes with sand over laterite
<i>Pityrodia viscida</i>	P4		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	September–February	Hillslopes, uplands and sandplains with grey, white or yellow sand, sometimes with lateritic gravel

Taxon	Status (WA)	Status (EPBC)	Source*	Flowering Period	Habitat
<i>Platysace ramosissima</i>	P3		<ul style="list-style-type: none"> • DBCA • WEC 	October–November	Undulating plains and flats with yellow, brown or grey sand
<i>Ptilotus clivicola</i>	P2		<ul style="list-style-type: none"> • DBCA 	November	Hills and slopes with grey or white gravelly sand over laterite
<i>Scaevola eneabba</i>	P2		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	February, November	Swales and flats with grey-white sand
<i>Schoenus griffinianus</i>	P4		<ul style="list-style-type: none"> • DBCA • Matiske • Tronox-Iluka • WEC 	September–October	Sandplains and flats with white-grey sand
<i>Schoenus</i> sp. Eneabba (F. Obbens & C. Godden I154)	P2		<ul style="list-style-type: none"> • DBCA • Matiske • Tronox-Iluka • WEC 	November–December	Undulating sandplains, mid slopes and tops of rises with grey, yellow or white sand
<i>Spirogardnera rubescens</i>	T	EN	<ul style="list-style-type: none"> • DAWE~ 	August–January	Slopes and plains, gravelly sandy loam
<i>Stawellia dimorphantha</i>	P4		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	June–November	Undulating plains and slopes with yellow sand
<i>Stylidium carnosum</i> subsp. Narrow leaves (J.A. Wege 490)	P1		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	September–October	Hillslopes and plains with white-grey sand and lateritic gravel
<i>Stylidium drummondianum</i>	P3		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	August–October	Upper hillslopes and breakaways, low heath or mallee shrubland on sand or clayey sand over laterite
<i>Stylidium inversiflorum</i>	P4		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	September–November	Sandplains, hillslopes and gullies, heath, open woodland on white or grey sand over laterite
<i>Stylidium torticarpum</i>	P3		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	September–November	Adjacent to drainage lines, depressions, and beneath breakaways, heath or mallee shrubland on sandy clay or clay loam over laterite
<i>Styphelia filamentosa</i>	P3		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka 	October–January	Uplands and low rises with white-grey sand over laterite
<i>Styphelia longissima</i>	T	CR	<ul style="list-style-type: none"> • DAWE# • DBCA • WEC 	June–September	Hillsides with gentle slopes and yellow sand

Taxon	Status (WA)	Status (EPBC)	Source*	Flowering Period	Habitat
<i>Styphelia obtecta</i>	T	EN	<ul style="list-style-type: none"> • DAWE[#] • DBCA • Tronox-Iluka • WEC 	October–November	Plains with white, grey or yellow sand
<i>Synaphea endothrix</i>	P3		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	July–October	Ridges and hills with brown, yellow or white gravelly sand over laterite
<i>Synaphea oulopha</i>	P3		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	July–October	Lateritic breakaways, slopes and rises with grey sand, gravelly loam or clay
<i>Tetratheca nephelioides</i>	T	CR	<ul style="list-style-type: none"> • DAWE[#] • DBCA • Tronox-Iluka • WEC 	July–January	Slopes and ridges with white or grey gravelly sand over laterite
<i>Thelymitra pulcherrima</i>	P2		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	July–September	Flats and slopes of lateritic hills with white-grey sand or grey-brown sandy clay
<i>Thelymitra stellata</i>	T	EN	<ul style="list-style-type: none"> • DAWE[#] • DBCA • WEC 	October–November	Ridges and tops of lateritic hills with grey or brown sand or loam and lateritic gravel
<i>Thryptomene spicata</i>	P2		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	September–November	Slopes with grey, yellow or brown lateritic sand, Rocky Springs ferricrete
<i>Thysanotus vernalis</i>	P3		<ul style="list-style-type: none"> • Tronox-Iluka 	September – October	Slopes, flats and winter wet depressions with grey, brown or white sand with lateritic gravel over laterite
<i>Thysanotus</i> sp. Badgingarra (E.A. Griffin 2511)	P2		<ul style="list-style-type: none"> • DBCA 	December–January	Slopes, uplands and flats with grey or white sand, sometimes with lateritic gravel
<i>Verticordia albida</i>	T	EN	<ul style="list-style-type: none"> • DAWE[~] • DBCA • WEC 	November–January	Undulating sandplains with grey, white or yellow sand, sometimes over laterite
<i>Verticordia amphigia</i>	P3		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	October–November	Winter-wet depressions with sandy loam, clay and rocky loam, Rocky Springs ferricrete
<i>Verticordia argentea</i>	P2		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	November–April	Sand ridges and undulating plains with white, grey or yellow sand
<i>Verticordia aurea</i>	P4		<ul style="list-style-type: none"> • DBCA • Mattiske • Tronox-Iluka • WEC 	September–December	Sandplains with deep white-grey sand

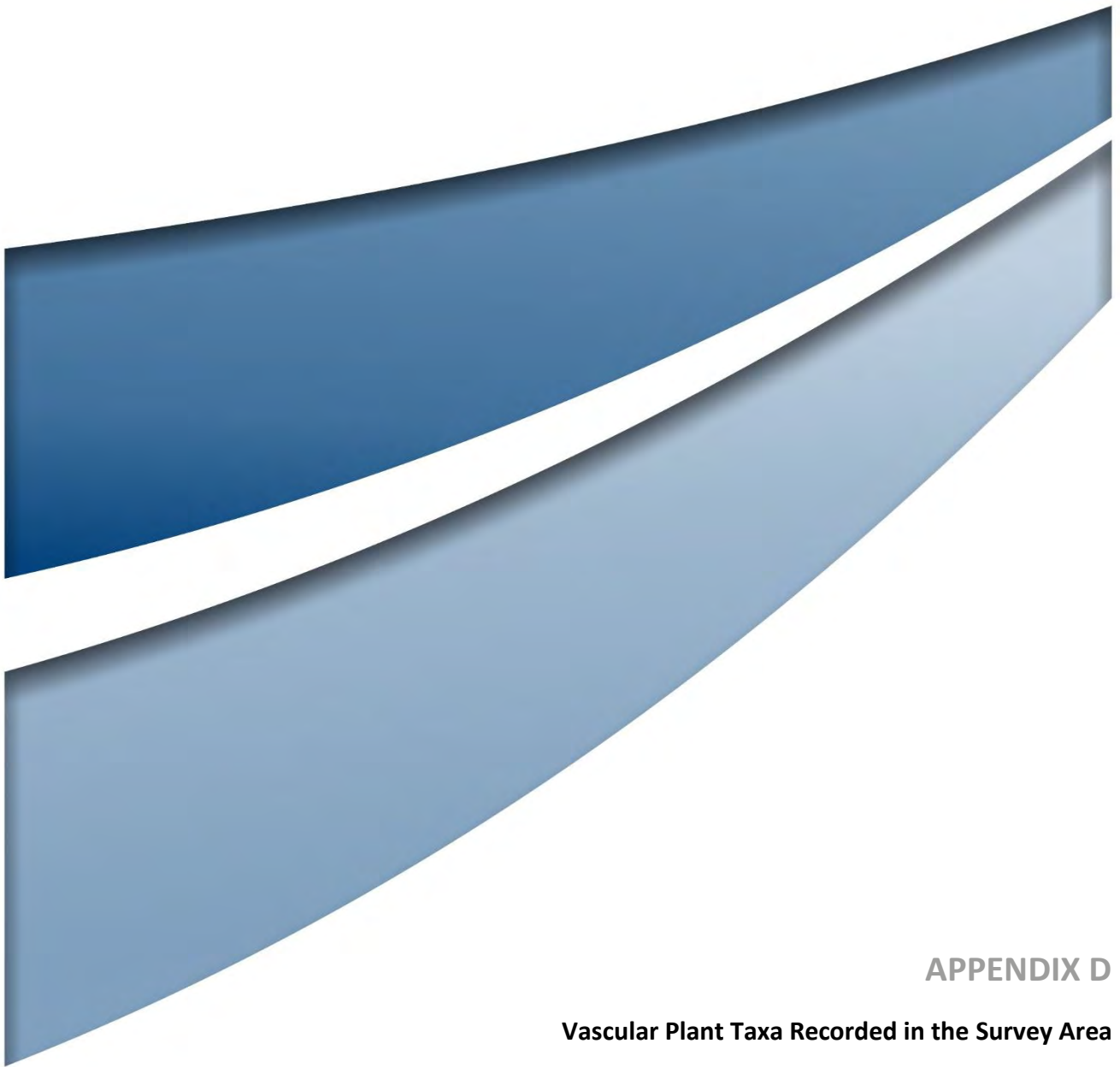
Taxon	Status (WA)	Status (EPBC)	Source*	Flowering Period	Habitat
<i>Verticordia densiflora</i> var. <i>roseostella</i>	P3		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • Umwelt 	September–December	Sandplains and breakaways with yellow, grey or white sand or sandy loam, often with laterite
<i>Verticordia fragrans</i>	P3		<ul style="list-style-type: none"> • DBCA • Mattiske • Tronox-Iluka • WEC 	September–November	Sandplains and low-lying areas with white, grey or yellow sand or clay loam
<i>Verticordia luteola</i> var. <i>rosea</i>	P1		<ul style="list-style-type: none"> • DBCA 	December–January	Flats with white-grey sand
<i>Verticordia muelleriana</i> subsp. <i>muelleriana</i>	P3		<ul style="list-style-type: none"> • DBCA • WEC 	September–January	Sandplains and slopes with white-grey or yellow sand
<i>Verticordia penicillaris</i>	P4		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka 	September–October	Hills, rocky creeks and outcrops with shallow grey or brown sandy loam or clay loam, often with granite or sometimes laterite or sandstone
<i>Verticordia rutilastra</i>	P3		<ul style="list-style-type: none"> • Tronox-Iluka • WEC 	September–November	Lateritic breakaways and slopes with white or brown gravelly sand or sandy loam
<i>Walteranthus erectus</i>	P2		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka 	February	Coastal limestone ridges with sand over limestone
<i>Xanthosia tomentosa</i>	P4		<ul style="list-style-type: none"> • DBCA • Tronox-Iluka • WEC 	September–December	Undulating sandplains, tops of hills and ridges with white-grey sand, lateritic gravelly soils over laterite

* Sources are: DAWE – Interrogation of DCCEEW SPRAT Database (DAWE, 2022)
 DBCA – Interrogation of DBCA WA Herbarium Specimen and TPFL Databases (DBCA, 2022c)
 Mattiske – Mattiske (2018)
 Tronox-Iluka – Tronox-Iluka Significant Flora Database (Iluka, 2021)
 Umwelt – Umwelt (2022)
 WEC – Woodman Environmental (2012, 2013, 2014a, 2014b, 2015a, 2015b, 2015c, 2015d, 2016).

Species or species habitat known to occur within area (DAWE, 2022).

~ Species or species habitat likely to occur within area (DAWE, 2022).

^ Species or species habitat may occur within area (DAWE, 2022).



APPENDIX D

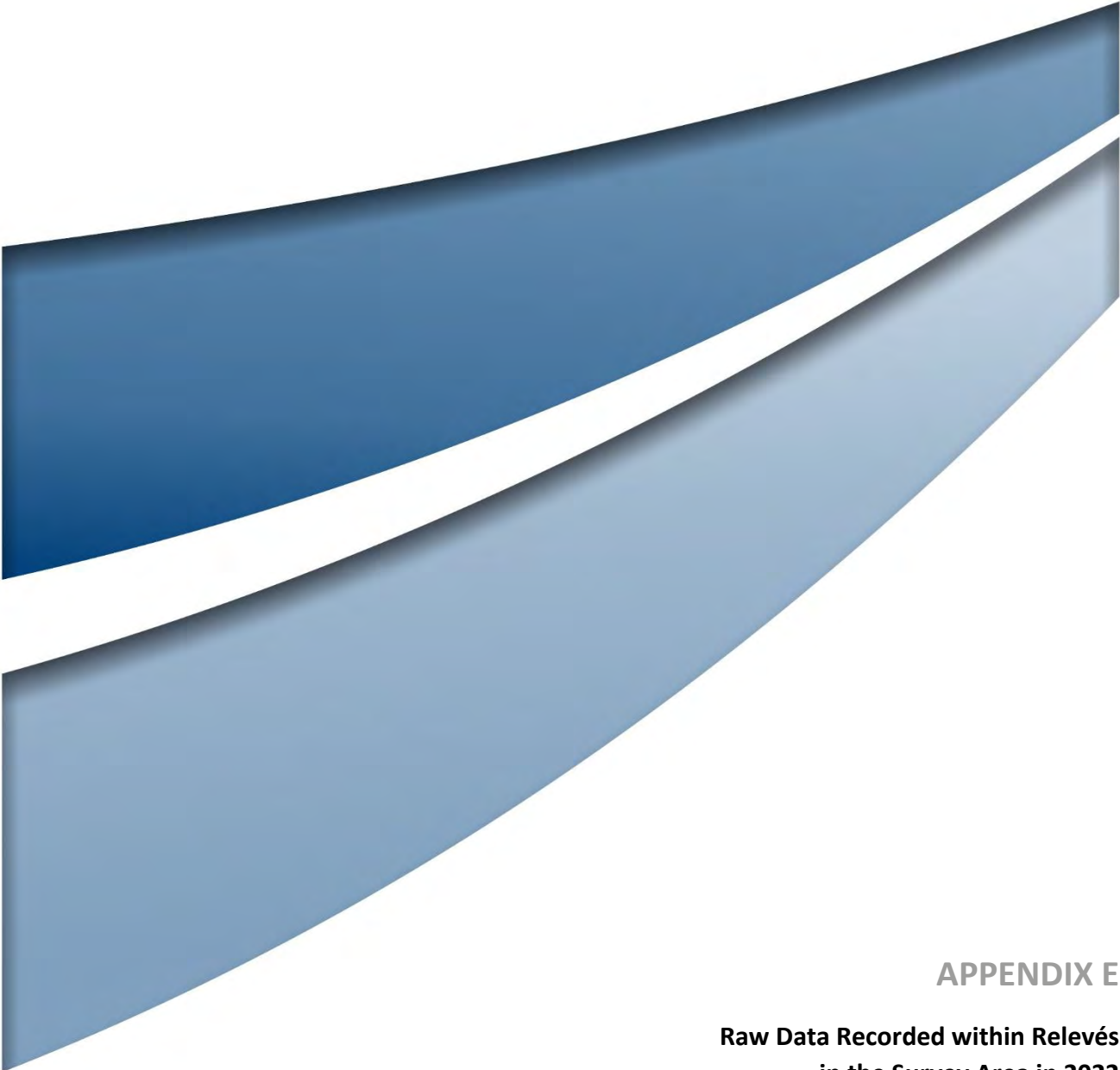
Vascular Plant Taxa Recorded in the Survey Area

Family	Taxon
Anarthriaceae	<i>Lyginia imberbis</i>
Apiaceae	<i>Platysace xerophila</i>
	<i>Platysace</i> sp. Eneabba (R. Hnatiuk 770001)
Araliaceae	<i>Trachymene pilosa</i>
Asparagaceae	<i>Thysanotus triandrus</i>
	<i>Thysanotus</i> sp. Twining Wheatbelt (N.H. Brittan 81/29)
Asteraceae	* <i>Arctotheca calendula</i>
	* <i>Monoculus monstrosus</i>
Brassicaceae	* <i>Brassica tournefortii</i>
Casuarinaceae	<i>Allocasuarina humilis</i>
	<i>Allocasuarina microstachya</i>
Crassulaceae	<i>Crassula</i> sp.
Cupressaceae	<i>Callitris acuminata</i>
Cyperaceae	<i>Caustis dioica</i>
	<i>Mesomelaena pseudostygia</i>
	<i>Schoenus caespitius</i>
	<i>Schoenus griffinianus</i> (P4)
Dasygongonaceae	<i>Calectasia narragara</i>
Dilleniaceae	<i>Hibbertia crassifolia</i>
	<i>Hibbertia hypericoides</i> subsp. <i>septentrionalis</i>
	<i>Hibbertia striata</i>
	<i>Hibbertia subvaginata</i>
Droseraceae	<i>Drosera coomallo</i>
Ecdeiocoleaceae	<i>Ecdeiocolea monostachya</i>
Ericaceae	<i>Conostephium magnum</i> (P4)
	<i>Styphelia filamentosa</i> (P3)
	<i>Styphelia hispida</i>
	<i>Styphelia xerophylla</i>
Euphorbiaceae	<i>Stachystemon axillaris</i>
Fabaceae	<i>Acacia blakelyi</i>
	<i>Daviesia divaricata</i> subsp. <i>divaricata</i>
	<i>Daviesia nudiflora</i> subsp. <i>nudiflora</i>
	<i>Daviesia pedunculata</i>
	<i>Daviesia podophylla</i>
	<i>Gompholobium tomentosum</i>
	<i>Jacksonia floribunda</i>
Goodeniaceae	<i>Dampiera spicigera</i>
	<i>Lechenaultia hirsuta</i>
Haemodoraceae	<i>Conostylis aurea</i>
	<i>Conostylis neocymosa</i>

Family	Taxon
Haemodoraceae cont.	<i>Conostylis teretifolia</i> subsp. <i>teretifolia</i>
	<i>Haemodorum loratum</i> (P3)
Hemerocallidaceae	<i>Tricoryne humilis</i>
Lamiaceae	<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687) (P3)
	<i>Hemiphora bartlingii</i>
	<i>Lachnostachys eriobotrya</i>
Loranthaceae	<i>Nuytsia floribunda</i>
Macarthuriaceae	<i>Macarthuria australis</i>
Malvaceae	<i>Lasiopetalum drummondii</i>
Myrtaceae	<i>Babingtonia grandiflora</i>
	<i>Beaufortia elegans</i>
	<i>Calothamnus glaber</i>
	<i>Calothamnus sanguineus</i>
	<i>Calothamnus torulosus</i>
	<i>Calytrix chrysantha</i> (P4)
	<i>Calytrix depressa</i>
	<i>Calytrix eneabbensis</i> (P4)
	<i>Calytrix superba</i> (P4)
	<i>Darwinia neildiana</i>
	<i>Darwinia speciosa</i>
	<i>Eremaea beaufortoides</i> var. <i>beaufortoides</i>
	<i>Eremaea beaufortoides</i> var. <i>microphylla</i>
	<i>Eremaea ectadioclada</i>
	<i>Eremaea violacea</i> subsp. <i>violacea</i>
	<i>Eucalyptus drummondii</i>
	<i>Eucalyptus jucunda</i>
	<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i> (P4)
	<i>Eucalyptus pleurocarpa</i>
	<i>Eucalyptus todtiana</i>
	<i>Hypocalymma gardneri</i> (P3)
	<i>Hypocalymma xanthopetalum</i>
	<i>Leptospermum oligandrum</i>
	<i>Leptospermum spinescens</i>
	<i>Melaleuca leuropoma</i>
	<i>Melaleuca trichophylla</i>
	<i>Phymatocarpus porphyrocephalus</i>
	<i>Pileanthus filifolius</i>
	<i>Scholtzia laxiflora</i>
	<i>Thryptomene spicata</i> (P2)
<i>Verticordia amphigia</i> (P3)	

Family	Taxon
Myrtaceae cont.	<i>Verticordia argentea</i> (P2)
	<i>Verticordia aurea</i> (P4)
	<i>Verticordia centipeda</i>
	<i>Verticordia densiflora</i> var. <i>cespitosa</i>
	<i>Verticordia densiflora</i> var. ? <i>densiflora</i>
	<i>Verticordia fragrans</i> (P3)
	<i>Verticordia grandis</i>
	<i>Verticordia pennigera</i>
Orchidaceae	<i>Caladenia</i> sp.
	<i>Paracaleana dixonii</i> (T)
	<i>Thelymitra pulcherrima</i> (P2)
Poaceae	* <i>Avena barbata</i>
	* <i>Briza maxima</i>
	* <i>Ehrharta longiflora</i>
Proteaceae	<i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i>
	<i>Banksia attenuata</i>
	<i>Banksia candolleana</i>
	<i>Banksia carlinoides</i>
	<i>Banksia chamaephyton</i> (P4)
	<i>Banksia grossa</i>
	<i>Banksia menziesii</i>
	<i>Banksia prionotes</i>
	<i>Banksia sessilis</i> var. <i>flabellifolia</i>
	<i>Banksia shuttleworthiana</i>
	<i>Banksia stenoprion</i>
	<i>Banksia tridentata</i>
	<i>Conospermum unilaterale</i>
	<i>Conospermum wycherleyi</i> subsp. <i>wycherleyi</i>
	<i>Grevillea biformis</i> subsp. <i>cymbiformis</i> (P3)
	<i>Grevillea eriostachya</i>
	<i>Grevillea rudis</i> (P4)
	<i>Grevillea shuttleworthiana</i> subsp. <i>canarina</i>
	<i>Hakea costata</i>
	<i>Hakea psilorrhyncha</i>
	<i>Isopogon linearis</i>
	<i>Isopogon tridens</i>
	<i>Lambertia multiflora</i> var. <i>multiflora</i>
<i>Persoonia acicularis</i>	
<i>Persoonia filiformis</i> (P3)	
<i>Petrophile brevifolia</i> subsp. <i>brevifolia</i>	

Family	Taxon
Proteaceae cont.	<i>Petrophile drummondii</i>
	<i>Petrophile macrostachya</i>
	<i>Petrophile shuttleworthiana</i>
	<i>Stirlingia latifolia</i>
	<i>Synaphea spinulosa</i>
	<i>Xylomelum angustifolium</i>
Restionaceae	<i>Alexgeorgea nitens</i>
	<i>Chordifex sinuosus</i>
	<i>Desmocladus elongatus</i> (P4)
Rubiaceae	<i>Opercularia vaginata</i>
Stylidiaceae	<i>Stylidium carnosum</i> subsp. Narrow leaves (J.A. Wege 490) (P1)
	<i>Stylidium crossocephalum</i>
Xanthorrhoeaceae	<i>Xanthorrhoea acanthostachya</i>
	<i>Xanthorrhoea</i> sp. Lesueur (G.J. Keighery 16404)



APPENDIX E

**Raw Data Recorded within Relevés
in the Survey Area in 2022**

**GOVERNMENT AGENCY REFERENCE ONLY
NOT FOR PUBLIC DISSEMINATION
CONTAINS LOCATIONS OF SIGNIFICANT FLORA TAXA**

Site Name: MAR01
 Site Type: RELEVE
 Survey Date: 12/09/2022
 GPS Location: GDA94 Zone 50 333948.78E 6697513.86N
 Community: 1a
 Landform Type: Plain
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sand
 Soil Colour: Yellow-brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: Southern Vegetation Condition - 2 - Excellent
 Disturbance: None
 Fire: >10 Years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: *Eucalyptus todtiana*
 Mid Stratum 1: *Banksia grossa, Jacksonia floribunda, Scholtzia laxiflora*
 Lower Stratum 1: *Melaleuca leuropoma*
 Lower Stratum 2: *Lyginia imberbis*

SPECIES LIST

Taxon Name	Avg. Height	Cover Alive	Cover Class
<i>Banksia grossa</i>	1.3	15	
<i>Banksia prionotes</i>	0.8	1	
<i>Beaufortia elegans</i>	0.7	0.5	
<i>Calytrix superba</i> (P4)	0.4	0.1	
<i>Conospermum wycherleyi</i> subsp. <i>wycherleyi</i>	0.6	0.4	
<i>Conostylis neocymosa</i>	0.3	0.1	
<i>Ecdeiocolea monostachya</i>	1	0.2	
<i>Eucalyptus todtiana</i>	2.5	2	
<i>Grevillea eriostachya</i>	1.5	0.8	
<i>Hibbertia hypericoides</i> subsp. <i>septentrionalis</i>	0.3	0.5	
<i>Jacksonia floribunda</i>	1.2	5	
<i>Lachnostachys eriobotrya</i>	0.8	0.4	
<i>Leptospermum spinescens</i>	1	0.1	
<i>Lyginia imberbis</i>	0.2	1	
<i>Melaleuca leuropoma</i>	0.7	1.5	
<i>Mesomelaena pseudostygia</i>	0.4	0.1	

<i>Persoonia acicularis</i>	0.4	0.1	
<i>Petrophile drummondii</i>	0.7	0.4	
<i>Scholtzia laxiflora</i>	1.3	1	
<i>Stirlingia latifolia</i>	0.7	0.5	
<i>Synaphea spinulosa</i>	0.3	0.2	
<i>Verticordia grandis</i>	1	0.5	
<i>Xylomelum angustifolium</i>	3	0.2	

PHOTOS



Site Name: MAR02
 Site Type: RELEVE
 Survey Date: 12/09/2022
 GPS Location: GDA94 Zone 50 334043.38E 6696744.27N
 Community: 1b
 Landform Type: Plain
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sand
 Soil Colour: Grey-brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: Southern Vegetation Condition - 2 - Excellent
 Fire: >10 Years
 Comments: Between track and railway line

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: *Jacksonia floribunda*
 Lower Stratum 1: *Conospermum wycherleyi* subsp. *wycherleyi*, *Scholtzia laxiflora*, *Stirlingia latifolia*
 Lower Stratum 2: *Chordifex sinuosus*, *Ecdeiocolea monostachya*

SPECIES LIST

Taxon Name	Avg. Height	Cover Alive	Cover Class
<i>Beaufortia elegans</i>	0.6	0.1	
<i>Calothamnus glaber</i>	0.8	0.5	
<i>Chordifex sinuosus</i>	0.6	3	
<i>Conospermum unilaterale</i>	0.7	0.2	
<i>Conospermum wycherleyi</i> subsp. <i>wycherleyi</i>	0.7	3	
<i>Conostylis neocymosa</i>	0.3	0.1	
<i>Darwinia speciosa</i>	0.1	0.1	
<i>Daviesia nudiflora</i> subsp. <i>nudiflora</i>	0.5	0.1	
<i>Daviesia pedunculata</i>	0.4	0.1	
<i>Ecdeiocolea monostachya</i>	1.1	1	
<i>Grevillea eriostachya</i>	1.6	0.1	
<i>Hakea psilorrhyncha</i>	2.1	0.2	
<i>Hibbertia hypericoides</i> subsp. <i>septentrionalis</i>	0.8	0.2	
<i>Jacksonia floribunda</i>	1.1	6	
<i>Leptospermum oligandrum</i>	1.3	0.2	
<i>Lyginia imberbis</i>	0.5	0.5	
<i>Petrophile drummondii</i>	0.9	0.2	

<i>Scholtzia laxiflora</i>	0.7	3	
<i>Stirlingia latifolia</i>	0.7	1	

PHOTOS



Site Name: MAR03
 Site Type: RELEVE
 Survey Date: 12/09/2022
 GPS Location: GDA94 Zone 50 334249.36E 6695872.47N
 Community: 1a
 Landform Type: Plain
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sand
 Soil Colour: Yellow-brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: Southern Vegetation Condition - 2 - Excellent
 Fire: >10 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: *Melaleuca leuropoma*
 Lower Stratum 1: *Banksia carlinoides*, *Banksia shuttleworthiana*, *Eremaea beaufortioides* var. *microphylla*, *Scholtzia laxiflora*
 Lower Stratum 2: *Ecdeiocolea monostachya*, *Mesomelaena pseudostygia*

SPECIES LIST

Taxon Name	Avg. Height	Cover Alive	Cover Class
<i>Banksia carlinoides</i>	0.7	1.5	
<i>Banksia shuttleworthiana</i>	0.6	2	
<i>Banksia stenoprion</i>	0.4	0.8	
<i>Calothamnus torulosus</i>	0.3	0.1	
<i>Calytrix depressa</i>	0.2	0.5	
<i>Conostylis aurea</i>	0.3	0.1	
<i>Darwinia neildiana</i>	0.2	0.1	
<i>Daviesia nudiflora</i> subsp. <i>nudiflora</i>	0.6	0.5	
<i>Daviesia pedunculata</i>	0.3	0.1	
<i>Ecdeiocolea monostachya</i>	0.9	4	
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	0.4	1	
<i>Hibbertia hypericoides</i> subsp. <i>septentrionalis</i>	0.4	0.5	
<i>Jacksonia floribunda</i>	0.4	0.1	
<i>Melaleuca leuropoma</i>	0.3	2	
<i>Melaleuca trichophylla</i>	0.6	0.5	
<i>Mesomelaena pseudostygia</i>	0.4	1.5	
<i>Scholtzia laxiflora</i>	0.8	3	
<i>Verticordia aurea</i> (P4)	1.3	0.2	

PHOTOS



Site Name: MAR04
 Site Type: RELEVE
 Survey Date: 12/09/2022
 GPS Location: GDA94 Zone 50 334372.08E 6695224.36N
 Community: 1b
 Landform Type: Plain
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sand
 Soil Colour: Yellow-brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: Southern Vegetation Condition - 2 - Excellent
 Fire: >10 Years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: *Eucalyptus pleurocarpa*
 Mid Stratum 1: *Ecdeiocolea monostachya*
 Lower Stratum 1: *Banksia shuttleworthiana*, *Banksia stenoprion*, *Callitris acuminata*, *Eremaea violacea* subsp. *violacea*
 Lower Stratum 2: *Chordifex sinuosus*

SPECIES LIST

Taxon Name	Avg. Height	Cover Alive	Cover Class
<i>Allocasuarina humilis</i>	0.8	0.5	
<i>Banksia grossa</i>	0.8	0.4	
<i>Banksia shuttleworthiana</i>	0.9	3.5	
<i>Banksia stenoprion</i>	0.4	1	
<i>Banksia tridentata</i>	0.6	0.2	
<i>Callitris acuminata</i>	0.7	1	
<i>Calothamnus sanguineus</i>	0.8	0.5	
<i>Calothamnus torulosus</i>	0.3	0.2	
<i>Chordifex sinuosus</i>	0.8	1	
<i>Conostylis aurea</i>	0.3	0.1	
<i>Darwinia neildiana</i>	0.3	0.1	
<i>Daviesia nudiflora</i> subsp. <i>nudiflora</i>	0.6	0.3	
<i>Ecdeiocolea monostachya</i>	1.1	3.5	
<i>Eremaea beaufortoides</i> var. <i>microphylla</i>	0.4	0.2	
<i>Eremaea violacea</i> subsp. <i>violacea</i>	0.4	1	
<i>Eucalyptus pleurocarpa</i>	0.8	1.5	
<i>Hibbertia hypericoides</i> subsp. <i>septentrionalis</i>	0.5	0.5	

<i>Jacksonia floribunda</i>	0.6	0.5	
<i>Lambertia multiflora</i> var. <i>multiflora</i>	0.8	0.3	
<i>Leptospermum oligandrum</i>	0.7	0.2	
<i>Melaleuca leuropoma</i>	0.5	0.8	
<i>Melaleuca trichophylla</i>	0.5	0.5	
<i>Mesomelaena pseudostygia</i>	0.4	0.5	
<i>Petrophile shuttleworthiana</i>	0.8	0.2	
<i>Scholtzia laxiflora</i>	0.8	0.5	
<i>Styphelia xerophylla</i>	0.3	0.5	

PHOTOS



Site Name: MAR05
 Site Type: RELEVE
 Survey Date: 13/09/2022
 GPS Location: GDA94 Zone 50 335492.43E 6693971.6N
 Community: 6b
 Landform Type: Flat
 Slope Class: Very Gently Inclined (1 degree)
 Aspect: W
 Soil Type: Sand
 Soil Colour: Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: Southern Vegetation Condition - 2 - Excellent
 Disturbance: Exotic Weeds - Minor
 Fire: >10 Years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: *Eucalyptus pleurocarpa, Eucalyptus todtiana*
 Mid Stratum 1: *Acacia blakelyi*
 Lower Stratum 1: *Melaleuca leuropoma*

SPECIES LIST

Taxon Name	Avg. Height	Cover Alive	Cover Class
<i>Acacia blakelyi</i>	2.1	8	
<i>Allocasuarina humilis</i>	1.2	0.5	
<i>Calothamnus sanguineus</i>	0.9	1	
<i>Eremaea beaufortioides</i> var. <i>beaufortioides</i>	0.7	0.5	
<i>Eucalyptus pleurocarpa</i>	1.5	5	
<i>Eucalyptus todtiana</i>	2.3	4	
<i>Jacksonia floribunda</i>	0.7	0.5	
<i>Melaleuca leuropoma</i>	0.8	20	
<i>Melaleuca trichophylla</i>	0.5	0.1	

PHOTOS



Site Name: MAR06
 Site Type: RELEVE
 Survey Date: 13/09/2022
 GPS Location: GDA94 Zone 50 334590.45E 6693647.92N
 Community: 1a
 Landform Type: Plain
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sand
 Soil Colour: Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: Southern Vegetation Condition - 2 - Excellent
 Fire: > 10 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: *Banksia attenuata*, *Banksia grossa*
 Mid Stratum 2: *Ecdeiocolea monostachya*
 Lower Stratum 1: *Allocasuarina humilis*, *Banksia tridentata*, *Eremaea beaufortioides* var. *beaufortioides*, *Melaleuca leuropoma*, *Scholtzia laxiflora*

SPECIES LIST

Taxon Name	Avg. Height	Cover Alive	Cover Class
<i>Allocasuarina humilis</i>	0.9	1	
<i>Banksia attenuata</i>	1.5	1.5	
<i>Banksia grossa</i>	1.2	10	
<i>Banksia tridentata</i>	0.9	1	
<i>Callitris acuminata</i>	0.7	0.2	
<i>Conospermum wycherleyi</i> subsp. <i>wycherleyi</i>	0.7	0.5	
<i>Daviesia divaricata</i> subsp. <i>divaricata</i>	0.5	0.2	
<i>Ecdeiocolea monostachya</i>	1.2	1.5	
<i>Eremaea beaufortioides</i> var. <i>beaufortioides</i>	0.7	1.5	
<i>Hemiphora bartlingii</i>	0.4	0.1	
<i>Hibbertia hypericoides</i> subsp. <i>septentrionalis</i>	0.3	0.2	
<i>Hibbertia striata</i>	0.2	0.1	
<i>Isopogon linearis</i>	1	0.2	
<i>Jacksonia floribunda</i>	0.6	0.2	
<i>Melaleuca leuropoma</i>	0.8	1	
<i>Petrophile brevifolia</i> subsp. <i>brevifolia</i>	0.5	0.1	
<i>Petrophile drummondii</i>	0.7	0.2	
<i>Scholtzia laxiflora</i>	0.8	1	

<i>Verticordia aurea</i> (P4)	1.4	0.2	
<i>Verticordia grandis</i>	0.9	0.1	

PHOTOS



Site Name: MAR07
 Site Type: RELEVE
 Survey Date: 13/09/2022
 GPS Location: GDA94 Zone 50 334782.60653932E 6694141.20181935N
 Community: 6b
 Landform Type: Plain
 Slope Class: Gently Inclined (3 degrees)
 Aspect: SW
 Soil Type: Sand
 Soil Colour: Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: Southern Vegetation Condition - 2 - Excellent
 Fire: >10 Years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: *Eucalyptus pleurocarpa*, *Eucalyptus todtiana*
 Mid Stratum 1: *Allocasuarina humilis*, *Eremaea beaufortioides* var. *beaufortioides*,
Xanthorrhoea sp. Lesueur (G.J. Keighery 16404)
 Mid Stratum 2: *Ecdeiocolea monostachya*
 Lower Stratum 1: *Jacksonia floribunda*

SPECIES LIST

Taxon Name	Avg. Height	Cover Alive	Cover Class
<i>Allocasuarina humilis</i>	1.1	2	
<i>Conospermum unilaterale</i>	0.6	0.1	
<i>Daviesia divaricata</i> subsp. <i>divaricata</i>	0.7	0.1	
<i>Daviesia nudiflora</i> subsp. <i>nudiflora</i>	0.7	0.5	
<i>Daviesia podophylla</i>	0.7	0.1	
<i>Ecdeiocolea monostachya</i>	1.3	3.5	
<i>Eremaea beaufortioides</i> var. <i>beaufortioides</i>	1.2	2	
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	0.7	0.1	
<i>Eucalyptus pleurocarpa</i>	1.7	2.5	
<i>Eucalyptus todtiana</i>	3	5	
<i>Gompholobium tomentosum</i>	1.1	0.1	
<i>Hakea psilorrhyncha</i>	1.8	0.2	
<i>Hibbertia hypericoides</i> subsp. <i>septentrionalis</i>	0.3	0.2	
<i>Jacksonia floribunda</i>	0.9	5	
<i>Styphelia xerophylla</i>	0.5	0.1	

<i>Xanthorrhoea</i> sp. Lesueur (G.J. Keighery 16404)	0.8	1	
-------------------------------------------------------	-----	---	--

PHOTOS



Site Name: MAR08
 Site Type: RELEVE
 Survey Date: 13/09/2022
 GPS Location: GDA94 Zone 50 334324.64E 6694019.2N
 Community: 2b
 Landform Type: Plain
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sand
 Soil Colour: Grey-brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: Southern Vegetation Condition - 2 - Excellent
 Fire: >10 Years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: *Eucalyptus pleurocarpa*
 Mid Stratum 1: *Banksia grossa*, *Banksia shuttleworthiana*
 Mid Stratum 2: *Ecdeiocolea monostachya*
 Lower Stratum 1: *Callitris acuminata*

SPECIES LIST

Taxon Name	Avg. Height	Cover Alive	Cover Class
<i>Banksia grossa</i>	1.1	3.5	
<i>Banksia shuttleworthiana</i>	1	2	
<i>Banksia tridentata</i>	0.5	0.5	
<i>Callitris acuminata</i>	0.9	1.5	
<i>Calothamnus sanguineus</i>	0.6	0.1	
<i>Darwinia neildiana</i>	0.3	0.1	
<i>Ecdeiocolea monostachya</i>	1.2	2	
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	1	0.5	
<i>Eucalyptus pleurocarpa</i>	1.8	3	
<i>Hibbertia hypericoides</i> subsp. <i>septentrionalis</i>	0.3	0.1	
<i>Isopogon tridens</i>	1.5	0.5	
<i>Jacksonia floribunda</i>	0.9	0.5	
<i>Lambertia multiflora</i> var. <i>multiflora</i>	0.9	0.5	
<i>Melaleuca leuropoma</i>	0.6	0.5	
<i>Melaleuca trichophylla</i>	0.4	0.2	
<i>Phymatocarpus porphyrocephalus</i>	0.6	0.2	
<i>Scholtzia laxiflora</i>	1	0.5	
<i>Verticordia grandis</i>	1	0.2	

NO PHOTO AVAILABLE

Site Name: MAR09
 Site Type: RELEVE
 Survey Date: 13/09/2022
 GPS Location: GDA94 Zone 50 333907.9E 6694067.52N
 Community: 1a
 Landform Type: Plain
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sand
 Soil Colour: Grey-brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: Southern Vegetation Condition - 2 - Excellent
 Fire: >10 Years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: *Eucalyptus pleurocarpa*
 Mid Stratum 1: *Banksia grossa*, *Ecdeiocolea monostachya*
 Lower Stratum 1: *Banksia shuttleworthiana*, *Eremaea beaufortioides* var. *beaufortioides*

SPECIES LIST

Taxon Name	Avg. Height	Cover Alive	Cover Class
<i>Banksia grossa</i>	1.1	1	
<i>Banksia shuttleworthiana</i>	0.7	2.5	
<i>Banksia stenoprion</i>	0.4	0.2	
<i>Banksia tridentata</i>	0.6	0.5	
<i>Beaufortia elegans</i>	0.6	0.2	
<i>Calytrix superba</i> (P4)	0.3	0.1	
<i>Daviesia nudiflora</i> subsp. <i>nudiflora</i>	0.7	0.5	
<i>Ecdeiocolea monostachya</i>	1.2	4	
<i>Eremaea beaufortioides</i> var. <i>beaufortioides</i>	0.8	1	
<i>Eremaea violacea</i> subsp. <i>violacea</i>	0.4	0.1	
<i>Eucalyptus pleurocarpa</i>	1.1	1	
<i>Hibbertia hypericoides</i> subsp. <i>septentrionalis</i>	0.4	0.1	
<i>Melaleuca leuropoma</i>	0.7	0.3	
<i>Melaleuca trichophylla</i>	0.4	0.3	
<i>Mesomelaena pseudostygia</i>	0.3	0.3	
<i>Petrophile brevifolia</i> subsp. <i>brevifolia</i>	0.8	0.1	
<i>Styphelia xerophylla</i>	0.3	0.2	

PHOTOS



Site Name: MAR10
 Site Type: RELEVE
 Survey Date: 13/09/2022
 GPS Location: GDA94 Zone 50 333656.41E 6693996.69N
 Community: 1b
 Landform Type: Other, Low Rise (other)
 Slope Class: Gently Inclined (3 degrees)
 Soil Type: Sand
 Soil Colour: Grey-brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: Southern Vegetation Condition - 2 - Excellent
 Fire: >10 Years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: *Eucalyptus todtiana, Xylomelum angustifolium*
 Mid Stratum 1: *Banksia grossa*
 Mid Stratum 2: *Ecdeiocolea monostachya*

SPECIES LIST

Taxon Name	Avg. Height	Cover Alive	Cover Class
<i>Banksia grossa</i>	1.3	20	
<i>Banksia shuttleworthiana</i>	0.9	1.5	
<i>Daviesia nudiflora</i> subsp. <i>nudiflora</i>	0.5	0.1	
<i>Ecdeiocolea monostachya</i>	1.3	5	
<i>Eremaea beaufortoides</i> var. <i>microphylla</i>	0.7	0.4	
<i>Eucalyptus todtiana</i>	2	2.5	
<i>Jacksonia floribunda</i>	0.6	0.5	
<i>Melaleuca leuropoma</i>	0.5	0.3	
<i>Mesomelaena pseudostygia</i>	0.4	0.4	
<i>Petrophile drummondii</i>	0.8	1	
<i>Scholtzia laxiflora</i>	1.1	0.3	
<i>Verticordia grandis</i>	2.1	0.1	
<i>Xylomelum angustifolium</i>	4	1.5	

PHOTOS



Site Name: MAR11
 Site Type: RELEVE
 Survey Date: 14/09/2022
 GPS Location: GDA94 Zone 50 333335.28E 6694154.39N
 Community: 2a
 Landform Type: Other, Low Rise (other)
 Slope Class: Gently Inclined (3 degrees)
 Aspect: S
 Soil Type: Sand
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: Southern Vegetation Condition - 2 - Excellent
 Fire: >10 Years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: *Xylomelum angustifolium*
 Mid Stratum 1: *Banksia attenuata*, *Banksia grossa*
 Lower Stratum 1: *Banksia candolleana*, *Eremaea beaufortioides* var. *beaufortioides*
 Lower Stratum 2: *Conostylis neocymosa*

SPECIES LIST

Taxon Name	Avg. Height	Cover Alive	Cover Class
<i>Banksia attenuata</i>	1.2	10	
<i>Banksia candolleana</i>	0.8	7	
<i>Banksia grossa</i>	1.1	15	
<i>Banksia menziesii</i>	1.2	0.5	
<i>Conospermum wycherleyi</i> subsp. <i>wycherleyi</i>	0.4	0.2	
<i>Conostylis neocymosa</i>	0.1	1	
<i>Eremaea beaufortioides</i> var. <i>beaufortioides</i>	0.8	3	
<i>Eucalyptus todtiana</i>	4	0.5	
<i>Grevillea eriostachya</i>	1.3	0.1	
<i>Melaleuca leuropoma</i>	0.4	0.5	
<i>Petrophile drummondii</i>	1	0.5	
<i>Verticordia grandis</i>	1.3	0.2	
<i>Xylomelum angustifolium</i>	3	2	

PHOTOS



Site Name: MAR12
 Site Type: RELEVE
 Survey Date: 14/09/2022
 GPS Location: GDA94 Zone 50 332846.8949368E 6694387.38461848N
 Community: 2a
 Landform Type: Other, Undulating Plain (other)
 Slope Class: Very Gently Inclined (1 degree)
 Aspect: S
 Soil Type: Sand
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: Southern Vegetation Condition - 2 - Excellent
 Fire: >10 Years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: *Eucalyptus pleurocarpa, Eucalyptus todtiana*
 Mid Stratum 1: *Ecdeiocolea monostachya*
 Lower Stratum 1: *Allocasuarina humilis, Banksia shuttleworthiana, Melaleuca leuropoma*
 Lower Stratum 2: *Chordifex sinuosus*

SPECIES LIST

Taxon Name	Avg. Height	Cover Alive	Cover Class
<i>Allocasuarina humilis</i>	0.9	10	
<i>Banksia shuttleworthiana</i>	0.6	4	
<i>Banksia stenoprion</i>	0.4	0.2	
<i>Chordifex sinuosus</i>	0.4	3	
<i>Conospermum wycherleyi</i> subsp. <i>wycherleyi</i>	0.5	0.2	
<i>Conostylis aurea</i>	0.1	0.5	
<i>Ecdeiocolea monostachya</i>	1.1	2	
<i>Eremaea beaufortoides</i> var. <i>beaufortoides</i>	1.1	0.5	
<i>Eremaea ectadioclada</i>	0.4	0.1	
<i>Eucalyptus pleurocarpa</i>	1.7	10	
<i>Eucalyptus todtiana</i>	1.7	15	
<i>Hibbertia hypericoides</i> subsp. <i>septentrionalis</i>	0.3	0.1	
<i>Jacksonia floribunda</i>	0.6	0.2	
<i>Lyginia imberbis</i>	0.4	0.5	
<i>Melaleuca leuropoma</i>	0.4	1	
<i>Petrophile brevifolia</i> subsp. <i>brevifolia</i>	0.7	0.1	

<i>Petrophile drummondii</i>	1.2	0.5	
<i>Petrophile macrostachya</i>	0.8	0.2	
<i>Phymatocarpus porphyrocephalus</i>	1.1	0.3	
<i>Scholtzia laxiflora</i>	1	0.4	
<i>Verticordia grandis</i>	1.1	0.2	

PHOTOS



Site Name: MAR13
 Site Type: RELEVE
 Survey Date: 14/09/2022
 GPS Location: GDA94 Zone 50 332151.55E 6694718.89N
 Community: 2a
 Landform Type: Other, Low rise (other)
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sand
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: Southern Vegetation Condition - 2 - Excellent
 Fire: >10 Years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: *Eucalyptus todtiana*
 Mid Stratum 1: *Banksia candolleana*, *Callitris acuminata*, *Phymatocarpus porphyrocephalus*
 Lower Stratum 1: *Chordifex sinuosus*, *Melaleuca leuropoma*, *Scholtzia laxiflora*

SPECIES LIST

Taxon Name	Avg. Height	Cover Alive	Cover Class
<i>Banksia attenuata</i>			
<i>Banksia candolleana</i>	1.2	15	
<i>Banksia tridentata</i>	0.6	0.2	
<i>Callitris acuminata</i>	1.2	2	
<i>Chordifex sinuosus</i>	0.5	1	
<i>Conostylis neocymosa</i>	0.1	0.1	
<i>Daviesia divaricata</i> subsp. <i>divaricata</i>	0.8	0.3	
<i>Ecdeiocolea monostachya</i>	1	0.5	
<i>Eremaea beaufortoides</i> var. <i>beaufortoides</i>	1.1	0.5	
<i>Eucalyptus todtiana</i>	2.2	10	
<i>Hakea psilorrhyncha</i>			
<i>Hibbertia hypericoides</i> subsp. <i>septentrionalis</i>	0.3	0.2	
<i>Lyginia imberbis</i>	0.8	0.2	
<i>Melaleuca leuropoma</i>	0.6	2	
<i>Mesomelaena pseudostygia</i>	0.6	0.6	
<i>Phymatocarpus porphyrocephalus</i>	1.4	20	
<i>Scholtzia laxiflora</i>	0.8	1	
<i>Verticordia grandis</i>	1.5	0.2	

PHOTOS



Site Name: MAR14
 Site Type: RELEVE
 Survey Date: 14/09/2022
 GPS Location: GDA94 Zone 50 331692.58E 6694949.63N
 Community: 1a
 Landform Type: Other, Undulating Plain (other)
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sand
 Soil Colour: Grey-brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: <2%
 CF Sizes: 2-6mm
 CF Types: Laterite
 Vegetation Condition: Southern Vegetation Condition - 2 - Excellent
 Fire: >10 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: *Xanthorrhoea acanthostachya*
 Lower Stratum 1: *Banksia shuttleworthiana*, *Banksia tridentata*, *Calothamnus torulosus*
 Lower Stratum 2: *Ecdeiocolea monostachya*, *Mesomelaena pseudostygia*

SPECIES LIST

Taxon Name	Avg. Height	Cover Alive	Cover Class
<i>Allocasuarina humilis</i>	0.3	0.3	
<i>Allocasuarina microstachya</i>	0.5	0.2	
<i>Banksia shuttleworthiana</i>	0.7	5	
<i>Banksia tridentata</i>	0.5	1	
<i>Beaufortia elegans</i>	0.7	0.5	
<i>Calothamnus torulosus</i>	0.3	1.5	
<i>Ecdeiocolea monostachya</i>	0.8	15	
<i>Hibbertia hypericoides</i> subsp. <i>septentrionalis</i>	0.3	0.5	
<i>Melaleuca trichophylla</i>	0.3	0.5	
<i>Mesomelaena pseudostygia</i>	0.4	1	
<i>Xanthorrhoea acanthostachya</i>	1.1	5	

PHOTOS



Site Name: MAR15
 Site Type: RELEVE
 Survey Date: 14/09/2022
 GPS Location: GDA94 Zone 50 331496.83E 6696402.55N
 Community: 6b
 Landform Type: Flat
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sand
 Soil Colour: Grey-brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: Southern Vegetation Condition - 2 - Excellent
 Fire: >10 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: *Phymatocarpus porphyrocephalus*
 Mid Stratum 2: *Ecdeiocolea monostachya*
 Lower Stratum 1: *Banksia shuttleworthiana, Melaleuca leuropoma*

SPECIES LIST

Taxon Name	Avg. Height	Cover Alive	Cover Class
<i>Banksia shuttleworthiana</i>	0.7	1	
<i>Caustis dioica</i>	0.3	0.1	
<i>Chordifex sinuosus</i>	0.4	0.5	
<i>Conostylis aurea</i>	0.1	0.1	
<i>Dampiera spicigera</i>	0.2	0.2	
<i>Ecdeiocolea monostachya</i>	1.2	25	
<i>Eremaea violacea</i> subsp. <i>violacea</i>	0.4	0.5	
<i>Grevillea shuttleworthiana</i> subsp. <i>canarina</i>	1.2	0.2	
<i>Hibbertia hypericoides</i> subsp. <i>septentrionalis</i>	0.4	0.1	
<i>Lyginia imberbis</i>	0.4	0.5	
<i>Melaleuca leuropoma</i>	0.3	1	
<i>Mesomelaena pseudostygia</i>	0.3	0.7	
<i>Phymatocarpus porphyrocephalus</i>	1.3	10	

PHOTOS



Site Name: MAR16
 Site Type: RELEVE
 Survey Date: 14/09/2022
 GPS Location: GDA94 Zone 50 331435.34648943E 6696072.48127215N
 Community: 1a
 Landform Type: Plain
 Slope Class: Very Gently Inclined (1 degree)
 Aspect: S
 Soil Type: Sand
 Soil Colour: Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: Southern Vegetation Condition - 2 - Excellent
 Fire: ~10 Years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: *Eucalyptus pleurocarpa*
 Lower Stratum 1: *Beaufortia elegans*, *Hibbertia hypericoides* subsp. *septentrionalis*, *Melaleuca leuropoma*
 Lower Stratum 2: *Mesomelaena pseudostygia*

SPECIES LIST

Taxon Name	Avg. Height	Cover Alive	Cover Class
<i>Alexgeorgea nitens</i>	0.1	0.4	
<i>Allocasuarina microstachya</i>	0.3	0.1	
<i>Banksia shuttleworthiana</i>	0.3	0.5	
<i>Banksia stenoprion</i>	0.3	0.5	
<i>Banksia tridentata</i>	0.3	0.5	
<i>Beaufortia elegans</i>	0.4	3	
<i>Calectasia narragara</i>	0.3	0.1	
<i>Calytrix superba</i> (P4)	0.3	0.1	
<i>Chordifex sinuosus</i>	0.3	0.3	
<i>Eucalyptus pleurocarpa</i>	1.2	2	
<i>Hibbertia crassifolia</i>	0.4	0.4	
<i>Hibbertia hypericoides</i> subsp. <i>septentrionalis</i>	0.3	1.9	
<i>Melaleuca leuropoma</i>	0.3	5	
<i>Mesomelaena pseudostygia</i>	0.3	1.5	
<i>Pileanthus filifolius</i>	0.3	0.1	
<i>Schoenus caespitius</i>	0.3	0.1	
<i>Stylidium crossocephalum</i>	0.1	0.1	

<i>Verticordia densiflora</i>	0.3	0.1	
-------------------------------	-----	-----	--

PHOTOS



Site Name: MAR17
 Site Type: RELEVE
 Survey Date: 14/09/2022
 GPS Location: GDA94 Zone 50 331447.93E 6695822.47N
 Community: 2a
 Landform Type: Other, Low Rise (other)
 Slope Class: Gently Inclined (3 degrees)
 Aspect: SW
 Soil Type: Sand
 Soil Colour: Grey-brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: Southern Vegetation Condition - 2 - Excellent
 Fire: >10 Years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: *Eucalyptus todtiana*
 Mid Stratum 1: *Banksia attenuata*, *Banksia candolleana*, *Phymatocarpus porphyrocephalus*
 Lower Stratum 1: *Melaleuca leuropoma*
 Lower Stratum 2: *Mesomelaena pseudostygia*

SPECIES LIST

Taxon Name	Avg. Height	Cover Alive	Cover Class
<i>Banksia attenuata</i>	1.3	3	
<i>Banksia candolleana</i>	1.1	5	
<i>Beaufortia elegans</i>	0.6	0.5	
<i>Conospermum wycherleyi</i> subsp. <i>wycherleyi</i>	1	0.5	
<i>Conostylis aurea</i>	0.1	0.2	
<i>Conostylis neocymosa</i>	0.7	0.3	
<i>Conostylis teretifolia</i> subsp. <i>teretifolia</i>	0.1	0.1	
<i>Dampiera spicigera</i>	0.2	0.1	
<i>Daviesia divaricata</i> subsp. <i>divaricata</i>	0.7	0.1	
<i>Eremaea beaufortoides</i> var. <i>microphylla</i>	0.8	0.5	
<i>Eucalyptus todtiana</i>	3	3	
<i>Hibbertia hypericoides</i> subsp. <i>septentrionalis</i>	0.4	0.3	
<i>Jacksonia floribunda</i>	0.4	0.2	
<i>Melaleuca leuropoma</i>	0.6	2.5	
<i>Mesomelaena pseudostygia</i>	0.3	2.5	
<i>Petrophile drummondii</i>	0.6	0.2	

<i>Phymatocarpus porphyrocephalus</i>	1.3	5	
<i>Stirlingia latifolia</i>	0.7	0.1	
<i>Verticordia grandis</i>	1.1	0.1	
<i>Xylomelum angustifolium</i>	4	0.5	

PHOTOS



Site Name: MAR18
 Site Type: RELEVE
 Survey Date: 14/09/2022
 GPS Location: GDA94 Zone 50 331268.69E 6695484.4N
 Community: 6b
 Landform Type: Plain
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sand
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: Southern Vegetation Condition - 2 - Excellent
 Fire: ~10 Years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: *Eucalyptus pleurocarpa*
 Lower Stratum 1: *Allocasuarina humilis*, *Melaleuca leuropoma*, *Scholtzia laxiflora*
 Lower Stratum 2: *Ecdeiocolea monostachya*, *Mesomelaena pseudostygia*

SPECIES LIST

Taxon Name	Avg. Height	Cover Alive	Cover Class
<i>Allocasuarina humilis</i>	0.4	1	
<i>Allocasuarina microstachya</i>	0.2	0.2	
<i>Babingtonia grandiflora</i>	0.3	0.1	
<i>Banksia tridentata</i>	0.4	0.2	
<i>Calectasia narragara</i>	0.2	0.1	
<i>Calothamnus torulosus</i>	0.3	0.5	
<i>Calytrix superba</i> (P4)	0.2	0.1	
<i>Caustis dioica</i>	0.2	0.1	
<i>Chordifex sinuosus</i>	0.2	0.2	
<i>Conostylis aurea</i>	0.2	0.1	
<i>Dampiera spicigera</i>	0.2	0.1	
<i>Daviesia pedunculata</i>	0.3	0.2	
<i>Ecdeiocolea monostachya</i>	0.9	5	
<i>Eucalyptus pleurocarpa</i>	1	2	
<i>Hibbertia crassifolia</i>	0.3	0.5	
<i>Hibbertia hypericoides</i> subsp. <i>septentrionalis</i>	0.3	0.5	
<i>Jacksonia floribunda</i>	0.4	0.5	
<i>Melaleuca leuropoma</i>	0.2	3	
<i>Melaleuca trichophylla</i>	0.3	0.5	

<i>Mesomelaena pseudostygia</i>	0.3	7	
<i>Scholtzia laxiflora</i>	0.3	1	
<i>Styphelia xerophylla</i>	0.3	0.1	

PHOTOS



Site Name: MAR19
 Site Type: RELEVE
 Survey Date: 14/09/2022
 GPS Location: GDA94 Zone 50 331023.43E 6694183.31N
 Community: 2b
 Landform Type: Other, Low Rise (other)
 Slope Class: Gently Inclined (3 degrees)
 Aspect: W
 Soil Type: Sand
 Soil Colour: Grey-brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: Southern Vegetation Condition - 2 - Excellent
 Fire: >10 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: *Adenanthos cygnorum* subsp. *cygnorum*, *Allocasuarina humilis*, *Banksia attenuata*, *Banksia candolleana*, *Calothamnus sanguineus*
 Lower Stratum 1: *Hibbertia hypericoides* subsp. *septentrionalis*, *Melaleuca leuropoma*

SPECIES LIST

Taxon Name	Avg. Height	Cover Alive	Cover Class
<i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i>	1.6	10	
<i>Allocasuarina humilis</i>	1.1	2.5	
<i>Banksia attenuata</i>	1.3	3.5	
<i>Banksia candolleana</i>	1.5	10	
<i>Banksia prionotes</i>			
<i>Calothamnus sanguineus</i>	1.3	3	
<i>Conospermum wycherleyi</i> subsp. <i>wycherleyi</i>	0.9	0.5	
<i>Eremaea beaufortoides</i> var. <i>microphylla</i>	0.7	0.2	
<i>Gompholobium tomentosum</i>	1.2	0.2	
<i>Hakea psilorrhyncha</i>	2	0.5	
<i>Hibbertia hypericoides</i> subsp. <i>septentrionalis</i>	0.4	1.5	
<i>Lambertia multiflora</i> var. <i>multiflora</i>	1.1	0.4	
<i>Lasiopetalum drummondii</i>	0.3	0.5	
<i>Lyginia imberbis</i>	0.6	0.3	
<i>Melaleuca leuropoma</i>	0.6	1.5	
<i>Mesomelaena pseudostygia</i>	0.3	0.5	
<i>Nuytsia floribunda</i>	3	0.5	
<i>Petrophile macrostachya</i>	0.9	0.3	

<i>Verticordia grandis</i>	1.2	0.1	
----------------------------	-----	-----	--

PHOTOS



Site Name: MAR20
 Site Type: RELEVE
 Survey Date: 14/09/2022
 GPS Location: GDA94 Zone 50 331088.3528743E 6693643.75381789N
 Community: 2a
 Landform Type: Plain
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sand
 Soil Colour: Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: Southern Vegetation Condition - 2 - Excellent
 Fire: >10 Years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: *Banksia attenuata, Eucalyptus todtiana*
 Mid Stratum 1: *Adenanthos cygnorum* subsp. *cygnorum*
 Lower Stratum 1: *Allocasuarina humilis, Banksia grossa, Callitris acuminata, Calothamnus sanguineus, Daviesia divaricata* subsp. *divaricata, Jacksonia floribunda, Melaleuca leuropoma*

SPECIES LIST

Taxon Name	Avg. Height	Cover Alive	Cover Class
<i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i>	1.5	25	
<i>Allocasuarina humilis</i>	1	3	
<i>Banksia attenuata</i>	1.2	5	
<i>Banksia grossa</i>	0.8	2	
<i>Callitris acuminata</i>	0.3	5	
<i>Calothamnus sanguineus</i>	0.7	2	
<i>Conospermum unilaterale</i>	0.4	0.3	
<i>Conospermum wycherleyi</i> subsp. <i>wycherleyi</i>	0.5	0.2	
<i>Conostylis aurea</i>	0.1	0.1	
<i>Daviesia divaricata</i> subsp. <i>divaricata</i>	0.9	3	
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	1.1	0.5	
<i>Eucalyptus todtiana</i>	2.5	5	
<i>Gompholobium tomentosum</i>	1.1	0.5	
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687) (P3)	0.3	0.1	
<i>Hibbertia hypericoides</i> subsp. <i>septentrionalis</i>	0.8	0.2	
<i>Jacksonia floribunda</i>	0.5	2	

<i>Lechenaultia hirsuta</i>	0.1	0.1	
<i>Melaleuca leuropoma</i>	0.3	2.5	
<i>Mesomelaena pseudostygia</i>	0.4	0.5	
<i>Nuytsia floribunda</i>	3.5	0.5	
<i>Stirlingia latifolia</i>	0.7	0.5	
<i>Verticordia grandis</i>	1	0.1	
<i>Xylomelum angustifolium</i>	3	0.5	

PHOTOS



Site Name: MAR21
 Site Type: RELEVE
 Survey Date: 14/09/2022
 GPS Location: GDA94 Zone 50 331186.34E 6693171.88N
 Community: 3
 Landform Type: Plain
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sand
 Soil Colour: Grey-brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: <2%
 CF Sizes: 2-6mm, 6-20mm
 CF Types: Laterite
 Vegetation Condition: Southern Vegetation Condition - 2 - Excellent
 Fire: >10 Years
 Comments: Occasional large laterite boulders

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: *Eucalyptus todtiana, Xylomelum angustifolium*
 Mid Stratum 1: *Banksia sessilis var. flabellifolia, Calothamnus sanguineus, Eremaea beaufortioides var. beaufortioides, Melaleuca leuropoma, Petrophile drummondii, Stachystemon axillaris*

SPECIES LIST

Taxon Name	Avg. Height	Cover Alive	Cover Class
<i>Alexgeorgea nitens</i>	0.1	0.2	
<i>Banksia sessilis var. flabellifolia</i>	1.5	5	
<i>Calothamnus sanguineus</i>	1.1	2	
<i>Calytrix chrysantha</i> (P4)	1.3	3.5	
<i>Eremaea beaufortioides var. beaufortioides</i>	1.1	1	
<i>Eucalyptus todtiana</i>	3.5	5	
<i>Hakea costata</i>	1.3	0.4	
<i>Hibbertia hypericoides</i> subsp. <i>septentrionalis</i>	0.7	0.3	
<i>Hibbertia subvaginata</i>	0.4	0.5	
<i>Melaleuca leuropoma</i>	1	4	
<i>Mesomelaena pseudostygia</i>	0.3	0.1	
<i>Opercularia vaginata</i>	0.2	0.1	
<i>Petrophile drummondii</i>	1.1	2	
<i>Stachystemon axillaris</i>	1.3	1.5	
<i>Stirlingia latifolia</i>	0.5	0.5	

<i>Xanthorrhoea</i> sp. Lesueur (G.J. Keighery 16404)	0.4	0.4	
<i>Xylomelum angustifolium</i>	3	15	

PHOTOS



Site Name: MAR22
 Site Type: RELEVE
 Survey Date: 14/09/2022
 GPS Location: GDA94 Zone 50 331102.5E 6693126.48N
 Community: 3
 Landform Type: Plain
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sand
 Soil Colour: Yellow-brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: <2%
 CF Sizes: 2-6mm
 CF Types: Laterite
 Vegetation Condition: Southern Vegetation Condition - 2 - Excellent
 Fire: >10 Years

DOMINANT TAXA IN VEGETATION STRATA

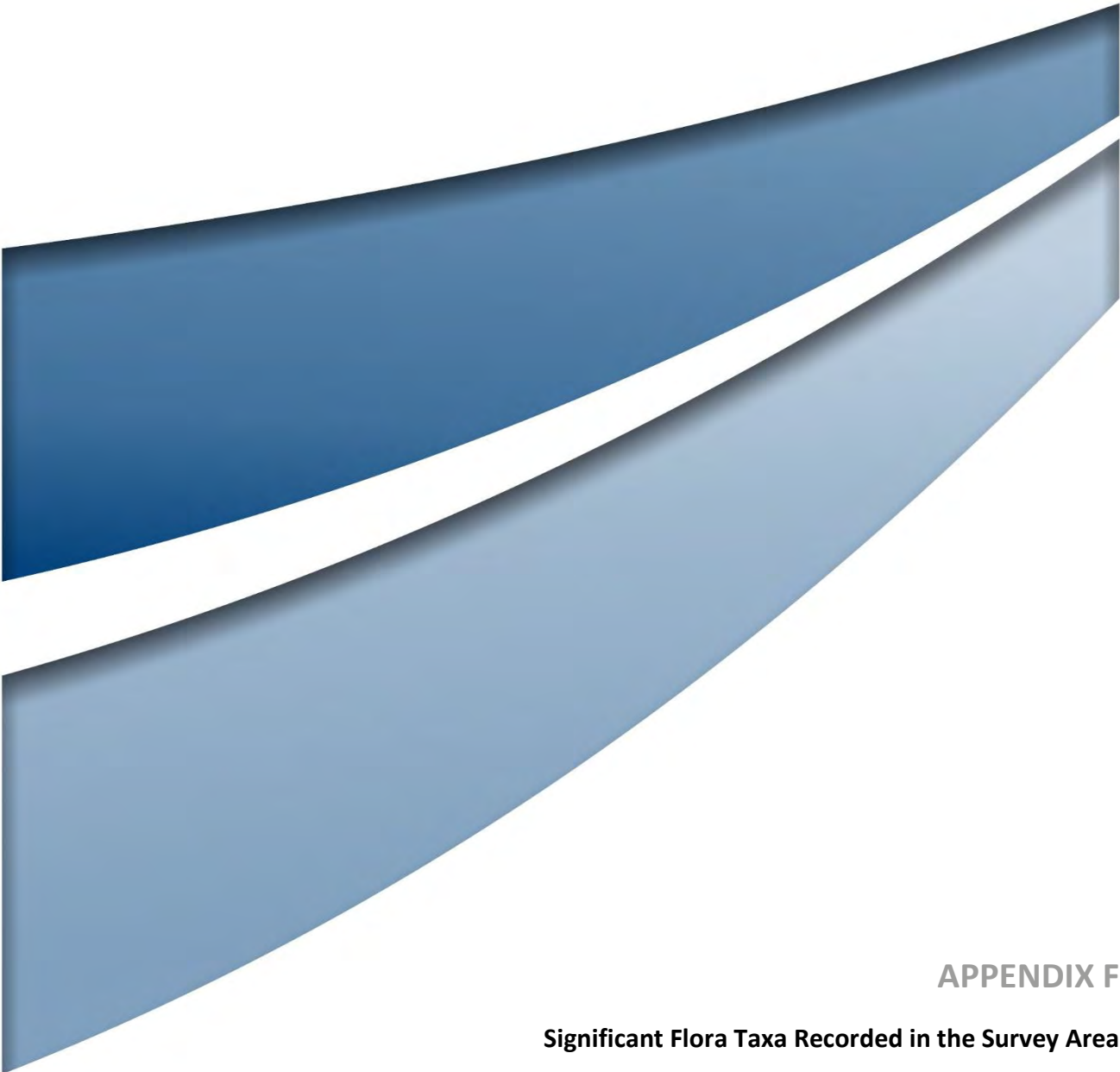
Upper Stratum 1: *Eucalyptus todtiana, Xylomelum angustifolium*
 Mid Stratum 1: *Adenanthos cygnorum* subsp. *cygnorum*, *Calytrix chrysantha*, *Melaleuca leuropoma*, *Thryptomene spicata*

SPECIES LIST

Taxon Name	Avg. Height	Cover Alive	Cover Class
<i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i>	1.6	17	
<i>Banksia sessilis</i> var. <i>flabellifolia</i>	1.8	0.5	
<i>Calytrix chrysantha</i> (P4)	1.4	3.5	
<i>Eucalyptus todtiana</i>	4	5	
<i>Hakea costata</i>	1.3	0.2	
<i>Hibbertia subvaginata</i>	0.4	0.2	
<i>Macarthuria australis</i>	0.4	0.1	
<i>Melaleuca leuropoma</i>	1.4	23	
<i>Styphelia hispida</i>	0.3	0.2	
<i>Thryptomene spicata</i> (P2)	1.4	25	
<i>Verticordia argentea</i> (P2)	2.1	0.1	
<i>Xylomelum angustifolium</i>	3	2	

PHOTOS





APPENDIX F

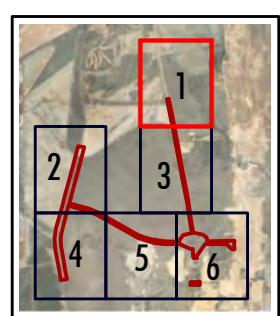
Significant Flora Taxa Recorded in the Survey Area

GOVERNMENT AGENCY REFERENCE ONLY
NOT FOR PUBLIC DISSEMINATION
CONTAINS LOCATIONS OF SIGNIFICANT FLORA TAXA



- Legend**
- Survey Area
 - Railways
 - Roads
 - Drainage Lines
- Significant Flora Taxa**
- Hlor
 - HspE
 - ScaN
 - CsU
 - Hga
 - Var
 - Del
 - Vau

GOVERNMENT AGENCY REFERENCE ONLY
 NOT FOR PUBLIC DISSEMINATION
 CONTAINS LOCATIONS OF SIGNIFICANT FLORA TAXA



APPENDIX F
 Significant Flora Taxa Recorded in the Survey Area



D:\UMWELT (AUSTRALIA) PTY LTD\22446-03 38\VF_R02\22446_018_APPF_SIGFLORATAXA_AKD_24/03/2023_7:44:53 PM

Scale 1:10000 of A4

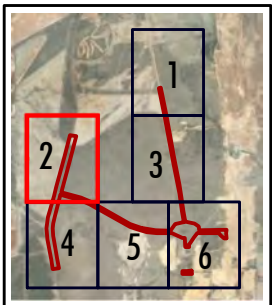
6697000
6695000
6695000
6695000
6695000
6695000

GDA2020 MGA Zone 50

Legend		Significant Flora Taxa	
Survey Area	Csu	Gbic	Sgr
Railways	Cma	Hlor	Sfil
Roads	Del	HspE	Tpu
	Emae	Hga	Var
		Pdix	Vau
			Vfr

GOVERNMENT AGENCY REFERENCE ONLY
NOT FOR PUBLIC DISSEMINATION
CONTAINS LOCATIONS OF SIGNIFICANT FLORA TAXA

Image Source: ESRI Basemap (2021) Data source: Iluka (2022), Landgate (2023), Umwelt (2023)



333500

334000

334500

6697000

6696500

6696000

6695500

6695000

D:\UMWELT (AUSTRALIA) PTY LTD\22416 - 03 58\VF_R02\22416_018_APPF_SIGFLORATAXA_MXD_24/03/2023_7:45:00 PM

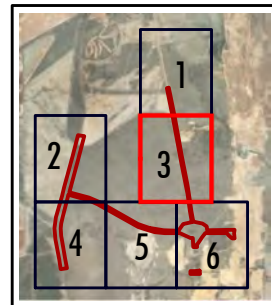
Scale 1:10000 of A4



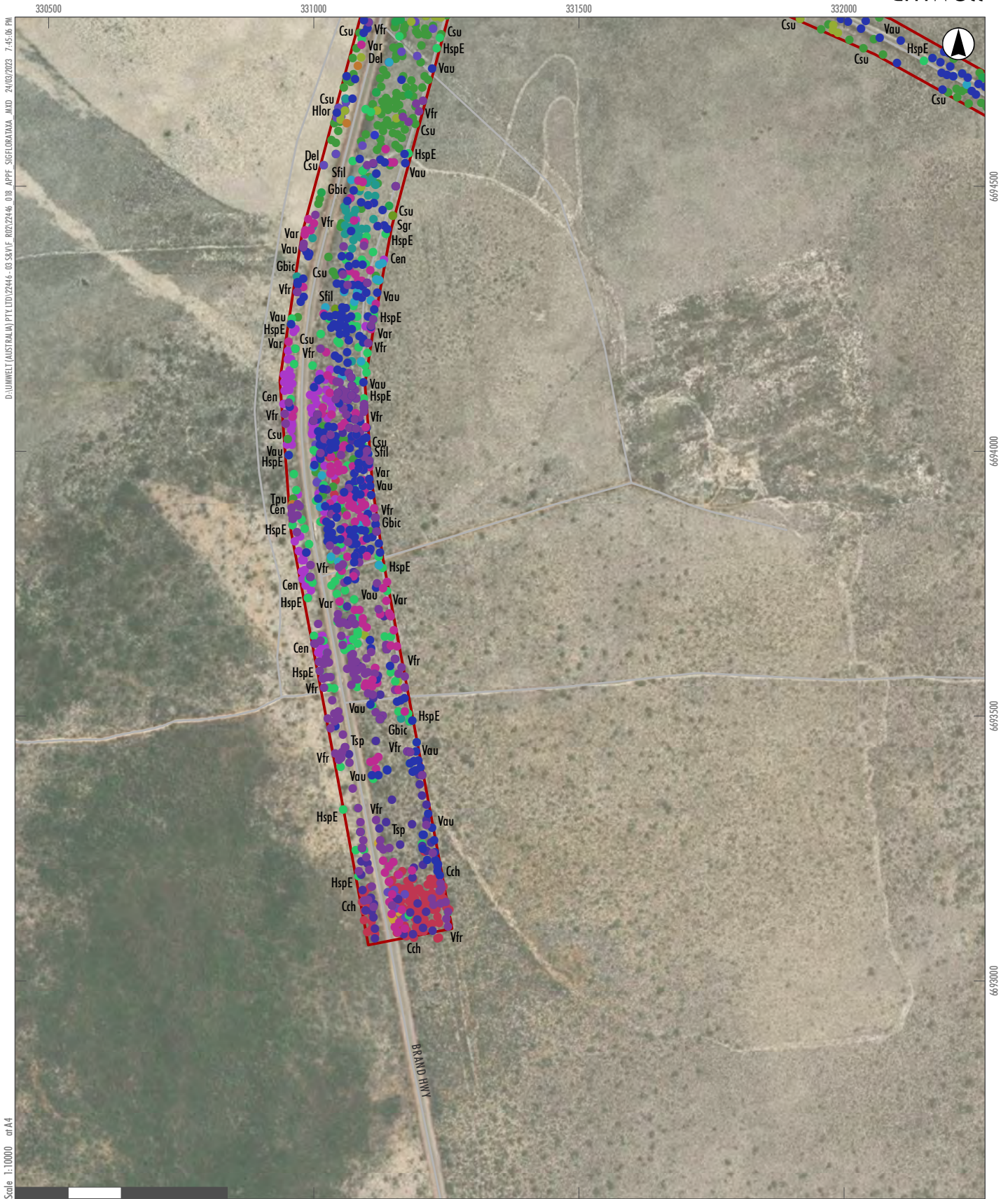
GDA2020 MGA Zone 50

- Legend**
- Survey Area
 - Railways
 - Roads
 - Drainage Lines
 - Waterbodies
- Significant Flora Taxa**
- | | |
|-------------------------------------------|-------------------------------------------|
| ● Hlor | ● Sfil |
| ● Csu | ● Tpu |
| ● Hga | ● Var |
| ● Pfi | ● Vau |
| ● Sgr | ● Vfr |

GOVERNMENT AGENCY REFERENCE ONLY
 NOT FOR PUBLIC DISSEMINATION
 CONTAINS LOCATIONS OF SIGNIFICANT FLORA TAXA



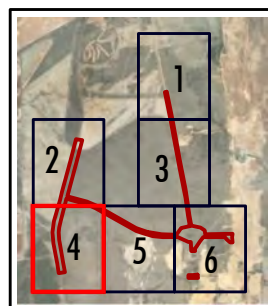
APPENDIX F
 Significant Flora Taxa Recorded in the Survey Area



Legend

- Survey Area
 - Roads
- Significant Flora Taxa**
- Cch
 - Cen
 - Csu
 - Cma
 - Del
 - Gbic
 - Hlor
 - HspE
 - Hga
 - Pdix
 - Sgr
 - Sfil
 - Tpu
 - Tsp
 - Var
 - Vau
 - Vfr

GOVERNMENT AGENCY REFERENCE ONLY
 NOT FOR PUBLIC DISSEMINATION
 CONTAINS LOCATIONS OF SIGNIFICANT FLORA TAXA



APPENDIX F

Significant Flora Taxa Recorded in the Survey Area



D:\UMWELT (AUSTRALIA) PTY LTD\2446-03 SRV\F R02\2446_018_APPF_SIGFLORATAXA_AWXD_24/03/2023_7:45:13 PM

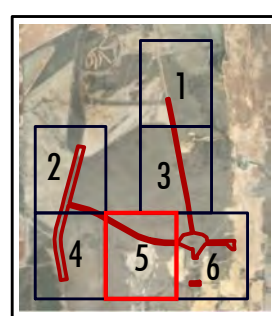
Scale 1:10000 of A4

GDA2020 MGA Zone 50

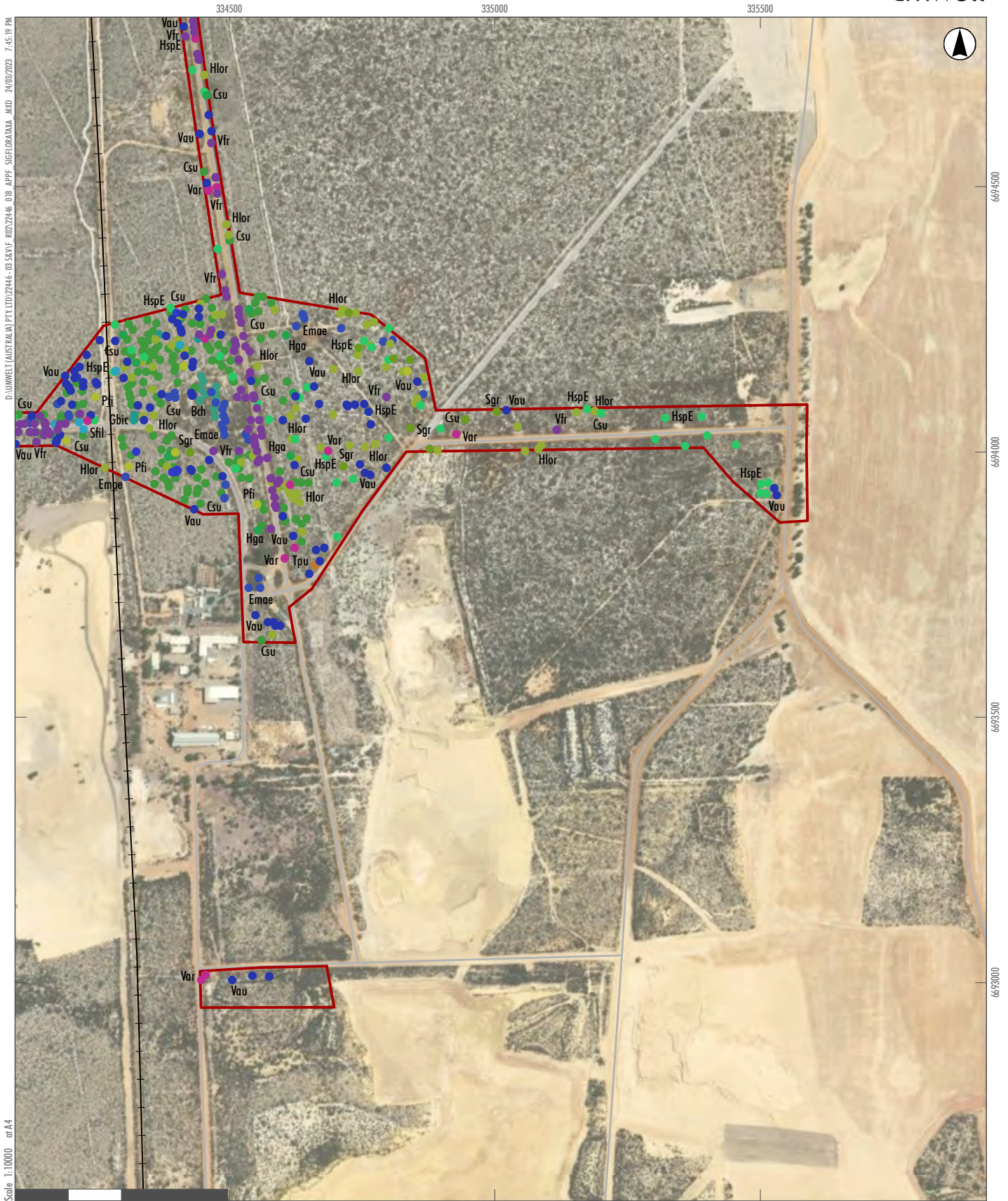
Legend

- | | | | |
|-------------|-------------------------------|------|------|
| Survey Area | Significant Flora Taxa | Hlor | Sfil |
| Roads | Csu | Tpu | Vam |
| | Cma | Hga | Var |
| | Del | Pdix | Vau |
| | Emae | Pfi | Vfr |
| | Gbic | Sgr | |

GOVERNMENT AGENCY REFERENCE ONLY
NOT FOR PUBLIC DISSEMINATION
CONTAINS LOCATIONS OF SIGNIFICANT FLORA TAXA

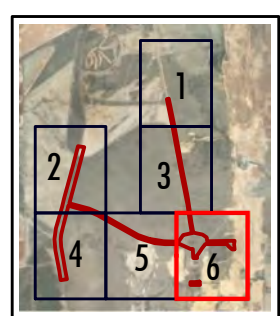


APPENDIX F
Significant Flora Taxa Recorded in the Survey Area



- Legend**
- Survey Area
 - Railways
 - Roads
- Significant Flora Taxa**
- | | | |
|-------------------------------------------|-------------------------------------------|-------------------------------------------|
| ● Bch | ● Hlor | ● Sfil |
| ● CsU | ● HspE | ● Tpu |
| ● Del | ● Hga | ● Var |
| ● Emæ | ● Pdex | ● Vau |
| ● Gbic | ● Pfi | ● Vfr |
| | ● Sgr | |

GOVERNMENT AGENCY REFERENCE ONLY
 NOT FOR PUBLIC DISSEMINATION
 CONTAINS LOCATIONS OF SIGNIFICANT FLORA TAXA



APPENDIX F
 Significant Flora Taxa Recorded in the Survey Area

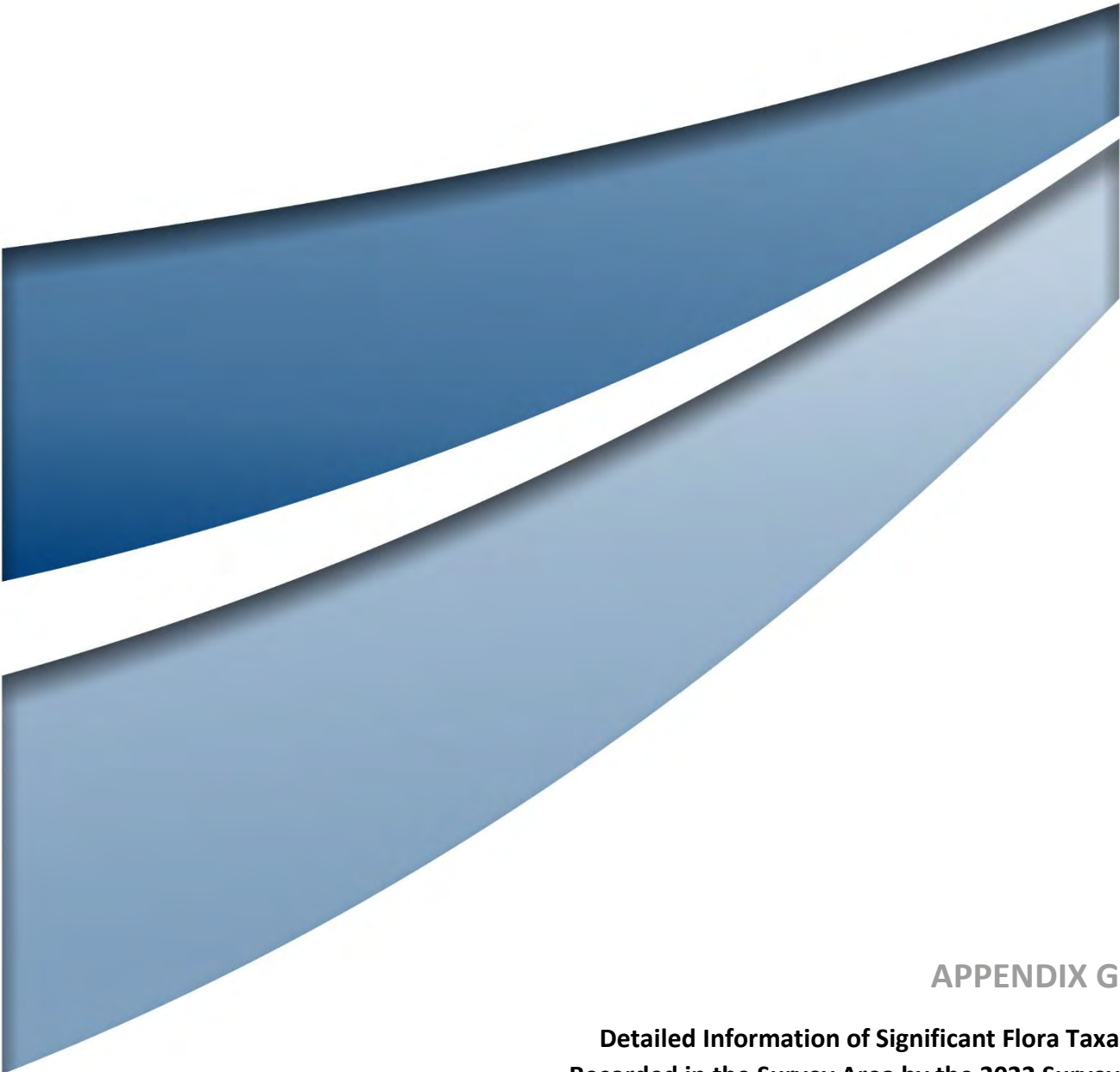
Legend

Significant Flora Taxa

- Bch *Banksia chamaephyton* (P4)
- Cch *Calytrix chrysantha* (P4)
- Cen *Calytrix eneabensis* (P4)
- Csu *Calytrix superba* (P4)
- Cma *Conostephium magnum* (P4)
- Del *Desmocladius elongatus* (P4)
- Emae *Eucalyptus macrocarpa* subsp. *elachantha* (P4)
- Gbic *Grevillea biformis* subsp. *cymbiformis* (P3)
- Grud *Grevillea rudis* (P4)
- Hlor *Haemodorum loratum* (P3)
- HspE *Hemiandra* sp. *Eneabba* (H. Demarz 3687) (P3)
- Hga *Hypocalymma gardneri* (P3)
- Pdix *Paracaleana dixonii* (T)
- Pfi *Persoonia filiformis* (P3)
- Sgr *Schoenus griffinianus* (P4)
- ScaN *Stylidium camosum* subsp. *Narrow leaves* (J.A. Wege 490) (P1)
- Sfil *Styphelia filamentosa* (P3)
- Tpu *Thelymitra pulcherrima* (P2)
- Tsp *Thryptomene spicata* (P2)
- Vam *Verticordia amphigia* (P3)
- Var *Verticordia argentea* (P2)
- Vau *Verticordia aurea* (P4)
- Vfr *Verticordia fragrans* (P3)

APPENDIX F

LEGEND: Significant Flora Taxa Recorded in the Survey Area



APPENDIX G

**Detailed Information of Significant Flora Taxa
Recorded in the Survey Area by the 2022 Survey**

Taxon	Status (WA)	Description	Habitat	Approximate Range	Location Records*	Regional Populations (approx. based on location records)	Regional Populations in Conservation Estate	Endemic to WA^
<i>Banksia chamaephyton</i>	P4	Low, lignotuberous shrub to 0.4 m high and to 2 m wide	Slopes, breakaways and flats with grey or white sand over laterite.	172 km Kadathinni to Boonanarring	36	32	12 Badgingarra NP, South Eneabba NR, Boonanarring NR, Alexander Morrison NP	Yes
<i>Calytrix chrysantha</i>	P4	Shrub to 1.3 m high	Flats with white, grey or yellow/brown sand	115 km Hill River to as far north as Morawa	36	35	8 Coomallo NR, South Eneabba NR, Lake Logue NR, Unnamed Nature Reserve WA39744	Yes
<i>Calytrix eneabbensis</i>	P4	Shrub to 1 m high	Sandplains and flats with white, grey or yellow sand over laterite.	90 km Warradarge to Irwin	29	28	6 South Eneabba NR, Lake Logue NR, Unnamed Nature Reserve WA39744	Yes
<i>Calytrix superba</i>	P4	Shrub to 1 m high	Sandplains and flats with white/grey sand over laterite.	43 km Warradarge to Arrowsmith	19	19	6 South Eneabba NR, Lake Logue NR, Unnamed Nature Reserve WA39744	Yes
<i>Conostephium magnum</i>	P4	Erect, compact, many-stemmed shrub to 2 m high	Sand dunes and slopes with white-grey sands.	103 km Eneabba to Cataby	31	31	8 South Eneabba NR, Coomallo NR, Badgingarra NP	Yes
<i>Desmocladius elongatus</i>	P4	Rhizomatous, perennial herb (sedge-like) to 0.5 m high	Slopes, plains and uplands with white or grey sand over laterite.	120 km Arrowsmith East to Dandaragan	38	37	11 Lake Logue NR, South Eneabba NR, Alexander Morrison NP, Tathra NP, Coomallo NR, Watheroo NP	Yes

Taxon	Status (WA)	Description	Habitat	Approximate Range	Location Records*	Regional Populations (approx. based on location records)	Regional Populations in Conservation Estate	Endemic to WA [^]
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	Spreading mallee to 4 m high	Hillslopes, ridges, sandplains with white or grey sand over laterite.	235 km Red Gully to Burma Road	46	43	3 South Eneabba NR, Fynes NR	Yes
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	Shrub to 1.5 m high	Flats, slopes and hills with yellow/white sand.	23 km Warradarge to Eneabba	22	21	9 Lake Logue NR, South Eneabba NR, White Gums NR, Stockyard Gully Reserve	Yes
<i>Grevillea rudis</i>	P4	Spreading or erect shrub to 1.2 m high	Hills and slopes with white, grey, yellow or red sand, often with gravel and laterite.	102 km Arrowsmith East to Dandaragan	53	51	17 Wotto NR, Tathra NP, South Eneabba NR, Alexander Morrison NP, Coomallo NR, Badgingarra NP	Yes
<i>Haemodorum loratum</i>	P3	Bulbaceous, perennial herb to 1.2 m high	Uplands and sandplains with grey, white or yellow sand and gravel.	295 km Arrowsmith East to Wattle Grove	22	19	7 Lesueur NP, Coomallo NR, Moore River NP, South Eneabba NR	Yes
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	Straggly erect shrub to 0.9 m high	Sandplains with white, grey or yellow sand.	67 km Warradarge to Mount Adams	35	32	3 South Eneabba NR, Yardanogo NR	Yes
<i>Hypocalymma gardneri</i>	P3	Shrub to 0.3 m high	Sandplains, upper slopes and heathland with grey-brown sand and laterite.	105 km Hill River to Arrowsmith	20	20	5 Lesueur NP, South Eneabba NR, Lake Logue NR	Yes
<i>Paracaleana dixonii</i>	T	Tuberous, perennial herb to 0.2 m high	Undulating plains, flats and slopes with grey sand and gravel.	145 km Mount Adams to Cooljarloo	20	19 ¹	5 Lake Logue NR, South Eneabba NR, Lesueur NP, Coomallo NR	Yes

Taxon	Status (WA)	Description	Habitat	Approximate Range	Location Records*	Regional Populations (approx. based on location records)	Regional Populations in Conservation Estate	Endemic to WA^
<i>Persoonia filiformis</i>	P3	Erect, spreading, lignotuberous shrub to 0.4 m high	Sandplains with yellow or white sand over laterite.	150 km Arrowsmith East to Dandaragan	24	24	6 South Eneabba NR, Lesueur NP, Coomallo NR	Yes
<i>Schoenus griffinianus</i>	P4	Small, tufted perennial sedge to 0.1 m high	Sandplains and flats with white/grey sand.	560 km Geraldton to Lake Grace	39	37	10 Moore River NP, Fynes NR, South Eneabba NR, Lake Logue NR, Tarin Rock NR	Yes
<i>Stylidium carnosum</i> subsp. Narrow leaves (J.A. Wege 490)	P1	Tall perennial herb with underground corm, to 1 m high	Hillslopes and plains with white/grey sand and laterite gravel.	155 km Arrowsmith to Yathroo	14	14	3 Lesueur NP, Badgingarra NP	Yes
<i>Styphelia filamentosa</i>	P3	Low compact spreading shrub to 0.3 m high	Uplands and low rises with white/grey sand over laterite.	66 km Eneabba to Badgingarra	13	13	5 South Eneabba NR, Alexander Morrison NP, Coomallo NR	Yes
<i>Thelymitra pulcherrima</i>	P2	Tuberous, perennial herb to 0.15 m	Flats and slopes of lateritic hills with white/grey sand or grey-brown sandy clay.	95 km Eneabba to Cooljarloo	12	11	4 Lesueur NP, Badgingarra NP	Yes
<i>Thryptomene spicata</i>	P2	Shrub to 1.5 m high	Plains, yellow or grey sand over laterite.	14 km Eneabba to Warradarge	9	6	4 South Eneabba NR	Yes
<i>Verticordia amphigia</i>	P3	Shrub to 1.3 m high	Winter-wet depressions with sandy loam, sandy clay or rocky loam	80 km Eneabba to Cooljarloo	11	8	5 Lesueur NP, South Eneabba NR	Yes
<i>Verticordia argentea</i>	P2	Erect open shrub to 2 m high	Sand ridges, undulating plains with white, grey or yellow sand.	27 km Eneabba area	29	26	8 South Eneabba NR	Yes

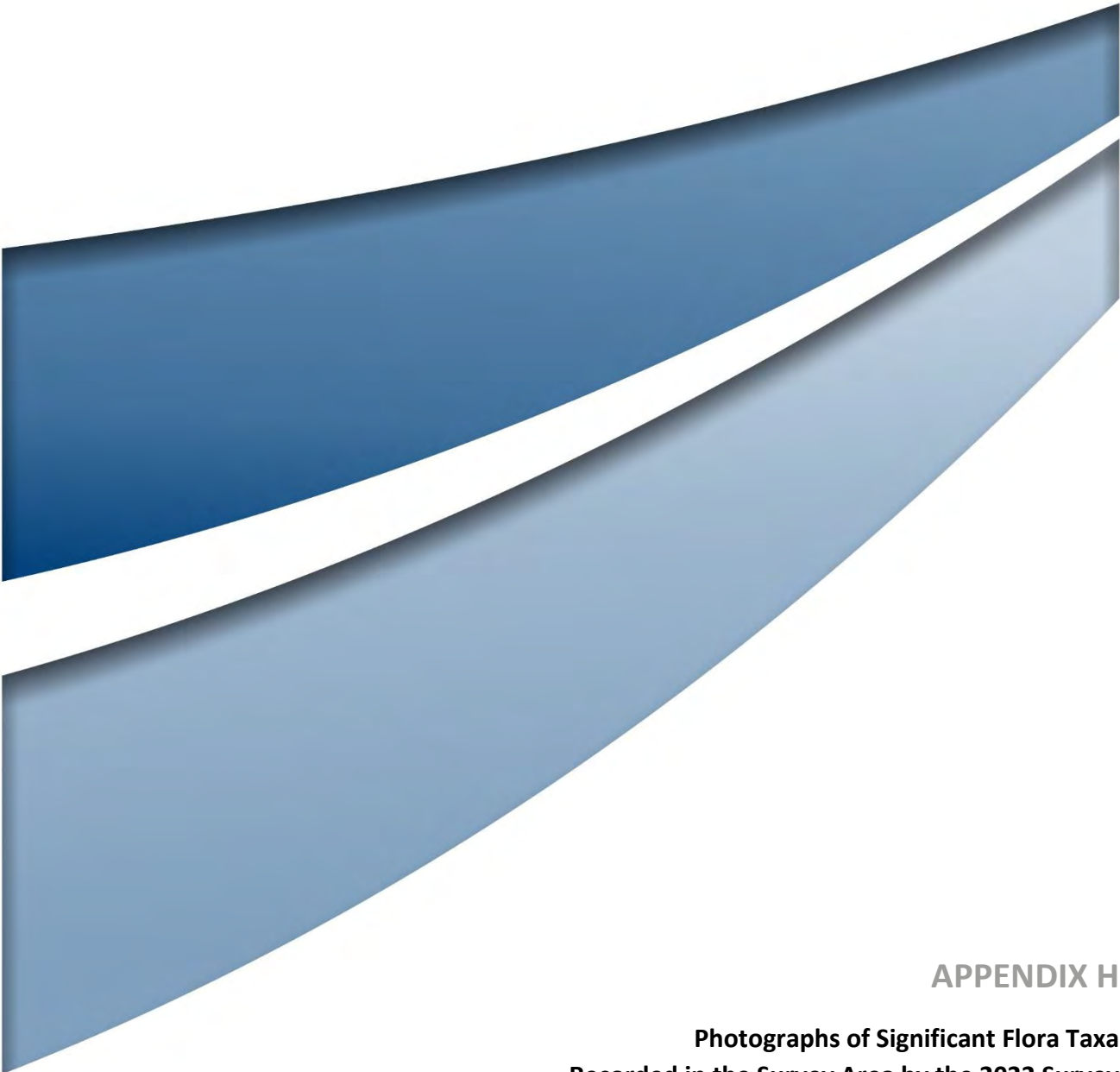
Taxon	Status (WA)	Description	Habitat	Approximate Range	Location Records*	Regional Populations (approx. based on location records)	Regional Populations in Conservation Estate	Endemic to WA [^]
<i>Verticordia aurea</i>	P4	Shrub to 1.5 m high	Sandplains with deep white/grey sand.	42 km Eneabba to Warradarge	28	27	8 Lake Logue NR, South Eneabba NR	Yes
<i>Verticordia fragrans</i>	P3	Openly branched shrub to 3 m high	Sandplains and low-lying areas with white, grey or yellow sand or clay loam.	80 km Boothendarra to Arrowsmith ²	23	23	7 South Eneabba NR, Lake Logue NR	Yes

* Source: DBCA WA Herbarium Specimen Database, accessed via Florabase (WA Herbarium, 1998-). Number of unique locations as per WA Herbarium database records is presented (different to the total number of specimens held at WA Herbarium, which is often higher due to multiple specimens being lodged from a particular location). However, it is worth noting that the coordinates entered into and stored in the WA Herbarium database do not always fully correspond with the collector's original location description, or the location was not given in sufficient detail, and as such often represent an approximation rather than an exact location.

[^] Source: Atlas of Living Australia (ALA, 2023).

¹ The approved conservation advice for *Paracaleana dixonii* (DEWHA, 2008) states there are only eight populations, however the current Florabase records (WA Herbarium, 1998-) indicate there are approximately 19 populations, with nine specimen records submitted to the WA Herbarium since the conservation advice was approved in 2008.

² One outlier near Tenindewa, a further 100 km north, omitted from the range calculation; this record is potentially erroneous (no collector information provided, vague locality description).



APPENDIX H

**Photographs of Significant Flora Taxa
Recorded in the Survey Area by the 2022 Survey**

***Banksia chamaephyton* (P4) (source: Umwelt)**



Calytrix chrysantha (P4) (source: Umwelt, Monika Hrubanova)



Calytrix eneabbensis (P4) (source: Umwelt)



Calytrix superba (P4) (source: Umwelt, Monika Hrubanova)



Conostephium magnum (P4) (source: Umwelt)



Desmocladus elongatus (P4) (source: Umwelt)



Eucalyptus macrocarpa subsp. *elachantha* (P4) (source: Umwelt)



Grevillea biformis subsp. *cymbiformis* (P3) (source: Umwelt)



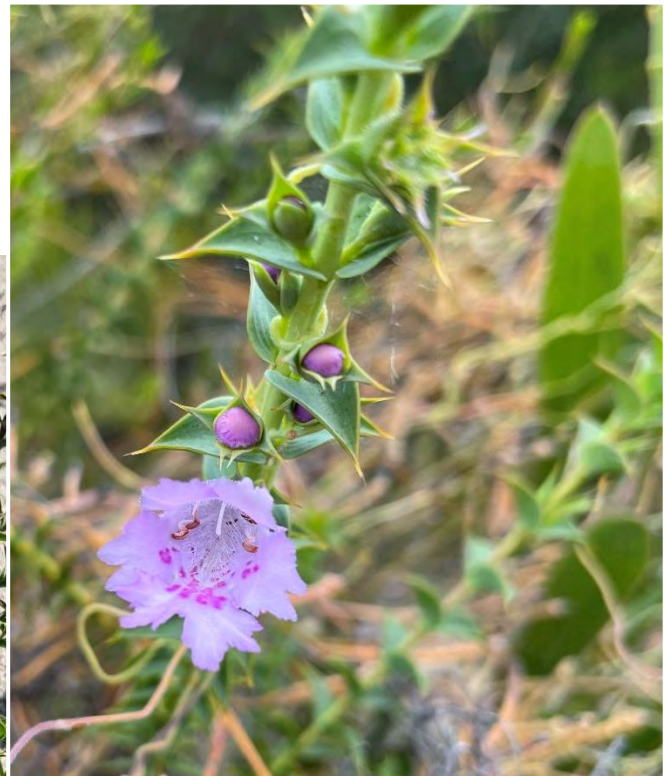
Grevillea rudis (P4) (source: Umwelt)



Haemodorum loratum (P3) (source: Umwelt)



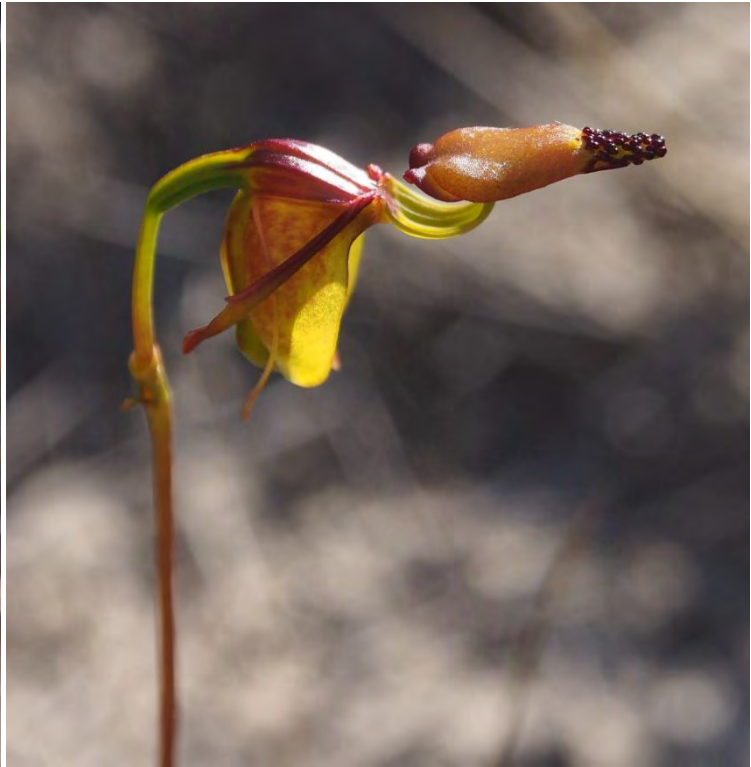
Hemiandra sp. Eneabba (H. Demarz 3687) (P3) (source: Umwelt)



Hypocalymma gardneri (P3) (source: Umwelt scanned specimen)



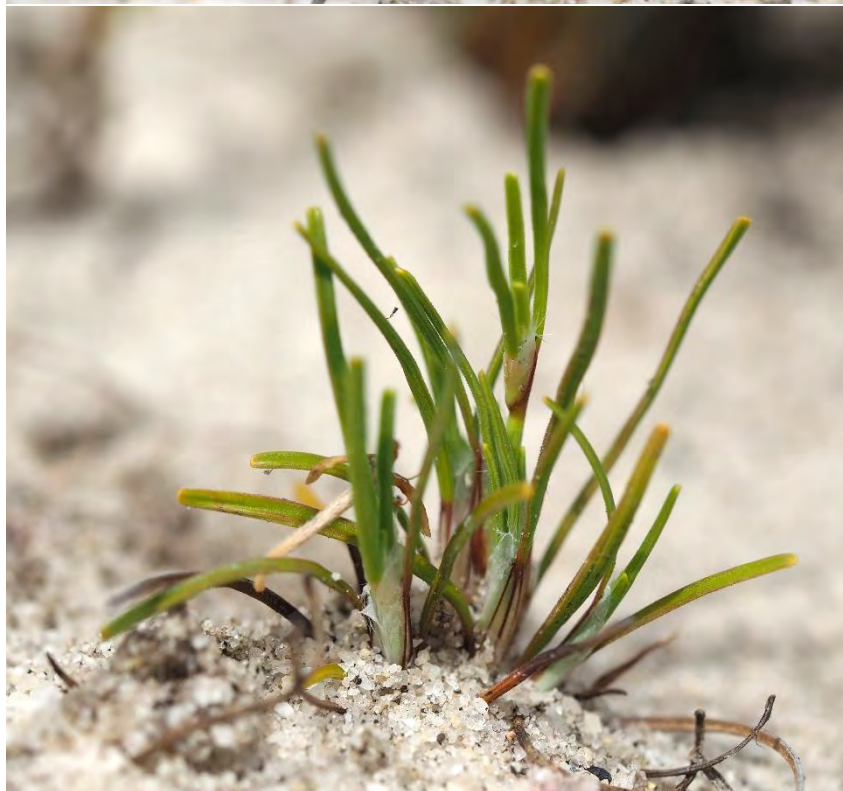
Paracaleana dixonii (T) (source: Umwelt, Monika Hrubanova)



Persoonia filiformis (P3) (source: Umwelt)



Schoenus griffinianus (P4) (source: Umwelt)



Stylidium carnosum subsp. Narrow leaves (J.A. Wege 490) (P1) (source: Umwelt)



Styphelia filamentosa (P3) (source: Umwelt)



Thelymitra pulcherrima (P2) (source: Umwelt)



Thryptomene spicata (P2) (source: Umwelt)



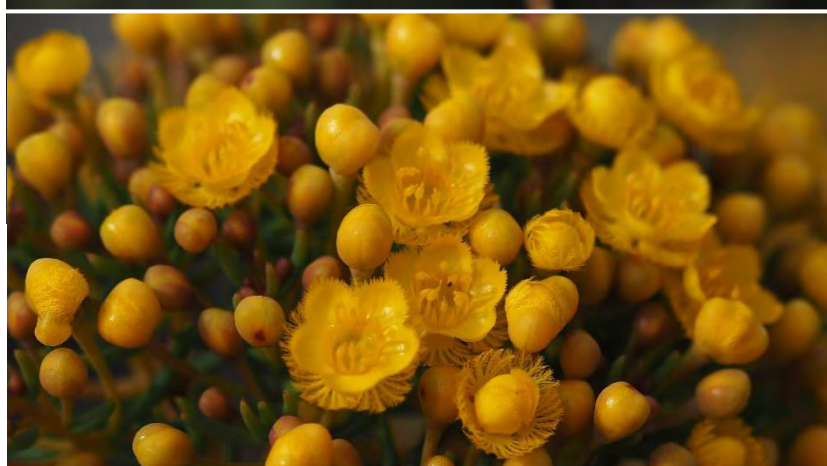
Verticordia amphigia (P3) (source: Umwelt)



Verticordia argentea (P2) (source: Umwelt, Monika Hrubanova)

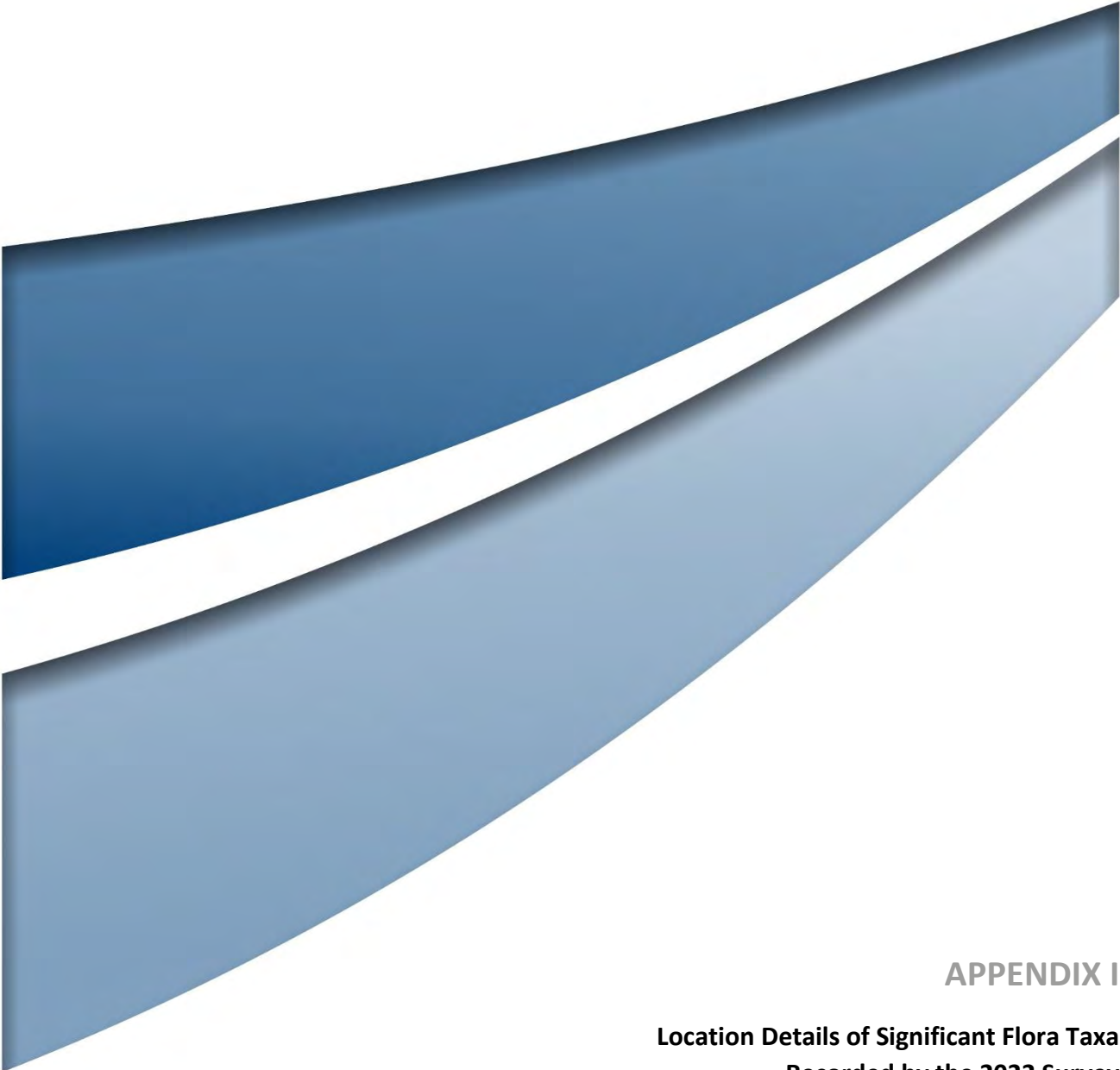


Verticordia aurea (P4) (source: Umwelt)



Verticordia fragrans (P3) (source: Umwelt)





APPENDIX I

**Location Details of Significant Flora Taxa
Recorded by the 2022 Survey**

**GOVERNMENT AGENCY REFERENCE ONLY
NOT FOR PUBLIC DISSEMINATION
CONTAINS LOCATIONS OF SIGNIFICANT FLORA TAXA**

All locations are in GDA2020 Zone 50.

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Banksia chamaephyton</i>	P4	14/09/2022	4	334451	6694133
<i>Banksia chamaephyton</i>	P4	14/09/2022	1	334455	6694109
<i>Banksia chamaephyton</i>	P4	14/09/2022	12	334473	6694113
<i>Banksia chamaephyton</i>	P4	14/09/2022	4	334475	6694093
<i>Banksia chamaephyton</i>	P4	13/09/2022	1	334473	6694067
<i>Banksia chamaephyton</i>	P4	13/09/2022	6	334472	6694082
<i>Banksia chamaephyton</i>	P4	14/09/2022	3	334447	6694144
<i>Banksia chamaephyton</i>	P4	14/09/2022	2	334446	6694119
<i>Banksia chamaephyton</i>	P4	14/09/2022	4	334476	6694123
<i>Banksia chamaephyton</i>	P4	14/09/2022	6	334475	6694101
<i>Banksia chamaephyton</i>	P4	14/09/2022	2	334444	6694098
<i>Calytrix chrysantha</i>	P4	8/11/2022	1	331236	6693083
<i>Calytrix chrysantha</i>	P4	8/11/2022	2	331237	6693110
<i>Calytrix chrysantha</i>	P4	8/11/2022	3	331234	6693121
<i>Calytrix chrysantha</i>	P4	8/11/2022	3	331231	6693137
<i>Calytrix chrysantha</i>	P4	8/11/2022	6	331230	6693145
<i>Calytrix chrysantha</i>	P4	8/11/2022	8	331226	6693156
<i>Calytrix chrysantha</i>	P4	8/11/2022	6	331223	6693167
<i>Calytrix chrysantha</i>	P4	8/11/2022	10	331222	6693181
<i>Calytrix chrysantha</i>	P4	8/11/2022	2	331220	6693193
<i>Calytrix chrysantha</i>	P4	8/11/2022	2	331208	6693245
<i>Calytrix chrysantha</i>	P4	8/11/2022	2	331041	6693988
<i>Calytrix chrysantha</i>	P4	8/11/2022	6	331176	6693189
<i>Calytrix chrysantha</i>	P4	8/11/2022	4	331181	6693180
<i>Calytrix chrysantha</i>	P4	8/11/2022	6	331181	6693171
<i>Calytrix chrysantha</i>	P4	8/11/2022	2	331185	6693160
<i>Calytrix chrysantha</i>	P4	8/11/2022	4	331187	6693150
<i>Calytrix chrysantha</i>	P4	8/11/2022	3	331190	6693141
<i>Calytrix chrysantha</i>	P4	8/11/2022	3	331192	6693130
<i>Calytrix chrysantha</i>	P4	8/11/2022	2	331190	6693120
<i>Calytrix chrysantha</i>	P4	8/11/2022	3	331194	6693113
<i>Calytrix chrysantha</i>	P4	8/11/2022	2	331193	6693102
<i>Calytrix chrysantha</i>	P4	8/11/2022	4	331200	6693094
<i>Calytrix chrysantha</i>	P4	8/11/2022	1	331233	6693081
<i>Calytrix chrysantha</i>	P4	8/11/2022	30	331223	6693108
<i>Calytrix chrysantha</i>	P4	8/11/2022	40	331225	6693135
<i>Calytrix chrysantha</i>	P4	8/11/2022	30	331220	6693146
<i>Calytrix chrysantha</i>	P4	8/11/2022	25	331212	6693163
<i>Calytrix chrysantha</i>	P4	8/11/2022	30	331215	6693182

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix chrysantha</i>	P4	7/11/2022	1	331236	6693162
<i>Calytrix chrysantha</i>	P4	7/11/2022	3	331232	6693184
<i>Calytrix chrysantha</i>	P4	7/11/2022	2	331232	6693195
<i>Calytrix chrysantha</i>	P4	7/11/2022	3	331187	6693193
<i>Calytrix chrysantha</i>	P4	7/11/2022	8	331192	6693170
<i>Calytrix chrysantha</i>	P4	7/11/2022	15	331191	6693156
<i>Calytrix chrysantha</i>	P4	7/11/2022	6	331196	6693147
<i>Calytrix chrysantha</i>	P4	7/11/2022	5	331199	6693137
<i>Calytrix chrysantha</i>	P4	7/11/2022	6	331201	6693127
<i>Calytrix chrysantha</i>	P4	7/11/2022	18	331204	6693107
<i>Calytrix chrysantha</i>	P4	7/11/2022	3	331207	6693094
<i>Calytrix chrysantha</i>	P4	7/11/2022	5	331150	6693120
<i>Calytrix chrysantha</i>	P4	7/11/2022	1	331153	6693111
<i>Calytrix chrysantha</i>	P4	7/11/2022	2	331156	6693091
<i>Calytrix chrysantha</i>	P4	8/11/2022	1	331256	6693135
<i>Calytrix chrysantha</i>	P4	8/11/2022	1	331251	6693138
<i>Calytrix chrysantha</i>	P4	8/11/2022	2	331250	6693140
<i>Calytrix chrysantha</i>	P4	8/11/2022	8	331248	6693147
<i>Calytrix chrysantha</i>	P4	8/11/2022	3	331244	6693157
<i>Calytrix chrysantha</i>	P4	8/11/2022	2	331241	6693169
<i>Calytrix chrysantha</i>	P4	8/11/2022	6	331245	6693179
<i>Calytrix chrysantha</i>	P4	8/11/2022	6	331238	6693198
<i>Calytrix chrysantha</i>	P4	8/11/2022	18	331199	6693174
<i>Calytrix chrysantha</i>	P4	8/11/2022	11	331203	6693167
<i>Calytrix chrysantha</i>	P4	8/11/2022	9	331209	6693157
<i>Calytrix chrysantha</i>	P4	8/11/2022	9	331207	6693148
<i>Calytrix chrysantha</i>	P4	8/11/2022	7	331208	6693136
<i>Calytrix chrysantha</i>	P4	8/11/2022	4	331209	6693116
<i>Calytrix chrysantha</i>	P4	8/11/2022	10	331212	6693107
<i>Calytrix chrysantha</i>	P4	8/11/2022	6	331093	6693166
<i>Calytrix chrysantha</i>	P4	8/11/2022	3	331091	6693150
<i>Calytrix chrysantha</i>	P4	8/11/2022	3	331096	6693133
<i>Calytrix chrysantha</i>	P4	8/11/2022	1	331094	6693115
<i>Calytrix chrysantha</i>	P4	8/11/2022	5	331101	6693093
<i>Calytrix chrysantha</i>	P4	8/11/2022	6	331165	6693104
<i>Calytrix chrysantha</i>	P4	8/11/2022	3	331156	6693146
<i>Calytrix chrysantha</i>	P4	8/11/2022	2	331150	6693178
<i>Calytrix chrysantha</i>	P4	8/11/2022	2	331148	6693191
<i>Calytrix chrysantha</i>	P4	8/11/2022	10	331106	6693178
<i>Calytrix chrysantha</i>	P4	8/11/2022	20	331066	6694063

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix chrysantha</i>	P4	8/11/2022	1	331026	6694065
<i>Calytrix chrysantha</i>	P4	8/11/2022	40	331029	6693989
<i>Calytrix chrysantha</i>	P4	8/11/2022	5	331041	6693945
<i>Calytrix chrysantha</i>	P4	8/11/2022	25	331039	6693919
<i>Calytrix chrysantha</i>	P4	8/11/2022	2	331167	6693207
<i>Calytrix chrysantha</i>	P4	8/11/2022	20	331169	6693175
<i>Calytrix chrysantha</i>	P4	8/11/2022	35	331173	6693167
<i>Calytrix chrysantha</i>	P4	8/11/2022	15	331180	6693151
<i>Calytrix chrysantha</i>	P4	8/11/2022	5	331182	6693137
<i>Calytrix chrysantha</i>	P4	8/11/2022	30	331187	6693125
<i>Calytrix chrysantha</i>	P4	8/11/2022	40	331189	6693082
<i>Calytrix chrysantha</i>	P4	7/11/2022	11	331097	6693171
<i>Calytrix chrysantha</i>	P4	7/11/2022	8	331106	6693150
<i>Calytrix chrysantha</i>	P4	7/11/2022	17	331102	6693144
<i>Calytrix chrysantha</i>	P4	7/11/2022	4	331111	6693125
<i>Calytrix chrysantha</i>	P4	7/11/2022	5	331109	6693113
<i>Calytrix chrysantha</i>	P4	7/11/2022	13	331110	6693100
<i>Calytrix chrysantha</i>	P4	7/11/2022	4	331116	6693089
<i>Calytrix chrysantha</i>	P4	7/11/2022	12	331175	6693085
<i>Calytrix chrysantha</i>	P4	7/11/2022	16	331176	6693095
<i>Calytrix chrysantha</i>	P4	7/11/2022	10	331172	6693105
<i>Calytrix chrysantha</i>	P4	7/11/2022	6	331170	6693121
<i>Calytrix chrysantha</i>	P4	7/11/2022	5	331168	6693137
<i>Calytrix chrysantha</i>	P4	7/11/2022	6	331165	6693151
<i>Calytrix chrysantha</i>	P4	7/11/2022	8	331164	6693163
<i>Calytrix chrysantha</i>	P4	7/11/2022	9	331159	6693178
<i>Calytrix chrysantha</i>	P4	7/11/2022	7	331159	6693201
<i>Calytrix chrysantha</i>	P4	7/11/2022	4	331100	6693560
<i>Calytrix chrysantha</i>	P4	7/11/2022	3	331142	6693188
<i>Calytrix chrysantha</i>	P4	7/11/2022	1	331142	6693188
<i>Calytrix eneabbensis</i>	P4	8/09/2022	2	331009	6693921
<i>Calytrix eneabbensis</i>	P4	8/09/2022	2	331003	6693983
<i>Calytrix eneabbensis</i>	P4	8/09/2022	5	330997	6694032
<i>Calytrix eneabbensis</i>	P4	8/09/2022	12	330998	6694035
<i>Calytrix eneabbensis</i>	P4	8/09/2022	15	330999	6694041
<i>Calytrix eneabbensis</i>	P4	8/09/2022	8	330997	6694052
<i>Calytrix eneabbensis</i>	P4	8/09/2022	15	330999	6694057
<i>Calytrix eneabbensis</i>	P4	8/09/2022	5	330997	6694073
<i>Calytrix eneabbensis</i>	P4	8/09/2022	3	330995	6694081
<i>Calytrix eneabbensis</i>	P4	8/09/2022	3	330993	6694107

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix eneabbensis</i>	P4	8/09/2022	2	331009	6694134
<i>Calytrix eneabbensis</i>	P4	8/09/2022	2	331004	6694125
<i>Calytrix eneabbensis</i>	P4	8/09/2022	10	331004	6694115
<i>Calytrix eneabbensis</i>	P4	8/09/2022	4	331003	6694099
<i>Calytrix eneabbensis</i>	P4	8/09/2022	4	331006	6694089
<i>Calytrix eneabbensis</i>	P4	8/09/2022	5	331006	6694054
<i>Calytrix eneabbensis</i>	P4	8/09/2022	4	331012	6694026
<i>Calytrix eneabbensis</i>	P4	8/09/2022	1	331017	6693930
<i>Calytrix eneabbensis</i>	P4	8/09/2022	3	331020	6693886
<i>Calytrix eneabbensis</i>	P4	8/09/2022	1	331057	6693629
<i>Calytrix eneabbensis</i>	P4	8/09/2022	10	331065	6693644
<i>Calytrix eneabbensis</i>	P4	12/09/2022	3	331098	6694235
<i>Calytrix eneabbensis</i>	P4	12/09/2022	2	331133	6694362
<i>Calytrix eneabbensis</i>	P4	12/09/2022	4	331076	6693895
<i>Calytrix eneabbensis</i>	P4	12/09/2022	4	331068	6693910
<i>Calytrix eneabbensis</i>	P4	12/09/2022	20	331067	6693917
<i>Calytrix eneabbensis</i>	P4	12/09/2022	2	331067	6693938
<i>Calytrix eneabbensis</i>	P4	12/09/2022	3	331066	6694102
<i>Calytrix eneabbensis</i>	P4	12/09/2022	3	331055	6694079
<i>Calytrix eneabbensis</i>	P4	12/09/2022	1	331072	6694021
<i>Calytrix eneabbensis</i>	P4	12/09/2022	1	331106	6693644
<i>Calytrix eneabbensis</i>	P4	8/09/2022	10	330998	6693752
<i>Calytrix eneabbensis</i>	P4	8/09/2022	3	330994	6693763
<i>Calytrix eneabbensis</i>	P4	8/09/2022	18	330993	6693785
<i>Calytrix eneabbensis</i>	P4	8/09/2022	9	330986	6693810
<i>Calytrix eneabbensis</i>	P4	8/09/2022	7	330959	6694050
<i>Calytrix eneabbensis</i>	P4	8/09/2022	8	330959	6694128
<i>Calytrix eneabbensis</i>	P4	8/09/2022	12	330957	6694142
<i>Calytrix eneabbensis</i>	P4	8/09/2022	8	330963	6694165
<i>Calytrix eneabbensis</i>	P4	8/09/2022	2	330965	6694195
<i>Calytrix eneabbensis</i>	P4	8/09/2022	7	331011	6694147
<i>Calytrix eneabbensis</i>	P4	8/09/2022	3	331013	6694137
<i>Calytrix eneabbensis</i>	P4	8/09/2022	18	331009	6694115
<i>Calytrix eneabbensis</i>	P4	8/09/2022	3	331017	6694083
<i>Calytrix eneabbensis</i>	P4	8/09/2022	3	331015	6694071
<i>Calytrix eneabbensis</i>	P4	8/09/2022	6	331019	6694036
<i>Calytrix eneabbensis</i>	P4	8/09/2022	12	331020	6694007
<i>Calytrix eneabbensis</i>	P4	8/09/2022	10	331023	6693998
<i>Calytrix eneabbensis</i>	P4	8/09/2022	10	331020	6693973
<i>Calytrix eneabbensis</i>	P4	8/09/2022	4	331032	6693959

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix eneabbensis</i>	P4	8/09/2022	1	331033	6693882
<i>Calytrix eneabbensis</i>	P4	8/09/2022	7	331016	6693652
<i>Calytrix eneabbensis</i>	P4	8/09/2022	16	331018	6693643
<i>Calytrix eneabbensis</i>	P4	8/09/2022	15	331021	6693631
<i>Calytrix eneabbensis</i>	P4	8/09/2022	14	331025	6693620
<i>Calytrix eneabbensis</i>	P4	8/09/2022	3	331082	6693587
<i>Calytrix eneabbensis</i>	P4	8/09/2022	12	331074	6693646
<i>Calytrix eneabbensis</i>	P4	8/09/2022	1	331080	6694437
<i>Calytrix eneabbensis</i>	P4	8/09/2022	21	330985	6693747
<i>Calytrix eneabbensis</i>	P4	8/09/2022	41	330979	6693760
<i>Calytrix eneabbensis</i>	P4	8/09/2022	82	330978	6693773
<i>Calytrix eneabbensis</i>	P4	8/09/2022	73	330977	6693794
<i>Calytrix eneabbensis</i>	P4	8/09/2022	24	330972	6693812
<i>Calytrix eneabbensis</i>	P4	8/09/2022	32	330965	6693831
<i>Calytrix eneabbensis</i>	P4	8/09/2022	28	330968	6693847
<i>Calytrix eneabbensis</i>	P4	8/09/2022	29	330960	6693861
<i>Calytrix eneabbensis</i>	P4	8/09/2022	37	330960	6693873
<i>Calytrix eneabbensis</i>	P4	8/09/2022	22	330959	6693881
<i>Calytrix eneabbensis</i>	P4	8/09/2022	20	330958	6693893
<i>Calytrix eneabbensis</i>	P4	8/09/2022	3	330960	6693901
<i>Calytrix eneabbensis</i>	P4	8/09/2022	7	330949	6694012
<i>Calytrix eneabbensis</i>	P4	8/09/2022	33	330951	6694023
<i>Calytrix eneabbensis</i>	P4	8/09/2022	61	330947	6694053
<i>Calytrix eneabbensis</i>	P4	8/09/2022	32	330945	6694071
<i>Calytrix eneabbensis</i>	P4	8/09/2022	44	330943	6694089
<i>Calytrix eneabbensis</i>	P4	8/09/2022	30	330945	6694114
<i>Calytrix eneabbensis</i>	P4	8/09/2022	27	330944	6694131
<i>Calytrix eneabbensis</i>	P4	8/09/2022	46	330943	6694145
<i>Calytrix eneabbensis</i>	P4	8/09/2022	4	330951	6694174
<i>Calytrix eneabbensis</i>	P4	8/09/2022	2	330952	6694189
<i>Calytrix eneabbensis</i>	P4	8/09/2022	8	330962	6694226
<i>Calytrix eneabbensis</i>	P4	8/09/2022	1	331040	6694181
<i>Calytrix eneabbensis</i>	P4	8/09/2022	2	331031	6694153
<i>Calytrix eneabbensis</i>	P4	8/09/2022	1	331036	6694134
<i>Calytrix eneabbensis</i>	P4	8/09/2022	3	331030	6694110
<i>Calytrix eneabbensis</i>	P4	8/09/2022	2	331031	6694092
<i>Calytrix eneabbensis</i>	P4	8/09/2022	1	331034	6694080
<i>Calytrix eneabbensis</i>	P4	8/09/2022	10	331034	6694069
<i>Calytrix eneabbensis</i>	P4	8/09/2022	1	331037	6694045
<i>Calytrix eneabbensis</i>	P4	8/09/2022	11	331040	6694007

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix eneabbensis</i>	P4	8/09/2022	1	331047	6693962
<i>Calytrix eneabbensis</i>	P4	8/09/2022	1	331052	6693909
<i>Calytrix eneabbensis</i>	P4	8/09/2022	2	331049	6693900
<i>Calytrix eneabbensis</i>	P4	8/09/2022	6	330989	6693724
<i>Calytrix eneabbensis</i>	P4	8/09/2022	22	331001	6693651
<i>Calytrix eneabbensis</i>	P4	8/09/2022	37	331002	6693637
<i>Calytrix eneabbensis</i>	P4	8/09/2022	81	331008	6693620
<i>Calytrix eneabbensis</i>	P4	8/09/2022	93	331010	6693603
<i>Calytrix eneabbensis</i>	P4	8/09/2022	36	331012	6693586
<i>Calytrix eneabbensis</i>	P4	8/09/2022	31	331017	6693571
<i>Calytrix eneabbensis</i>	P4	12/09/2022	7	331123	6693785
<i>Calytrix eneabbensis</i>	P4	12/09/2022	1	331068	6693852
<i>Calytrix eneabbensis</i>	P4	12/09/2022	4	331053	6693908
<i>Calytrix eneabbensis</i>	P4	12/09/2022	1	331041	6694099
<i>Calytrix eneabbensis</i>	P4	12/09/2022	1	331043	6694131
<i>Calytrix eneabbensis</i>	P4	12/09/2022	1	331086	6694217
<i>Calytrix eneabbensis</i>	P4	12/09/2022	1	331077	6694060
<i>Calytrix eneabbensis</i>	P4	12/09/2022	3	331100	6693835
<i>Calytrix eneabbensis</i>	P4	8/09/2022	1	331040	6694269
<i>Calytrix eneabbensis</i>	P4	8/09/2022	20	330988	6693763
<i>Calytrix eneabbensis</i>	P4	8/09/2022	50	330983	6693776
<i>Calytrix eneabbensis</i>	P4	8/09/2022	30	330981	6693795
<i>Calytrix eneabbensis</i>	P4	8/09/2022	20	330981	6693805
<i>Calytrix eneabbensis</i>	P4	8/09/2022	1	330974	6693840
<i>Calytrix eneabbensis</i>	P4	8/09/2022	25	330970	6693879
<i>Calytrix eneabbensis</i>	P4	8/09/2022	1	330970	6693919
<i>Calytrix eneabbensis</i>	P4	8/09/2022	1	330958	6694013
<i>Calytrix eneabbensis</i>	P4	8/09/2022	10	330958	6694026
<i>Calytrix eneabbensis</i>	P4	8/09/2022	10	330958	6694040
<i>Calytrix eneabbensis</i>	P4	8/09/2022	12	330958	6694057
<i>Calytrix eneabbensis</i>	P4	8/09/2022	6	330960	6694066
<i>Calytrix eneabbensis</i>	P4	8/09/2022	20	330956	6694073
<i>Calytrix eneabbensis</i>	P4	8/09/2022	10	330955	6694085
<i>Calytrix eneabbensis</i>	P4	8/09/2022	12	330953	6694091
<i>Calytrix eneabbensis</i>	P4	8/09/2022	5	330957	6694099
<i>Calytrix eneabbensis</i>	P4	8/09/2022	20	330954	6694116
<i>Calytrix eneabbensis</i>	P4	8/09/2022	60	330952	6694126
<i>Calytrix eneabbensis</i>	P4	8/09/2022	40	330952	6694139
<i>Calytrix eneabbensis</i>	P4	8/09/2022	30	330954	6694152
<i>Calytrix eneabbensis</i>	P4	8/09/2022	15	330957	6694174

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix eneabbensis</i>	P4	8/09/2022	10	330966	6694231
<i>Calytrix eneabbensis</i>	P4	8/09/2022	1	331026	6694143
<i>Calytrix eneabbensis</i>	P4	8/09/2022	5	331021	6694136
<i>Calytrix eneabbensis</i>	P4	8/09/2022	3	331024	6694115
<i>Calytrix eneabbensis</i>	P4	8/09/2022	2	331024	6694100
<i>Calytrix eneabbensis</i>	P4	8/09/2022	1	331027	6694063
<i>Calytrix eneabbensis</i>	P4	8/09/2022	4	331031	6694017
<i>Calytrix eneabbensis</i>	P4	8/09/2022	2	331030	6694004
<i>Calytrix eneabbensis</i>	P4	8/09/2022	6	331038	6693955
<i>Calytrix eneabbensis</i>	P4	8/09/2022	2	331041	6693910
<i>Calytrix eneabbensis</i>	P4	8/09/2022	6	331044	6693895
<i>Calytrix eneabbensis</i>	P4	8/09/2022	6	331053	6693819
<i>Calytrix eneabbensis</i>	P4	8/09/2022	3	330990	6693759
<i>Calytrix eneabbensis</i>	P4	8/09/2022	25	330995	6693738
<i>Calytrix eneabbensis</i>	P4	8/09/2022	10	331012	6693650
<i>Calytrix eneabbensis</i>	P4	8/09/2022	40	331013	6693629
<i>Calytrix eneabbensis</i>	P4	8/09/2022	20	331017	6693614
<i>Calytrix eneabbensis</i>	P4	8/09/2022	2	331019	6693599
<i>Calytrix superba</i>	P4	5/09/2022	2	334103	6694070
<i>Calytrix superba</i>	P4	5/09/2022	1	334051	6694070
<i>Calytrix superba</i>	P4	5/09/2022	2	334034	6694069
<i>Calytrix superba</i>	P4	5/09/2022	1	333955	6694072
<i>Calytrix superba</i>	P4	5/09/2022	1	333945	6694066
<i>Calytrix superba</i>	P4	5/09/2022	1	333895	6694069
<i>Calytrix superba</i>	P4	5/09/2022	1	333881	6694075
<i>Calytrix superba</i>	P4	5/09/2022	1	333878	6694075
<i>Calytrix superba</i>	P4	5/09/2022	1	333866	6694072
<i>Calytrix superba</i>	P4	5/09/2022	1	333843	6694075
<i>Calytrix superba</i>	P4	5/09/2022	4	333832	6694076
<i>Calytrix superba</i>	P4	5/09/2022	3	333816	6694075
<i>Calytrix superba</i>	P4	5/09/2022	4	333783	6694073
<i>Calytrix superba</i>	P4	5/09/2022	3	333763	6694074
<i>Calytrix superba</i>	P4	5/09/2022	3	333696	6694081
<i>Calytrix superba</i>	P4	5/09/2022	5	333693	6694084
<i>Calytrix superba</i>	P4	5/09/2022	4	333684	6694083
<i>Calytrix superba</i>	P4	5/09/2022	3	333666	6694088
<i>Calytrix superba</i>	P4	5/09/2022	6	333655	6694092
<i>Calytrix superba</i>	P4	5/09/2022	1	333646	6694093
<i>Calytrix superba</i>	P4	5/09/2022	1	333644	6694092
<i>Calytrix superba</i>	P4	5/09/2022	4	333638	6694096

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix superba</i>	P4	5/09/2022	3	333627	6694097
<i>Calytrix superba</i>	P4	5/09/2022	5	333624	6694098
<i>Calytrix superba</i>	P4	5/09/2022	2	333616	6694098
<i>Calytrix superba</i>	P4	5/09/2022	2	333591	6694104
<i>Calytrix superba</i>	P4	5/09/2022	4	333581	6694105
<i>Calytrix superba</i>	P4	5/09/2022	3	333575	6694104
<i>Calytrix superba</i>	P4	5/09/2022	1	333565	6694108
<i>Calytrix superba</i>	P4	5/09/2022	1	333537	6694109
<i>Calytrix superba</i>	P4	5/09/2022	4	333521	6694116
<i>Calytrix superba</i>	P4	5/09/2022	1	333513	6694120
<i>Calytrix superba</i>	P4	5/09/2022	1	333494	6694124
<i>Calytrix superba</i>	P4	5/09/2022	1	333477	6694116
<i>Calytrix superba</i>	P4	6/09/2022	1	331347	6695526
<i>Calytrix superba</i>	P4	6/09/2022	1	331343	6695510
<i>Calytrix superba</i>	P4	6/09/2022	1	331343	6695510
<i>Calytrix superba</i>	P4	6/09/2022	1	331336	6695479
<i>Calytrix superba</i>	P4	6/09/2022	1	331336	6695476
<i>Calytrix superba</i>	P4	6/09/2022	2	331334	6695474
<i>Calytrix superba</i>	P4	6/09/2022	1	331334	6695467
<i>Calytrix superba</i>	P4	6/09/2022	1	331324	6695448
<i>Calytrix superba</i>	P4	6/09/2022	4	331319	6695428
<i>Calytrix superba</i>	P4	6/09/2022	4	331318	6695408
<i>Calytrix superba</i>	P4	6/09/2022	1	331235	6695105
<i>Calytrix superba</i>	P4	6/09/2022	1	331363	6695592
<i>Calytrix superba</i>	P4	6/09/2022	1	331481	6696053
<i>Calytrix superba</i>	P4	6/09/2022	1	331578	6696390
<i>Calytrix superba</i>	P4	6/09/2022	1	331572	6696354
<i>Calytrix superba</i>	P4	6/09/2022	1	331541	6696242
<i>Calytrix superba</i>	P4	6/09/2022	2	331522	6696178
<i>Calytrix superba</i>	P4	6/09/2022	1	331516	6696160
<i>Calytrix superba</i>	P4	6/09/2022	1	331495	6696078
<i>Calytrix superba</i>	P4	6/09/2022	1	331485	6696032
<i>Calytrix superba</i>	P4	6/09/2022	1	331372	6695639
<i>Calytrix superba</i>	P4	6/09/2022	1	333191	6694213
<i>Calytrix superba</i>	P4	6/09/2022	2	333172	6694217
<i>Calytrix superba</i>	P4	6/09/2022	1	333156	6694226
<i>Calytrix superba</i>	P4	6/09/2022	2	333148	6694227
<i>Calytrix superba</i>	P4	6/09/2022	1	333115	6694240
<i>Calytrix superba</i>	P4	6/09/2022	5	333090	6694245
<i>Calytrix superba</i>	P4	6/09/2022	1	333066	6694261

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix superba</i>	P4	6/09/2022	2	333002	6694298
<i>Calytrix superba</i>	P4	6/09/2022	2	332982	6694305
<i>Calytrix superba</i>	P4	6/09/2022	1	332951	6694327
<i>Calytrix superba</i>	P4	6/09/2022	2	332941	6694331
<i>Calytrix superba</i>	P4	6/09/2022	1	332921	6694342
<i>Calytrix superba</i>	P4	6/09/2022	2	332884	6694365
<i>Calytrix superba</i>	P4	6/09/2022	1	332877	6694369
<i>Calytrix superba</i>	P4	6/09/2022	1	332863	6694378
<i>Calytrix superba</i>	P4	6/09/2022	2	332818	6694400
<i>Calytrix superba</i>	P4	6/09/2022	1	332798	6694413
<i>Calytrix superba</i>	P4	6/09/2022	8	332778	6694425
<i>Calytrix superba</i>	P4	6/09/2022	4	332772	6694427
<i>Calytrix superba</i>	P4	6/09/2022	5	332737	6694446
<i>Calytrix superba</i>	P4	6/09/2022	5	332726	6694455
<i>Calytrix superba</i>	P4	6/09/2022	5	332715	6694459
<i>Calytrix superba</i>	P4	6/09/2022	2	332702	6694466
<i>Calytrix superba</i>	P4	6/09/2022	4	332692	6694470
<i>Calytrix superba</i>	P4	6/09/2022	2	332683	6694470
<i>Calytrix superba</i>	P4	6/09/2022	5	332675	6694482
<i>Calytrix superba</i>	P4	6/09/2022	2	332671	6694484
<i>Calytrix superba</i>	P4	6/09/2022	5	332616	6694513
<i>Calytrix superba</i>	P4	6/09/2022	2	332592	6694529
<i>Calytrix superba</i>	P4	6/09/2022	2	332567	6694539
<i>Calytrix superba</i>	P4	6/09/2022	6	332563	6694544
<i>Calytrix superba</i>	P4	6/09/2022	6	332548	6694552
<i>Calytrix superba</i>	P4	6/09/2022	3	332538	6694557
<i>Calytrix superba</i>	P4	6/09/2022	4	332474	6694596
<i>Calytrix superba</i>	P4	6/09/2022	4	332452	6694606
<i>Calytrix superba</i>	P4	6/09/2022	4	332444	6694611
<i>Calytrix superba</i>	P4	6/09/2022	10	332437	6694616
<i>Calytrix superba</i>	P4	6/09/2022	1	332410	6694628
<i>Calytrix superba</i>	P4	6/09/2022	4	332390	6694638
<i>Calytrix superba</i>	P4	6/09/2022	8	332368	6694651
<i>Calytrix superba</i>	P4	6/09/2022	12	332344	6694667
<i>Calytrix superba</i>	P4	6/09/2022	2	332287	6694704
<i>Calytrix superba</i>	P4	6/09/2022	12	332262	6694706
<i>Calytrix superba</i>	P4	6/09/2022	4	332256	6694714
<i>Calytrix superba</i>	P4	6/09/2022	2	332207	6694741
<i>Calytrix superba</i>	P4	6/09/2022	5	332067	6694819
<i>Calytrix superba</i>	P4	6/09/2022	2	332027	6694837

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix superba</i>	P4	6/09/2022	2	332000	6694850
<i>Calytrix superba</i>	P4	6/09/2022	2	331988	6694857
<i>Calytrix superba</i>	P4	6/09/2022	3	331968	6694865
<i>Calytrix superba</i>	P4	6/09/2022	2	331868	6694909
<i>Calytrix superba</i>	P4	6/09/2022	2	331830	6694922
<i>Calytrix superba</i>	P4	6/09/2022	4	331822	6694923
<i>Calytrix superba</i>	P4	6/09/2022	6	331745	6694944
<i>Calytrix superba</i>	P4	6/09/2022	2	331705	6694958
<i>Calytrix superba</i>	P4	6/09/2022	1	331645	6694973
<i>Calytrix superba</i>	P4	6/09/2022	2	331631	6694977
<i>Calytrix superba</i>	P4	6/09/2022	10	331561	6694994
<i>Calytrix superba</i>	P4	6/09/2022	10	331484	6695021
<i>Calytrix superba</i>	P4	6/09/2022	4	331471	6695014
<i>Calytrix superba</i>	P4	6/09/2022	8	331462	6695017
<i>Calytrix superba</i>	P4	6/09/2022	5	331448	6695026
<i>Calytrix superba</i>	P4	6/09/2022	4	331429	6695027
<i>Calytrix superba</i>	P4	6/09/2022	3	331401	6695040
<i>Calytrix superba</i>	P4	6/09/2022	10	331392	6695040
<i>Calytrix superba</i>	P4	6/09/2022	7	331351	6695049
<i>Calytrix superba</i>	P4	6/09/2022	4	331340	6695055
<i>Calytrix superba</i>	P4	6/09/2022	2	331322	6695058
<i>Calytrix superba</i>	P4	6/09/2022	1	334542	6694262
<i>Calytrix superba</i>	P4	6/09/2022	2	334555	6694265
<i>Calytrix superba</i>	P4	6/09/2022	1	334581	6694222
<i>Calytrix superba</i>	P4	6/09/2022	1	334567	6694140
<i>Calytrix superba</i>	P4	6/09/2022	1	334601	6694097
<i>Calytrix superba</i>	P4	6/09/2022	4	334605	6693937
<i>Calytrix superba</i>	P4	6/09/2022	3	334624	6693944
<i>Calytrix superba</i>	P4	6/09/2022	2	334635	6693943
<i>Calytrix superba</i>	P4	6/09/2022	4	334649	6693942
<i>Calytrix superba</i>	P4	6/09/2022	2	334636	6693864
<i>Calytrix superba</i>	P4	7/09/2022	1	334561	6693646
<i>Calytrix superba</i>	P4	8/09/2022	1	331212	6695028
<i>Calytrix superba</i>	P4	8/09/2022	4	331205	6695005
<i>Calytrix superba</i>	P4	8/09/2022	1	331197	6694985
<i>Calytrix superba</i>	P4	8/09/2022	2	331185	6694929
<i>Calytrix superba</i>	P4	8/09/2022	2	331183	6694917
<i>Calytrix superba</i>	P4	8/09/2022	1	331172	6694878
<i>Calytrix superba</i>	P4	8/09/2022	2	331158	6694828
<i>Calytrix superba</i>	P4	8/09/2022	1	331155	6694806

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix superba</i>	P4	8/09/2022	1	331153	6694801
<i>Calytrix superba</i>	P4	8/09/2022	4	331131	6694720
<i>Calytrix superba</i>	P4	8/09/2022	4	331125	6694704
<i>Calytrix superba</i>	P4	8/09/2022	3	331118	6694677
<i>Calytrix superba</i>	P4	8/09/2022	2	331111	6694656
<i>Calytrix superba</i>	P4	8/09/2022	3	331108	6694641
<i>Calytrix superba</i>	P4	8/09/2022	2	331106	6694631
<i>Calytrix superba</i>	P4	8/09/2022	2	331099	6694599
<i>Calytrix superba</i>	P4	8/09/2022	4	331089	6694584
<i>Calytrix superba</i>	P4	8/09/2022	1	331052	6694431
<i>Calytrix superba</i>	P4	8/09/2022	2	331051	6694424
<i>Calytrix superba</i>	P4	8/09/2022	1	331036	6694340
<i>Calytrix superba</i>	P4	8/09/2022	1	331028	6694368
<i>Calytrix superba</i>	P4	8/09/2022	1	331004	6693961
<i>Calytrix superba</i>	P4	8/09/2022	1	331011	6693973
<i>Calytrix superba</i>	P4	8/09/2022	2	331017	6693918
<i>Calytrix superba</i>	P4	9/09/2022	1	334206	6695912
<i>Calytrix superba</i>	P4	9/09/2022	1	334215	6695895
<i>Calytrix superba</i>	P4	9/09/2022	1	334242	6695922
<i>Calytrix superba</i>	P4	9/09/2022	2	334239	6695931
<i>Calytrix superba</i>	P4	9/09/2022	2	334237	6695939
<i>Calytrix superba</i>	P4	9/09/2022	1	334391	6694955
<i>Calytrix superba</i>	P4	9/09/2022	1	334387	6694972
<i>Calytrix superba</i>	P4	9/09/2022	3	334373	6695056
<i>Calytrix superba</i>	P4	9/09/2022	1	334363	6695112
<i>Calytrix superba</i>	P4	9/09/2022	1	334347	6695195
<i>Calytrix superba</i>	P4	9/09/2022	1	334344	6695218
<i>Calytrix superba</i>	P4	9/09/2022	2	334333	6695250
<i>Calytrix superba</i>	P4	9/09/2022	1	334335	6695254
<i>Calytrix superba</i>	P4	9/09/2022	1	334336	6695260
<i>Calytrix superba</i>	P4	9/09/2022	1	334322	6695339
<i>Calytrix superba</i>	P4	9/09/2022	1	334309	6695382
<i>Calytrix superba</i>	P4	9/09/2022	1	334290	6695492
<i>Calytrix superba</i>	P4	9/09/2022	2	334332	6695467
<i>Calytrix superba</i>	P4	9/09/2022	4	334344	6695388
<i>Calytrix superba</i>	P4	9/09/2022	1	334372	6695233
<i>Calytrix superba</i>	P4	9/09/2022	2	334377	6695219
<i>Calytrix superba</i>	P4	9/09/2022	4	334383	6695192
<i>Calytrix superba</i>	P4	9/09/2022	3	334389	6695140
<i>Calytrix superba</i>	P4	9/09/2022	4	334396	6695105

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix superba</i>	P4	9/09/2022	1	334395	6695106
<i>Calytrix superba</i>	P4	9/09/2022	2	334397	6695090
<i>Calytrix superba</i>	P4	9/09/2022	1	332993	6694259
<i>Calytrix superba</i>	P4	9/09/2022	3	332962	6694278
<i>Calytrix superba</i>	P4	9/09/2022	2	332954	6694281
<i>Calytrix superba</i>	P4	9/09/2022	6	332762	6694389
<i>Calytrix superba</i>	P4	9/09/2022	2	332755	6694393
<i>Calytrix superba</i>	P4	9/09/2022	2	332730	6694407
<i>Calytrix superba</i>	P4	9/09/2022	2	332717	6694413
<i>Calytrix superba</i>	P4	9/09/2022	2	332706	6694422
<i>Calytrix superba</i>	P4	9/09/2022	3	332690	6694427
<i>Calytrix superba</i>	P4	9/09/2022	5	332676	6694435
<i>Calytrix superba</i>	P4	9/09/2022	4	332629	6694463
<i>Calytrix superba</i>	P4	9/09/2022	3	332610	6694474
<i>Calytrix superba</i>	P4	9/09/2022	3	332567	6694496
<i>Calytrix superba</i>	P4	9/09/2022	1	332557	6694507
<i>Calytrix superba</i>	P4	9/09/2022	4	332514	6694528
<i>Calytrix superba</i>	P4	9/09/2022	1	332497	6694535
<i>Calytrix superba</i>	P4	9/09/2022	4	332487	6694541
<i>Calytrix superba</i>	P4	9/09/2022	8	332435	6694569
<i>Calytrix superba</i>	P4	9/09/2022	15	332428	6694572
<i>Calytrix superba</i>	P4	9/09/2022	15	332419	6694577
<i>Calytrix superba</i>	P4	9/09/2022	10	332414	6694581
<i>Calytrix superba</i>	P4	9/09/2022	8	332405	6694583
<i>Calytrix superba</i>	P4	9/09/2022	2	332340	6694621
<i>Calytrix superba</i>	P4	9/09/2022	4	332333	6694627
<i>Calytrix superba</i>	P4	9/09/2022	2	332318	6694635
<i>Calytrix superba</i>	P4	9/09/2022	4	332291	6694650
<i>Calytrix superba</i>	P4	9/09/2022	1	332057	6694778
<i>Calytrix superba</i>	P4	9/09/2022	2	331844	6694875
<i>Calytrix superba</i>	P4	9/09/2022	4	331643	6694935
<i>Calytrix superba</i>	P4	9/09/2022	2	331585	6694943
<i>Calytrix superba</i>	P4	9/09/2022	4	331554	6694952
<i>Calytrix superba</i>	P4	9/09/2022	4	331345	6695013
<i>Calytrix superba</i>	P4	12/09/2022	1	333902	6697722
<i>Calytrix superba</i>	P4	12/09/2022	4	333921	6697602
<i>Calytrix superba</i>	P4	12/09/2022	4	333952	6697443
<i>Calytrix superba</i>	P4	12/09/2022	1	333952	6697417
<i>Calytrix superba</i>	P4	12/09/2022	2	333966	6697354
<i>Calytrix superba</i>	P4	12/09/2022	3	333997	6697214

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix superba</i>	P4	12/09/2022	3	334013	6697122
<i>Calytrix superba</i>	P4	12/09/2022	1	334023	6697060
<i>Calytrix superba</i>	P4	12/09/2022	3	334029	6697042
<i>Calytrix superba</i>	P4	12/09/2022	2	334031	6697023
<i>Calytrix superba</i>	P4	12/09/2022	2	334100	6696647
<i>Calytrix superba</i>	P4	12/09/2022	2	331107	6693848
<i>Calytrix superba</i>	P4	12/09/2022	3	331096	6693923
<i>Calytrix superba</i>	P4	12/09/2022	2	331093	6693996
<i>Calytrix superba</i>	P4	12/09/2022	1	331117	6694331
<i>Calytrix superba</i>	P4	12/09/2022	2	331187	6694628
<i>Calytrix superba</i>	P4	12/09/2022	2	331192	6694651
<i>Calytrix superba</i>	P4	12/09/2022	4	331205	6694686
<i>Calytrix superba</i>	P4	12/09/2022	2	331209	6694708
<i>Calytrix superba</i>	P4	12/09/2022	2	331217	6694701
<i>Calytrix superba</i>	P4	12/09/2022	3	331206	6694662
<i>Calytrix superba</i>	P4	12/09/2022	2	331191	6694618
<i>Calytrix superba</i>	P4	12/09/2022	2	331149	6694445
<i>Calytrix superba</i>	P4	12/09/2022	1	331100	6694004
<i>Calytrix superba</i>	P4	12/09/2022	1	331114	6693892
<i>Calytrix superba</i>	P4	12/09/2022	1	331074	6693900
<i>Calytrix superba</i>	P4	12/09/2022	3	331068	6693910
<i>Calytrix superba</i>	P4	12/09/2022	1	331061	6694019
<i>Calytrix superba</i>	P4	12/09/2022	2	331154	6694579
<i>Calytrix superba</i>	P4	12/09/2022	4	331158	6694598
<i>Calytrix superba</i>	P4	12/09/2022	4	331163	6694620
<i>Calytrix superba</i>	P4	12/09/2022	4	331167	6694639
<i>Calytrix superba</i>	P4	12/09/2022	4	331161	6694653
<i>Calytrix superba</i>	P4	12/09/2022	2	331153	6694616
<i>Calytrix superba</i>	P4	12/09/2022	5	331149	6694600
<i>Calytrix superba</i>	P4	12/09/2022	2	331121	6694506
<i>Calytrix superba</i>	P4	12/09/2022	1	331075	6693985
<i>Calytrix superba</i>	P4	12/09/2022	4	331090	6693851
<i>Calytrix superba</i>	P4	14/09/2022	2	334183	6694068
<i>Calytrix superba</i>	P4	14/09/2022	3	334216	6694070
<i>Calytrix superba</i>	P4	14/09/2022	2	334225	6694090
<i>Calytrix superba</i>	P4	14/09/2022	2	334213	6694088
<i>Calytrix superba</i>	P4	14/09/2022	3	334176	6694091
<i>Calytrix superba</i>	P4	14/09/2022	2	334194	6694112
<i>Calytrix superba</i>	P4	14/09/2022	2	334223	6694115
<i>Calytrix superba</i>	P4	14/09/2022	1	334212	6694130

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix superba</i>	P4	14/09/2022	2	334311	6694242
<i>Calytrix superba</i>	P4	14/09/2022	3	334363	6694243
<i>Calytrix superba</i>	P4	14/09/2022	2	334430	6694243
<i>Calytrix superba</i>	P4	14/09/2022	2	334445	6694242
<i>Calytrix superba</i>	P4	14/09/2022	2	334467	6694230
<i>Calytrix superba</i>	P4	14/09/2022	4	334356	6694229
<i>Calytrix superba</i>	P4	14/09/2022	3	334319	6694230
<i>Calytrix superba</i>	P4	14/09/2022	3	334304	6694190
<i>Calytrix superba</i>	P4	14/09/2022	2	334337	6694190
<i>Calytrix superba</i>	P4	14/09/2022	4	334351	6694188
<i>Calytrix superba</i>	P4	14/09/2022	4	334360	6694193
<i>Calytrix superba</i>	P4	14/09/2022	2	334386	6694195
<i>Calytrix superba</i>	P4	14/09/2022	2	334404	6694195
<i>Calytrix superba</i>	P4	14/09/2022	2	334428	6694192
<i>Calytrix superba</i>	P4	14/09/2022	3	334464	6694193
<i>Calytrix superba</i>	P4	14/09/2022	2	334491	6694191
<i>Calytrix superba</i>	P4	14/09/2022	1	334502	6694172
<i>Calytrix superba</i>	P4	14/09/2022	2	334480	6694174
<i>Calytrix superba</i>	P4	14/09/2022	4	334468	6694172
<i>Calytrix superba</i>	P4	14/09/2022	4	334393	6694171
<i>Calytrix superba</i>	P4	14/09/2022	4	334370	6694174
<i>Calytrix superba</i>	P4	14/09/2022	6	334348	6694172
<i>Calytrix superba</i>	P4	14/09/2022	2	334328	6694151
<i>Calytrix superba</i>	P4	14/09/2022	4	334343	6694151
<i>Calytrix superba</i>	P4	14/09/2022	2	334357	6694153
<i>Calytrix superba</i>	P4	14/09/2022	4	334397	6694152
<i>Calytrix superba</i>	P4	14/09/2022	4	334500	6694152
<i>Calytrix superba</i>	P4	14/09/2022	4	334508	6694133
<i>Calytrix superba</i>	P4	14/09/2022	3	334403	6694131
<i>Calytrix superba</i>	P4	14/09/2022	3	334338	6694132
<i>Calytrix superba</i>	P4	14/09/2022	4	334316	6694130
<i>Calytrix superba</i>	P4	14/09/2022	2	334312	6694110
<i>Calytrix superba</i>	P4	14/09/2022	2	334337	6694112
<i>Calytrix superba</i>	P4	14/09/2022	4	334370	6694092
<i>Calytrix superba</i>	P4	14/09/2022	2	334316	6694089
<i>Calytrix superba</i>	P4	14/09/2022	2	334346	6694249
<i>Calytrix superba</i>	P4	14/09/2022	2	334409	6694252
<i>Calytrix superba</i>	P4	14/09/2022	2	334468	6694252
<i>Calytrix superba</i>	P4	14/09/2022	2	334390	6694261
<i>Calytrix superba</i>	P4	14/09/2022	4	331293	6695020

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix superba</i>	P4	14/09/2022	3	331286	6694996
<i>Calytrix superba</i>	P4	14/09/2022	2	331278	6694958
<i>Calytrix superba</i>	P4	14/09/2022	3	331269	6694931
<i>Calytrix superba</i>	P4	14/09/2022	4	331258	6694891
<i>Calytrix superba</i>	P4	14/09/2022	3	331241	6694828
<i>Calytrix superba</i>	P4	14/09/2022	4	331240	6694787
<i>Calytrix superba</i>	P4	14/09/2022	4	331252	6694823
<i>Calytrix superba</i>	P4	14/09/2022	4	331283	6694943
<i>Calytrix superba</i>	P4	14/09/2022	2	331290	6694970
<i>Calytrix superba</i>	P4	14/09/2022	6	331293	6694983
<i>Calytrix superba</i>	P4	14/09/2022	2	331303	6695017
<i>Calytrix superba</i>	P4	14/09/2022	1	331667	6696410
<i>Calytrix superba</i>	P4	14/09/2022	2	331684	6696475
<i>Calytrix superba</i>	P4	14/09/2022	2	331687	6696488
<i>Calytrix superba</i>	P4	14/09/2022	2	331688	6696449
<i>Calytrix superba</i>	P4	14/09/2022	2	331685	6696436
<i>Calytrix superba</i>	P4	14/09/2022	2	331680	6696416
<i>Calytrix superba</i>	P4	14/09/2022	4	331657	6696332
<i>Calytrix superba</i>	P4	14/09/2022	2	331609	6696283
<i>Calytrix superba</i>	P4	14/09/2022	2	331586	6696199
<i>Calytrix superba</i>	P4	14/09/2022	4	331580	6696175
<i>Calytrix superba</i>	P4	14/09/2022	3	331574	6696151
<i>Calytrix superba</i>	P4	14/09/2022	4	331563	6696103
<i>Calytrix superba</i>	P4	14/09/2022	4	331552	6696059
<i>Calytrix superba</i>	P4	14/09/2022	3	331538	6696004
<i>Calytrix superba</i>	P4	14/09/2022	4	331523	6695953
<i>Calytrix superba</i>	P4	14/09/2022	2	331458	6695715
<i>Calytrix superba</i>	P4	14/09/2022	4	331491	6695718
<i>Calytrix superba</i>	P4	14/09/2022	4	331493	6695733
<i>Calytrix superba</i>	P4	14/09/2022	2	331566	6695996
<i>Calytrix superba</i>	P4	14/09/2022	4	331568	6696007
<i>Calytrix superba</i>	P4	14/09/2022	5	331569	6696022
<i>Calytrix superba</i>	P4	14/09/2022	2	331578	6696032
<i>Calytrix superba</i>	P4	14/09/2022	4	331582	6696056
<i>Calytrix superba</i>	P4	14/09/2022	4	331586	6696081
<i>Calytrix superba</i>	P4	14/09/2022	5	331600	6696125
<i>Calytrix superba</i>	P4	14/09/2022	3	331603	6696138
<i>Calytrix superba</i>	P4	14/09/2022	2	331614	6696173
<i>Calytrix superba</i>	P4	14/09/2022	2	331334	6695249
<i>Calytrix superba</i>	P4	14/09/2022	2	331335	6695259

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix superba</i>	P4	14/09/2022	4	331335	6695263
<i>Calytrix superba</i>	P4	14/09/2022	5	331343	6695284
<i>Calytrix superba</i>	P4	14/09/2022	4	331346	6695302
<i>Calytrix superba</i>	P4	14/09/2022	2	331374	6695398
<i>Calytrix superba</i>	P4	14/09/2022	6	331376	6695407
<i>Calytrix superba</i>	P4	14/09/2022	4	331377	6695416
<i>Calytrix superba</i>	P4	14/09/2022	4	331387	6695453
<i>Calytrix superba</i>	P4	14/09/2022	4	331404	6695503
<i>Calytrix superba</i>	P4	14/09/2022	4	331412	6695548
<i>Calytrix superba</i>	P4	14/09/2022	5	331431	6695615
<i>Calytrix superba</i>	P4	14/09/2022	3	331446	6695670
<i>Calytrix superba</i>	P4	14/09/2022	4	331485	6695692
<i>Calytrix superba</i>	P4	14/09/2022	2	331473	6695648
<i>Calytrix superba</i>	P4	14/09/2022	3	331468	6695628
<i>Calytrix superba</i>	P4	14/09/2022	4	331457	6695591
<i>Calytrix superba</i>	P4	14/09/2022	3	331451	6695572
<i>Calytrix superba</i>	P4	14/09/2022	2	331434	6695501
<i>Calytrix superba</i>	P4	14/09/2022	3	331424	6695470
<i>Calytrix superba</i>	P4	14/09/2022	4	331419	6695439
<i>Calytrix superba</i>	P4	14/09/2022	4	331405	6695396
<i>Calytrix superba</i>	P4	14/09/2022	3	331397	6695362
<i>Calytrix superba</i>	P4	14/09/2022	4	331368	6695256
<i>Calytrix superba</i>	P4	14/09/2022	6	331366	6695240
<i>Calytrix superba</i>	P4	14/09/2022	4	331330	6695121
<i>Calytrix superba</i>	P4	14/09/2022	3	331326	6695103
<i>Calytrix superba</i>	P4	14/09/2022	2	331320	6695080
<i>Calytrix superba</i>	P4	14/09/2022	4	331315	6695070
<i>Calytrix superba</i>	P4	12/09/2022	2	331285	6695030
<i>Calytrix superba</i>	P4	12/09/2022	4	331282	6695019
<i>Calytrix superba</i>	P4	12/09/2022	5	331279	6695004
<i>Calytrix superba</i>	P4	12/09/2022	3	331272	6694989
<i>Calytrix superba</i>	P4	12/09/2022	2	331267	6694968
<i>Calytrix superba</i>	P4	12/09/2022	1	331261	6694956
<i>Calytrix superba</i>	P4	12/09/2022	2	331255	6694918
<i>Calytrix superba</i>	P4	12/09/2022	6	331244	6694878
<i>Calytrix superba</i>	P4	12/09/2022	2	331232	6694842
<i>Calytrix superba</i>	P4	12/09/2022	3	331225	6694804
<i>Calytrix superba</i>	P4	12/09/2022	3	331215	6694786
<i>Calytrix superba</i>	P4	12/09/2022	5	331202	6694735
<i>Calytrix superba</i>	P4	12/09/2022	3	331189	6694685

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix superba</i>	P4	12/09/2022	2	331188	6694670
<i>Calytrix superba</i>	P4	12/09/2022	1	331168	6694672
<i>Calytrix superba</i>	P4	12/09/2022	1	331174	6694687
<i>Calytrix superba</i>	P4	12/09/2022	4	331197	6694787
<i>Calytrix superba</i>	P4	12/09/2022	1	331211	6694822
<i>Calytrix superba</i>	P4	12/09/2022	2	331228	6694904
<i>Calytrix superba</i>	P4	12/09/2022	2	331238	6694935
<i>Calytrix superba</i>	P4	12/09/2022	3	331243	6694954
<i>Calytrix superba</i>	P4	12/09/2022	2	331246	6694965
<i>Calytrix superba</i>	P4	14/09/2022	1	331320	6695255
<i>Calytrix superba</i>	P4	14/09/2022	2	331327	6695264
<i>Calytrix superba</i>	P4	14/09/2022	3	331332	6695289
<i>Calytrix superba</i>	P4	14/09/2022	2	331340	6695336
<i>Calytrix superba</i>	P4	14/09/2022	3	331358	6695367
<i>Calytrix superba</i>	P4	14/09/2022	2	331360	6695396
<i>Calytrix superba</i>	P4	14/09/2022	3	331364	6695407
<i>Calytrix superba</i>	P4	14/09/2022	4	331368	6695417
<i>Calytrix superba</i>	P4	14/09/2022	2	331370	6695428
<i>Calytrix superba</i>	P4	14/09/2022	2	331377	6695450
<i>Calytrix superba</i>	P4	14/09/2022	3	331387	6695486
<i>Calytrix superba</i>	P4	14/09/2022	2	331389	6695496
<i>Calytrix superba</i>	P4	14/09/2022	3	331404	6695549
<i>Calytrix superba</i>	P4	14/09/2022	3	331417	6695613
<i>Calytrix superba</i>	P4	14/09/2022	3	331434	6695660
<i>Calytrix superba</i>	P4	14/09/2022	2	331443	6695692
<i>Calytrix superba</i>	P4	14/09/2022	2	331461	6695638
<i>Calytrix superba</i>	P4	14/09/2022	3	331443	6695578
<i>Calytrix superba</i>	P4	14/09/2022	2	331398	6695411
<i>Calytrix superba</i>	P4	14/09/2022	4	331367	6695284
<i>Calytrix superba</i>	P4	14/09/2022	3	331314	6695097
<i>Calytrix superba</i>	P4	14/09/2022	4	331311	6695083
<i>Calytrix superba</i>	P4	12/09/2022	3	331271	6695018
<i>Calytrix superba</i>	P4	12/09/2022	2	331261	6694974
<i>Calytrix superba</i>	P4	12/09/2022	2	331257	6694967
<i>Calytrix superba</i>	P4	12/09/2022	3	331234	6694883
<i>Calytrix superba</i>	P4	12/09/2022	4	331225	6694846
<i>Calytrix superba</i>	P4	12/09/2022	2	331217	6694827
<i>Calytrix superba</i>	P4	12/09/2022	3	331210	6694798
<i>Calytrix superba</i>	P4	12/09/2022	4	331210	6694788
<i>Calytrix superba</i>	P4	12/09/2022	1	331203	6694767

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix superba</i>	P4	12/09/2022	5	331184	6694700
<i>Calytrix superba</i>	P4	12/09/2022	4	331156	6694677
<i>Calytrix superba</i>	P4	12/09/2022	3	331169	6694708
<i>Calytrix superba</i>	P4	12/09/2022	2	331193	6694793
<i>Calytrix superba</i>	P4	12/09/2022	3	331192	6694805
<i>Calytrix superba</i>	P4	12/09/2022	4	331201	6694834
<i>Calytrix superba</i>	P4	12/09/2022	2	331220	6694914
<i>Calytrix superba</i>	P4	12/09/2022	3	331225	6694932
<i>Calytrix superba</i>	P4	12/09/2022	3	331229	6694944
<i>Calytrix superba</i>	P4	12/09/2022	2	331236	6694975
<i>Calytrix superba</i>	P4	12/09/2022	1	331255	6695036
<i>Calytrix superba</i>	P4	14/09/2022	3	331590	6696292
<i>Calytrix superba</i>	P4	14/09/2022	8	331586	6696257
<i>Calytrix superba</i>	P4	14/09/2022	3	331579	6696246
<i>Calytrix superba</i>	P4	14/09/2022	6	331565	6696193
<i>Calytrix superba</i>	P4	14/09/2022	2	331547	6696127
<i>Calytrix superba</i>	P4	14/09/2022	4	331537	6696099
<i>Calytrix superba</i>	P4	14/09/2022	8	331537	6696084
<i>Calytrix superba</i>	P4	14/09/2022	3	331524	6696041
<i>Calytrix superba</i>	P4	14/09/2022	3	331515	6695990
<i>Calytrix superba</i>	P4	14/09/2022	2	331469	6695717
<i>Calytrix superba</i>	P4	14/09/2022	4	331540	6695980
<i>Calytrix superba</i>	P4	14/09/2022	3	331542	6695998
<i>Calytrix superba</i>	P4	14/09/2022	6	331555	6696036
<i>Calytrix superba</i>	P4	14/09/2022	3	331562	6696066
<i>Calytrix superba</i>	P4	14/09/2022	5	331567	6696080
<i>Calytrix superba</i>	P4	14/09/2022	4	331577	6696113
<i>Calytrix superba</i>	P4	14/09/2022	3	331577	6696123
<i>Calytrix superba</i>	P4	14/09/2022	7	331585	6696159
<i>Calytrix superba</i>	P4	14/09/2022	4	331600	6696195
<i>Calytrix superba</i>	P4	14/09/2022	3	331601	6696210
<i>Calytrix superba</i>	P4	14/09/2022	4	331610	6696239
<i>Calytrix superba</i>	P4	14/09/2022	3	331622	6696283
<i>Calytrix superba</i>	P4	14/09/2022	10	331263	6695089
<i>Calytrix superba</i>	P4	14/09/2022	12	331313	6695261
<i>Calytrix superba</i>	P4	14/09/2022	15	331319	6695270
<i>Calytrix superba</i>	P4	14/09/2022	4	331321	6695286
<i>Calytrix superba</i>	P4	14/09/2022	8	331357	6695414
<i>Calytrix superba</i>	P4	14/09/2022	11	331361	6695428
<i>Calytrix superba</i>	P4	14/09/2022	5	331366	6695452

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix superba</i>	P4	14/09/2022	4	331371	6695467
<i>Calytrix superba</i>	P4	14/09/2022	4	331423	6695666
<i>Calytrix superba</i>	P4	14/09/2022	2	331435	6695698
<i>Calytrix superba</i>	P4	14/09/2022	3	331464	6695693
<i>Calytrix superba</i>	P4	14/09/2022	3	331454	6695665
<i>Calytrix superba</i>	P4	14/09/2022	2	331443	6695621
<i>Calytrix superba</i>	P4	14/09/2022	2	331406	6695485
<i>Calytrix superba</i>	P4	14/09/2022	4	331393	6695437
<i>Calytrix superba</i>	P4	14/09/2022	3	331382	6695398
<i>Calytrix superba</i>	P4	14/09/2022	1	331354	6695278
<i>Calytrix superba</i>	P4	14/09/2022	12	331347	6695259
<i>Calytrix superba</i>	P4	14/09/2022	3	331327	6695182
<i>Calytrix superba</i>	P4	5/09/2022	2	333472	6694123
<i>Calytrix superba</i>	P4	6/09/2022	2	333098	6694242
<i>Calytrix superba</i>	P4	9/09/2022	2	332232	6694684
<i>Calytrix superba</i>	P4	12/09/2022	2	331144	6694540
<i>Calytrix superba</i>	P4	8/09/2022	1	330965	6694195
<i>Calytrix superba</i>	P4	8/09/2022	2	331017	6694048
<i>Calytrix superba</i>	P4	8/09/2022	6	331023	6693998
<i>Calytrix superba</i>	P4	9/09/2022	6	334331	6695285
<i>Calytrix superba</i>	P4	9/09/2022	2	334322	6695488
<i>Calytrix superba</i>	P4	9/09/2022	2	334348	6695346
<i>Calytrix superba</i>	P4	9/09/2022	2	334353	6695314
<i>Calytrix superba</i>	P4	9/09/2022	1	334367	6695257
<i>Calytrix superba</i>	P4	9/09/2022	5	334374	6695211
<i>Calytrix superba</i>	P4	9/09/2022	2	334387	6695115
<i>Calytrix superba</i>	P4	9/09/2022	2	334400	6695068
<i>Calytrix superba</i>	P4	9/09/2022	2	332916	6694327
<i>Calytrix superba</i>	P4	9/09/2022	2	332620	6694491
<i>Calytrix superba</i>	P4	9/09/2022	2	332604	6694501
<i>Calytrix superba</i>	P4	9/09/2022	5	331877	6694884
<i>Calytrix superba</i>	P4	9/09/2022	8	331835	6694894
<i>Calytrix superba</i>	P4	9/09/2022	3	331807	6694909
<i>Calytrix superba</i>	P4	9/09/2022	4	331794	6694917
<i>Calytrix superba</i>	P4	9/09/2022	1	332714	6694442
<i>Calytrix superba</i>	P4	9/09/2022	6	332699	6694449
<i>Calytrix superba</i>	P4	9/09/2022	2	332682	6694457
<i>Calytrix superba</i>	P4	9/09/2022	3	332594	6694507
<i>Calytrix superba</i>	P4	9/09/2022	2	332455	6694584
<i>Calytrix superba</i>	P4	9/09/2022	2	332440	6694593

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix superba</i>	P4	9/09/2022	6	332418	6694605
<i>Calytrix superba</i>	P4	9/09/2022	8	332389	6694621
<i>Calytrix superba</i>	P4	9/09/2022	6	332350	6694645
<i>Calytrix superba</i>	P4	5/09/2022	5	334145	6694035
<i>Calytrix superba</i>	P4	5/09/2022	1	333863	6694025
<i>Calytrix superba</i>	P4	5/09/2022	1	333857	6694029
<i>Calytrix superba</i>	P4	5/09/2022	1	333450	6694073
<i>Calytrix superba</i>	P4	5/09/2022	1	333444	6694077
<i>Calytrix superba</i>	P4	5/09/2022	1	333439	6694078
<i>Calytrix superba</i>	P4	6/09/2022	1	331218	6695239
<i>Calytrix superba</i>	P4	6/09/2022	1	331226	6695270
<i>Calytrix superba</i>	P4	6/09/2022	2	331237	6695310
<i>Calytrix superba</i>	P4	6/09/2022	2	331254	6695381
<i>Calytrix superba</i>	P4	6/09/2022	1	331258	6695390
<i>Calytrix superba</i>	P4	6/09/2022	1	331259	6695403
<i>Calytrix superba</i>	P4	6/09/2022	1	331266	6695421
<i>Calytrix superba</i>	P4	6/09/2022	1	331293	6695534
<i>Calytrix superba</i>	P4	6/09/2022	1	331356	6695495
<i>Calytrix superba</i>	P4	6/09/2022	1	331355	6695486
<i>Calytrix superba</i>	P4	6/09/2022	1	331520	6696358
<i>Calytrix superba</i>	P4	6/09/2022	2	331615	6696445
<i>Calytrix superba</i>	P4	6/09/2022	1	331606	6696416
<i>Calytrix superba</i>	P4	6/09/2022	4	331572	6696287
<i>Calytrix superba</i>	P4	6/09/2022	1	331563	6696267
<i>Calytrix superba</i>	P4	6/09/2022	1	331554	6696235
<i>Calytrix superba</i>	P4	6/09/2022	1	331522	6696097
<i>Calytrix superba</i>	P4	6/09/2022	1	331521	6696089
<i>Calytrix superba</i>	P4	6/09/2022	1	331384	6695581
<i>Calytrix superba</i>	P4	6/09/2022	1	332973	6694260
<i>Calytrix superba</i>	P4	6/09/2022	1	332832	6694336
<i>Calytrix superba</i>	P4	6/09/2022	1	332755	6694384
<i>Calytrix superba</i>	P4	6/09/2022	1	332722	6694401
<i>Calytrix superba</i>	P4	6/09/2022	3	332714	6694407
<i>Calytrix superba</i>	P4	6/09/2022	3	332667	6694429
<i>Calytrix superba</i>	P4	6/09/2022	2	332579	6694479
<i>Calytrix superba</i>	P4	6/09/2022	3	332561	6694490
<i>Calytrix superba</i>	P4	6/09/2022	1	332534	6694504
<i>Calytrix superba</i>	P4	6/09/2022	5	332492	6694528
<i>Calytrix superba</i>	P4	6/09/2022	2	332477	6694534
<i>Calytrix superba</i>	P4	6/09/2022	6	332468	6694540

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix superba</i>	P4	6/09/2022	6	332457	6694545
<i>Calytrix superba</i>	P4	6/09/2022	3	332448	6694553
<i>Calytrix superba</i>	P4	6/09/2022	3	332436	6694558
<i>Calytrix superba</i>	P4	6/09/2022	6	332420	6694568
<i>Calytrix superba</i>	P4	6/09/2022	5	332395	6694584
<i>Calytrix superba</i>	P4	6/09/2022	3	332384	6694587
<i>Calytrix superba</i>	P4	6/09/2022	6	332376	6694590
<i>Calytrix superba</i>	P4	6/09/2022	4	332367	6694597
<i>Calytrix superba</i>	P4	6/09/2022	3	332353	6694603
<i>Calytrix superba</i>	P4	6/09/2022	6	332332	6694617
<i>Calytrix superba</i>	P4	6/09/2022	2	332270	6694649
<i>Calytrix superba</i>	P4	6/09/2022	2	332259	6694657
<i>Calytrix superba</i>	P4	6/09/2022	1	332223	6694680
<i>Calytrix superba</i>	P4	6/09/2022	3	332213	6694683
<i>Calytrix superba</i>	P4	6/09/2022	1	331971	6694806
<i>Calytrix superba</i>	P4	6/09/2022	1	331884	6694847
<i>Calytrix superba</i>	P4	6/09/2022	1	331837	6694867
<i>Calytrix superba</i>	P4	6/09/2022	1	331794	6694878
<i>Calytrix superba</i>	P4	6/09/2022	1	331731	6694897
<i>Calytrix superba</i>	P4	6/09/2022	1	331601	6694931
<i>Calytrix superba</i>	P4	6/09/2022	1	331586	6694936
<i>Calytrix superba</i>	P4	6/09/2022	2	331552	6694944
<i>Calytrix superba</i>	P4	6/09/2022	1	331537	6694946
<i>Calytrix superba</i>	P4	6/09/2022	1	331492	6694959
<i>Calytrix superba</i>	P4	6/09/2022	2	331470	6694966
<i>Calytrix superba</i>	P4	6/09/2022	4	331412	6694981
<i>Calytrix superba</i>	P4	6/09/2022	2	331330	6695002
<i>Calytrix superba</i>	P4	7/09/2022	2	334549	6694281
<i>Calytrix superba</i>	P4	7/09/2022	2	334579	6694280
<i>Calytrix superba</i>	P4	7/09/2022	1	334596	6693964
<i>Calytrix superba</i>	P4	8/09/2022	1	331229	6695008
<i>Calytrix superba</i>	P4	8/09/2022	1	331191	6694868
<i>Calytrix superba</i>	P4	8/09/2022	3	331190	6694860
<i>Calytrix superba</i>	P4	8/09/2022	1	331183	6694840
<i>Calytrix superba</i>	P4	8/09/2022	2	331172	6694804
<i>Calytrix superba</i>	P4	8/09/2022	1	331171	6694798
<i>Calytrix superba</i>	P4	8/09/2022	1	331168	6694786
<i>Calytrix superba</i>	P4	8/09/2022	1	331162	6694763
<i>Calytrix superba</i>	P4	8/09/2022	1	331156	6694748
<i>Calytrix superba</i>	P4	8/09/2022	1	331155	6694742

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix superba</i>	P4	8/09/2022	1	331136	6694667
<i>Calytrix superba</i>	P4	8/09/2022	2	331131	6694647
<i>Calytrix superba</i>	P4	8/09/2022	1	331128	6694637
<i>Calytrix superba</i>	P4	8/09/2022	2	331121	6694616
<i>Calytrix superba</i>	P4	8/09/2022	1	331095	6694514
<i>Calytrix superba</i>	P4	8/09/2022	2	331009	6694468
<i>Calytrix superba</i>	P4	8/09/2022	2	331012	6694476
<i>Calytrix superba</i>	P4	8/09/2022	1	331042	6694582
<i>Calytrix superba</i>	P4	8/09/2022	2	331046	6694606
<i>Calytrix superba</i>	P4	8/09/2022	4	331049	6694622
<i>Calytrix superba</i>	P4	8/09/2022	2	331061	6694659
<i>Calytrix superba</i>	P4	8/09/2022	4	331070	6694697
<i>Calytrix superba</i>	P4	8/09/2022	3	331075	6694711
<i>Calytrix superba</i>	P4	8/09/2022	1	331110	6694843
<i>Calytrix superba</i>	P4	8/09/2022	1	331135	6694927
<i>Calytrix superba</i>	P4	8/09/2022	2	331140	6694950
<i>Calytrix superba</i>	P4	8/09/2022	4	331141	6694957
<i>Calytrix superba</i>	P4	8/09/2022	3	331146	6694979
<i>Calytrix superba</i>	P4	8/09/2022	1	330970	6694253
<i>Calytrix superba</i>	P4	8/09/2022	1	331037	6693933
<i>Calytrix superba</i>	P4	8/09/2022	1	331043	6693891
<i>Calytrix superba</i>	P4	9/09/2022	1	334112	6696569
<i>Calytrix superba</i>	P4	9/09/2022	1	334117	6696543
<i>Calytrix superba</i>	P4	9/09/2022	1	334152	6696360
<i>Calytrix superba</i>	P4	9/09/2022	1	334157	6696343
<i>Calytrix superba</i>	P4	9/09/2022	3	334153	6694038
<i>Calytrix superba</i>	P4	9/09/2022	3	334135	6694038
<i>Calytrix superba</i>	P4	9/09/2022	2	334103	6694037
<i>Calytrix superba</i>	P4	9/09/2022	1	334012	6694035
<i>Calytrix superba</i>	P4	9/09/2022	4	333999	6694034
<i>Calytrix superba</i>	P4	9/09/2022	1	333879	6694034
<i>Calytrix superba</i>	P4	9/09/2022	1	333803	6694036
<i>Calytrix superba</i>	P4	9/09/2022	1	333775	6694042
<i>Calytrix superba</i>	P4	9/09/2022	1	333704	6694048
<i>Calytrix superba</i>	P4	9/09/2022	1	333515	6694072
<i>Calytrix superba</i>	P4	9/09/2022	1	331339	6695018
<i>Calytrix superba</i>	P4	9/09/2022	4	331318	6695023
<i>Calytrix superba</i>	P4	5/09/2022	1	334137	6694019
<i>Calytrix superba</i>	P4	5/09/2022	1	334006	6694022
<i>Calytrix superba</i>	P4	5/09/2022	1	333894	6694016

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix superba</i>	P4	5/09/2022	1	333870	6694017
<i>Calytrix superba</i>	P4	5/09/2022	3	333859	6694014
<i>Calytrix superba</i>	P4	5/09/2022	1	333811	6694015
<i>Calytrix superba</i>	P4	5/09/2022	2	333658	6694027
<i>Calytrix superba</i>	P4	5/09/2022	4	333638	6694036
<i>Calytrix superba</i>	P4	5/09/2022	3	333625	6694031
<i>Calytrix superba</i>	P4	5/09/2022	3	333588	6694040
<i>Calytrix superba</i>	P4	5/09/2022	2	333534	6694039
<i>Calytrix superba</i>	P4	5/09/2022	2	333519	6694048
<i>Calytrix superba</i>	P4	5/09/2022	3	331198	6695198
<i>Calytrix superba</i>	P4	5/09/2022	6	331216	6695270
<i>Calytrix superba</i>	P4	5/09/2022	3	331219	6695289
<i>Calytrix superba</i>	P4	5/09/2022	3	331231	6695340
<i>Calytrix superba</i>	P4	5/09/2022	2	331258	6695441
<i>Calytrix superba</i>	P4	5/09/2022	2	331274	6695487
<i>Calytrix superba</i>	P4	5/09/2022	2	331283	6695517
<i>Calytrix superba</i>	P4	5/09/2022	10	331284	6695523
<i>Calytrix superba</i>	P4	5/09/2022	2	331293	6695563
<i>Calytrix superba</i>	P4	5/09/2022	2	331365	6695491
<i>Calytrix superba</i>	P4	5/09/2022	4	331364	6695479
<i>Calytrix superba</i>	P4	5/09/2022	6	331353	6695440
<i>Calytrix superba</i>	P4	5/09/2022	3	331348	6695423
<i>Calytrix superba</i>	P4	5/09/2022	13	331350	6695414
<i>Calytrix superba</i>	P4	5/09/2022	8	331337	6695380
<i>Calytrix superba</i>	P4	5/09/2022	6	331313	6695273
<i>Calytrix superba</i>	P4	5/09/2022	13	331311	6695263
<i>Calytrix superba</i>	P4	5/09/2022	9	331299	6695234
<i>Calytrix superba</i>	P4	5/09/2022	6	331286	6695197
<i>Calytrix superba</i>	P4	5/09/2022	3	331301	6695584
<i>Calytrix superba</i>	P4	5/09/2022	3	331310	6695620
<i>Calytrix superba</i>	P4	5/09/2022	6	331320	6695655
<i>Calytrix superba</i>	P4	5/09/2022	2	331328	6695696
<i>Calytrix superba</i>	P4	5/09/2022	2	331428	6696056
<i>Calytrix superba</i>	P4	5/09/2022	4	331448	6696136
<i>Calytrix superba</i>	P4	5/09/2022	2	331466	6696208
<i>Calytrix superba</i>	P4	5/09/2022	3	331486	6696281
<i>Calytrix superba</i>	P4	5/09/2022	2	331496	6696314
<i>Calytrix superba</i>	P4	5/09/2022	2	331534	6696451
<i>Calytrix superba</i>	P4	5/09/2022	6	331643	6696508
<i>Calytrix superba</i>	P4	5/09/2022	7	331611	6696392

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix superba</i>	P4	5/09/2022	3	331595	6696325
<i>Calytrix superba</i>	P4	6/09/2022	2	331584	6696306
<i>Calytrix superba</i>	P4	6/09/2022	3	331569	6696230
<i>Calytrix superba</i>	P4	6/09/2022	2	331569	6696221
<i>Calytrix superba</i>	P4	6/09/2022	1	331547	6696160
<i>Calytrix superba</i>	P4	6/09/2022	3	331549	6696147
<i>Calytrix superba</i>	P4	6/09/2022	5	331544	6696132
<i>Calytrix superba</i>	P4	6/09/2022	3	331532	6696104
<i>Calytrix superba</i>	P4	6/09/2022	6	331528	6696076
<i>Calytrix superba</i>	P4	6/09/2022	7	331507	6696015
<i>Calytrix superba</i>	P4	6/09/2022	1	331438	6695771
<i>Calytrix superba</i>	P4	6/09/2022	1	331382	6695539
<i>Calytrix superba</i>	P4	6/09/2022	1	333001	6694235
<i>Calytrix superba</i>	P4	6/09/2022	3	332836	6694328
<i>Calytrix superba</i>	P4	6/09/2022	4	332776	6694358
<i>Calytrix superba</i>	P4	6/09/2022	4	332747	6694376
<i>Calytrix superba</i>	P4	6/09/2022	2	332737	6694378
<i>Calytrix superba</i>	P4	6/09/2022	3	332729	6694384
<i>Calytrix superba</i>	P4	6/09/2022	4	332663	6694417
<i>Calytrix superba</i>	P4	6/09/2022	3	332634	6694435
<i>Calytrix superba</i>	P4	6/09/2022	1	332605	6694454
<i>Calytrix superba</i>	P4	6/09/2022	14	332528	6694493
<i>Calytrix superba</i>	P4	6/09/2022	13	332517	6694503
<i>Calytrix superba</i>	P4	6/09/2022	7	332501	6694511
<i>Calytrix superba</i>	P4	6/09/2022	13	332490	6694517
<i>Calytrix superba</i>	P4	6/09/2022	11	332474	6694526
<i>Calytrix superba</i>	P4	6/09/2022	16	332458	6694536
<i>Calytrix superba</i>	P4	6/09/2022	12	332437	6694548
<i>Calytrix superba</i>	P4	6/09/2022	7	332426	6694549
<i>Calytrix superba</i>	P4	6/09/2022	20	332399	6694566
<i>Calytrix superba</i>	P4	6/09/2022	12	332384	6694574
<i>Calytrix superba</i>	P4	6/09/2022	8	332370	6694585
<i>Calytrix superba</i>	P4	6/09/2022	4	332315	6694617
<i>Calytrix superba</i>	P4	6/09/2022	7	332297	6694620
<i>Calytrix superba</i>	P4	6/09/2022	6	332236	6694656
<i>Calytrix superba</i>	P4	6/09/2022	4	332214	6694668
<i>Calytrix superba</i>	P4	6/09/2022	5	332197	6694678
<i>Calytrix superba</i>	P4	6/09/2022	4	332074	6694748
<i>Calytrix superba</i>	P4	6/09/2022	2	332037	6694761
<i>Calytrix superba</i>	P4	6/09/2022	3	332011	6694777

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix superba</i>	P4	6/09/2022	2	331957	6694796
<i>Calytrix superba</i>	P4	6/09/2022	2	331917	6694816
<i>Calytrix superba</i>	P4	6/09/2022	6	331828	6694855
<i>Calytrix superba</i>	P4	6/09/2022	2	331823	6694862
<i>Calytrix superba</i>	P4	6/09/2022	14	331794	6694866
<i>Calytrix superba</i>	P4	6/09/2022	3	331778	6694870
<i>Calytrix superba</i>	P4	6/09/2022	2	331759	6694879
<i>Calytrix superba</i>	P4	6/09/2022	3	331749	6694882
<i>Calytrix superba</i>	P4	6/09/2022	2	331748	6694884
<i>Calytrix superba</i>	P4	6/09/2022	3	331697	6694895
<i>Calytrix superba</i>	P4	6/09/2022	3	331654	6694905
<i>Calytrix superba</i>	P4	6/09/2022	4	331622	6694915
<i>Calytrix superba</i>	P4	6/09/2022	2	331606	6694918
<i>Calytrix superba</i>	P4	6/09/2022	1	331549	6694932
<i>Calytrix superba</i>	P4	6/09/2022	5	331538	6694939
<i>Calytrix superba</i>	P4	6/09/2022	2	331504	6694945
<i>Calytrix superba</i>	P4	6/09/2022	4	331389	6694973
<i>Calytrix superba</i>	P4	6/09/2022	6	331379	6694982
<i>Calytrix superba</i>	P4	6/09/2022	7	331334	6694994
<i>Calytrix superba</i>	P4	6/09/2022	2	334554	6694293
<i>Calytrix superba</i>	P4	6/09/2022	4	334564	6694293
<i>Calytrix superba</i>	P4	6/09/2022	2	334559	6694213
<i>Calytrix superba</i>	P4	6/09/2022	2	334551	6694133
<i>Calytrix superba</i>	P4	6/09/2022	2	334609	6694133
<i>Calytrix superba</i>	P4	6/09/2022	1	334603	6693895
<i>Calytrix superba</i>	P4	8/09/2022	1	331211	6694910
<i>Calytrix superba</i>	P4	8/09/2022	1	331207	6694899
<i>Calytrix superba</i>	P4	8/09/2022	3	331167	6694746
<i>Calytrix superba</i>	P4	8/09/2022	3	331155	6694665
<i>Calytrix superba</i>	P4	8/09/2022	1	331143	6694660
<i>Calytrix superba</i>	P4	8/09/2022	1	331141	6694651
<i>Calytrix superba</i>	P4	8/09/2022	7	331140	6694644
<i>Calytrix superba</i>	P4	8/09/2022	1	331138	6694625
<i>Calytrix superba</i>	P4	8/09/2022	3	331132	6694615
<i>Calytrix superba</i>	P4	8/09/2022	6	331131	6694605
<i>Calytrix superba</i>	P4	8/09/2022	2	331126	6694589
<i>Calytrix superba</i>	P4	8/09/2022	6	331119	6694570
<i>Calytrix superba</i>	P4	8/09/2022	2	331105	6694517
<i>Calytrix superba</i>	P4	8/09/2022	3	331090	6694470
<i>Calytrix superba</i>	P4	8/09/2022	4	331090	6694458

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix superba</i>	P4	8/09/2022	4	331019	6694540
<i>Calytrix superba</i>	P4	8/09/2022	3	331033	6694588
<i>Calytrix superba</i>	P4	8/09/2022	8	331038	6694620
<i>Calytrix superba</i>	P4	8/09/2022	1	331043	6694630
<i>Calytrix superba</i>	P4	8/09/2022	3	331047	6694648
<i>Calytrix superba</i>	P4	8/09/2022	6	331057	6694687
<i>Calytrix superba</i>	P4	8/09/2022	3	331062	6694701
<i>Calytrix superba</i>	P4	8/09/2022	3	331062	6694708
<i>Calytrix superba</i>	P4	8/09/2022	2	331074	6694742
<i>Calytrix superba</i>	P4	8/09/2022	3	331081	6694761
<i>Calytrix superba</i>	P4	8/09/2022	4	331086	6694791
<i>Calytrix superba</i>	P4	8/09/2022	3	331095	6694824
<i>Calytrix superba</i>	P4	8/09/2022	3	331110	6694882
<i>Calytrix superba</i>	P4	8/09/2022	2	331114	6694899
<i>Calytrix superba</i>	P4	8/09/2022	4	331135	6694980
<i>Calytrix superba</i>	P4	8/09/2022	3	331133	6694950
<i>Calytrix superba</i>	P4	8/09/2022	2	331142	6695000
<i>Calytrix superba</i>	P4	8/09/2022	8	330961	6693910
<i>Calytrix superba</i>	P4	8/09/2022	4	330951	6694023
<i>Calytrix superba</i>	P4	8/09/2022	1	331043	6693997
<i>Calytrix superba</i>	P4	8/09/2022	2	331053	6693888
<i>Calytrix superba</i>	P4	8/09/2022	3	334161	6696166
<i>Calytrix superba</i>	P4	8/09/2022	1	334119	6696402
<i>Calytrix superba</i>	P4	8/09/2022	1	334117	6696571
<i>Calytrix superba</i>	P4	8/09/2022	6	334122	6696551
<i>Calytrix superba</i>	P4	8/09/2022	2	334129	6696515
<i>Calytrix superba</i>	P4	8/09/2022	3	334134	6696485
<i>Calytrix superba</i>	P4	8/09/2022	3	334142	6696436
<i>Calytrix superba</i>	P4	8/09/2022	2	334144	6696426
<i>Calytrix superba</i>	P4	8/09/2022	2	334150	6696405
<i>Calytrix superba</i>	P4	8/09/2022	3	334162	6696347
<i>Calytrix superba</i>	P4	8/09/2022	2	334197	6696159
<i>Calytrix superba</i>	P4	8/09/2022	3	334401	6694890
<i>Calytrix superba</i>	P4	9/09/2022	3	334452	6694529
<i>Calytrix superba</i>	P4	9/09/2022	2	334492	6694305
<i>Calytrix superba</i>	P4	9/09/2022	1	334501	6694399
<i>Calytrix superba</i>	P4	9/09/2022	6	334458	6694673
<i>Calytrix superba</i>	P4	9/09/2022	2	333890	6694051
<i>Calytrix superba</i>	P4	9/09/2022	1	333863	6694053
<i>Calytrix superba</i>	P4	9/09/2022	1	333785	6694054

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix superba</i>	P4	9/09/2022	12	333750	6694056
<i>Calytrix superba</i>	P4	9/09/2022	1	333547	6694090
<i>Calytrix superba</i>	P4	9/09/2022	1	333444	6694116
<i>Calytrix superba</i>	P4	9/09/2022	1	331291	6695047
<i>Calytrix superba</i>	P4	5/09/2022	1	334138	6694061
<i>Calytrix superba</i>	P4	5/09/2022	1	334125	6694059
<i>Calytrix superba</i>	P4	5/09/2022	2	334054	6694058
<i>Calytrix superba</i>	P4	5/09/2022	5	334035	6694062
<i>Calytrix superba</i>	P4	5/09/2022	6	333938	6694060
<i>Calytrix superba</i>	P4	5/09/2022	10	333895	6694065
<i>Calytrix superba</i>	P4	5/09/2022	20	333881	6694059
<i>Calytrix superba</i>	P4	5/09/2022	15	333841	6694063
<i>Calytrix superba</i>	P4	5/09/2022	3	333811	6694064
<i>Calytrix superba</i>	P4	5/09/2022	3	333789	6694067
<i>Calytrix superba</i>	P4	5/09/2022	2	333759	6694063
<i>Calytrix superba</i>	P4	5/09/2022	2	333711	6694075
<i>Calytrix superba</i>	P4	5/09/2022	3	333673	6694078
<i>Calytrix superba</i>	P4	5/09/2022	10	333633	6694086
<i>Calytrix superba</i>	P4	5/09/2022	10	333606	6694089
<i>Calytrix superba</i>	P4	5/09/2022	17	333587	6694098
<i>Calytrix superba</i>	P4	5/09/2022	10	333557	6694098
<i>Calytrix superba</i>	P4	5/09/2022	3	333541	6694098
<i>Calytrix superba</i>	P4	5/09/2022	3	333472	6694113
<i>Calytrix superba</i>	P4	6/09/2022	3	331208	6695193
<i>Calytrix superba</i>	P4	6/09/2022	2	331214	6695210
<i>Calytrix superba</i>	P4	6/09/2022	2	331255	6695349
<i>Calytrix superba</i>	P4	6/09/2022	3	331352	6695517
<i>Calytrix superba</i>	P4	6/09/2022	3	331348	6695503
<i>Calytrix superba</i>	P4	6/09/2022	2	331349	6695488
<i>Calytrix superba</i>	P4	6/09/2022	2	331283	6695256
<i>Calytrix superba</i>	P4	6/09/2022	6	331248	6695118
<i>Calytrix superba</i>	P4	6/09/2022	5	331242	6695104
<i>Calytrix superba</i>	P4	6/09/2022	3	331592	6696404
<i>Calytrix superba</i>	P4	6/09/2022	3	331556	6696275
<i>Calytrix superba</i>	P4	6/09/2022	5	331513	6696097
<i>Calytrix superba</i>	P4	6/09/2022	2	331493	6696034
<i>Calytrix superba</i>	P4	6/09/2022	3	331373	6695589
<i>Calytrix superba</i>	P4	6/09/2022	3	331363	6695554
<i>Calytrix superba</i>	P4	6/09/2022	4	333155	6694211
<i>Calytrix superba</i>	P4	6/09/2022	2	333106	6694233

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix superba</i>	P4	6/09/2022	1	332878	6694365
<i>Calytrix superba</i>	P4	6/09/2022	2	332770	6694422
<i>Calytrix superba</i>	P4	6/09/2022	2	332732	6694435
<i>Calytrix superba</i>	P4	6/09/2022	8	332669	6694476
<i>Calytrix superba</i>	P4	6/09/2022	4	332571	6694530
<i>Calytrix superba</i>	P4	6/09/2022	5	332554	6694544
<i>Calytrix superba</i>	P4	6/09/2022	2	332465	6694589
<i>Calytrix superba</i>	P4	6/09/2022	18	332441	6694602
<i>Calytrix superba</i>	P4	6/09/2022	10	332402	6694624
<i>Calytrix superba</i>	P4	6/09/2022	35	332385	6694635
<i>Calytrix superba</i>	P4	6/09/2022	6	332325	6694664
<i>Calytrix superba</i>	P4	6/09/2022	5	332272	6694700
<i>Calytrix superba</i>	P4	6/09/2022	7	331792	6694926
<i>Calytrix superba</i>	P4	6/09/2022	8	331646	6694963
<i>Calytrix superba</i>	P4	6/09/2022	2	331538	6694993
<i>Calytrix superba</i>	P4	6/09/2022	2	331473	6695007
<i>Calytrix superba</i>	P4	6/09/2022	5	331413	6695025
<i>Calytrix superba</i>	P4	6/09/2022	3	331362	6695041
<i>Calytrix superba</i>	P4	7/09/2022	2	334616	6693993
<i>Calytrix superba</i>	P4	7/09/2022	3	334606	6693870
<i>Calytrix superba</i>	P4	7/09/2022	5	334626	6693874
<i>Calytrix superba</i>	P4	7/09/2022	3	334645	6693875
<i>Calytrix superba</i>	P4	7/09/2022	1	334636	6693831
<i>Calytrix superba</i>	P4	8/09/2022	3	331220	6695040
<i>Calytrix superba</i>	P4	8/09/2022	6	331220	6695015
<i>Calytrix superba</i>	P4	8/09/2022	3	331216	6694994
<i>Calytrix superba</i>	P4	8/09/2022	3	331192	6694904
<i>Calytrix superba</i>	P4	8/09/2022	2	331172	6694836
<i>Calytrix superba</i>	P4	8/09/2022	5	331164	6694815
<i>Calytrix superba</i>	P4	8/09/2022	2	331151	6694762
<i>Calytrix superba</i>	P4	8/09/2022	3	331142	6694735
<i>Calytrix superba</i>	P4	8/09/2022	3	331137	6694710
<i>Calytrix superba</i>	P4	8/09/2022	5	331128	6694688
<i>Calytrix superba</i>	P4	8/09/2022	4	331129	6694660
<i>Calytrix superba</i>	P4	8/09/2022	8	331119	6694643
<i>Calytrix superba</i>	P4	8/09/2022	2	331093	6694529
<i>Calytrix superba</i>	P4	8/09/2022	3	331076	6694492
<i>Calytrix superba</i>	P4	8/09/2022	2	331041	6694333
<i>Calytrix superba</i>	P4	8/09/2022	2	331042	6694561
<i>Calytrix superba</i>	P4	8/09/2022	2	331120	6694865

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix superba</i>	P4	8/09/2022	1	330973	6693897
<i>Calytrix superba</i>	P4	9/09/2022	2	334200	6696120
<i>Calytrix superba</i>	P4	5/09/2022	3	334150	6694071
<i>Calytrix superba</i>	P4	13/09/2022	1	335201	6694073
<i>Calytrix superba</i>	P4	13/09/2022	2	334416	6693911
<i>Calytrix superba</i>	P4	13/09/2022	2	334441	6693930
<i>Calytrix superba</i>	P4	13/09/2022	3	334422	6693932
<i>Calytrix superba</i>	P4	13/09/2022	4	334386	6693935
<i>Calytrix superba</i>	P4	13/09/2022	1	334377	6693952
<i>Calytrix superba</i>	P4	13/09/2022	2	334398	6693952
<i>Calytrix superba</i>	P4	13/09/2022	2	334440	6693952
<i>Calytrix superba</i>	P4	13/09/2022	2	334476	6693955
<i>Calytrix superba</i>	P4	13/09/2022	2	334448	6693968
<i>Calytrix superba</i>	P4	13/09/2022	2	334394	6693971
<i>Calytrix superba</i>	P4	13/09/2022	2	334316	6693993
<i>Calytrix superba</i>	P4	13/09/2022	4	334385	6693991
<i>Calytrix superba</i>	P4	13/09/2022	4	334396	6693993
<i>Calytrix superba</i>	P4	13/09/2022	2	334300	6694011
<i>Calytrix superba</i>	P4	13/09/2022	2	334225	6694031
<i>Calytrix superba</i>	P4	13/09/2022	1	334356	6694032
<i>Calytrix superba</i>	P4	13/09/2022	4	334391	6694031
<i>Calytrix superba</i>	P4	13/09/2022	2	334519	6693993
<i>Calytrix superba</i>	P4	13/09/2022	3	334538	6693993
<i>Calytrix superba</i>	P4	13/09/2022	2	334519	6693970
<i>Calytrix superba</i>	P4	13/09/2022	2	334512	6693969
<i>Calytrix superba</i>	P4	13/09/2022	3	334524	6693952
<i>Calytrix superba</i>	P4	13/09/2022	4	334538	6693951
<i>Calytrix superba</i>	P4	13/09/2022	2	334565	6693891
<i>Calytrix superba</i>	P4	13/09/2022	2	331574	6696170
<i>Calytrix superba</i>	P4	13/09/2022	2	331548	6696083
<i>Calytrix superba</i>	P4	13/09/2022	2	331547	6696080
<i>Calytrix superba</i>	P4	13/09/2022	2	331535	6696035
<i>Calytrix superba</i>	P4	13/09/2022	1	331489	6695866
<i>Calytrix superba</i>	P4	13/09/2022	2	331455	6695730
<i>Calytrix superba</i>	P4	13/09/2022	2	331558	6696008
<i>Calytrix superba</i>	P4	13/09/2022	3	331560	6696020
<i>Calytrix superba</i>	P4	13/09/2022	2	331565	6696034
<i>Calytrix superba</i>	P4	13/09/2022	1	331570	6696055
<i>Calytrix superba</i>	P4	13/09/2022	1	331574	6696077
<i>Calytrix superba</i>	P4	13/09/2022	2	331579	6696088

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix superba</i>	P4	13/09/2022	3	331586	6696108
<i>Calytrix superba</i>	P4	13/09/2022	12	331596	6696142
<i>Calytrix superba</i>	P4	13/09/2022	2	331604	6696178
<i>Calytrix superba</i>	P4	13/09/2022	2	331613	6696206
<i>Calytrix superba</i>	P4	13/09/2022	2	331618	6696234
<i>Calytrix superba</i>	P4	13/09/2022	2	331626	6696263
<i>Calytrix superba</i>	P4	13/09/2022	2	331272	6695064
<i>Calytrix superba</i>	P4	14/09/2022	2	331270	6695071
<i>Calytrix superba</i>	P4	14/09/2022	2	331278	6695083
<i>Calytrix superba</i>	P4	12/09/2022	2	334108	6696573
<i>Calytrix superba</i>	P4	12/09/2022	2	334108	6696614
<i>Calytrix superba</i>	P4	12/09/2022	1	331053	6694025
<i>Calytrix superba</i>	P4	12/09/2022	2	331116	6694504
<i>Calytrix superba</i>	P4	12/09/2022	2	331127	6694577
<i>Calytrix superba</i>	P4	12/09/2022	3	331143	6694616
<i>Calytrix superba</i>	P4	12/09/2022	5	331154	6694647
<i>Calytrix superba</i>	P4	12/09/2022	3	331154	6694660
<i>Calytrix superba</i>	P4	12/09/2022	2	331179	6694622
<i>Calytrix superba</i>	P4	12/09/2022	3	331172	6694607
<i>Calytrix superba</i>	P4	12/09/2022	5	331166	6694592
<i>Calytrix superba</i>	P4	12/09/2022	3	331161	6694572
<i>Calytrix superba</i>	P4	12/09/2022	2	331088	6693945
<i>Calytrix superba</i>	P4	12/09/2022	3	331090	6693908
<i>Calytrix superba</i>	P4	12/09/2022	3	331091	6693895
<i>Calytrix superba</i>	P4	12/09/2022	4	331096	6693873
<i>Calytrix superba</i>	P4	12/09/2022	1	331097	6693850
<i>Calytrix superba</i>	P4	13/09/2022	2	334945	6694062
<i>Calytrix superba</i>	P4	13/09/2022	5	334446	6693903
<i>Calytrix superba</i>	P4	13/09/2022	4	334421	6693924
<i>Calytrix superba</i>	P4	13/09/2022	3	334439	6693922
<i>Calytrix superba</i>	P4	13/09/2022	2	334485	6693922
<i>Calytrix superba</i>	P4	13/09/2022	7	334455	6693942
<i>Calytrix superba</i>	P4	13/09/2022	5	334384	6693944
<i>Calytrix superba</i>	P4	13/09/2022	2	334359	6693940
<i>Calytrix superba</i>	P4	13/09/2022	2	334361	6693965
<i>Calytrix superba</i>	P4	13/09/2022	13	334373	6693979
<i>Calytrix superba</i>	P4	13/09/2022	3	334372	6694005
<i>Calytrix superba</i>	P4	13/09/2022	3	334389	6694002
<i>Calytrix superba</i>	P4	13/09/2022	3	334382	6694021
<i>Calytrix superba</i>	P4	13/09/2022	3	334298	6694026

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix superba</i>	P4	13/09/2022	4	334514	6693981
<i>Calytrix superba</i>	P4	13/09/2022	3	334499	6693981
<i>Calytrix superba</i>	P4	13/09/2022	3	334561	6693903
<i>Calytrix superba</i>	P4	13/09/2022	2	334561	6693862
<i>Calytrix superba</i>	P4	13/09/2022	2	334320	6694061
<i>Calytrix superba</i>	P4	14/09/2022	5	334182	6694061
<i>Calytrix superba</i>	P4	14/09/2022	2	334198	6694122
<i>Calytrix superba</i>	P4	14/09/2022	2	334209	6694140
<i>Calytrix superba</i>	P4	14/09/2022	3	334191	6694144
<i>Calytrix superba</i>	P4	14/09/2022	5	334300	6694222
<i>Calytrix superba</i>	P4	14/09/2022	3	334347	6694222
<i>Calytrix superba</i>	P4	14/09/2022	3	334472	6694224
<i>Calytrix superba</i>	P4	14/09/2022	3	334454	6694214
<i>Calytrix superba</i>	P4	14/09/2022	2	334349	6694212
<i>Calytrix superba</i>	P4	14/09/2022	6	334335	6694210
<i>Calytrix superba</i>	P4	14/09/2022	3	334308	6694212
<i>Calytrix superba</i>	P4	14/09/2022	5	334340	6694201
<i>Calytrix superba</i>	P4	14/09/2022	3	334367	6694201
<i>Calytrix superba</i>	P4	14/09/2022	3	334407	6694201
<i>Calytrix superba</i>	P4	14/09/2022	3	334458	6694202
<i>Calytrix superba</i>	P4	14/09/2022	4	334479	6694201
<i>Calytrix superba</i>	P4	14/09/2022	2	334505	6694204
<i>Calytrix superba</i>	P4	14/09/2022	5	334482	6694181
<i>Calytrix superba</i>	P4	14/09/2022	3	334394	6694182
<i>Calytrix superba</i>	P4	14/09/2022	4	334359	6694184
<i>Calytrix superba</i>	P4	14/09/2022	5	334316	6694182
<i>Calytrix superba</i>	P4	14/09/2022	6	334304	6694161
<i>Calytrix superba</i>	P4	14/09/2022	3	334399	6694161
<i>Calytrix superba</i>	P4	14/09/2022	2	334414	6694162
<i>Calytrix superba</i>	P4	14/09/2022	2	334487	6694162
<i>Calytrix superba</i>	P4	14/09/2022	4	334366	6694143
<i>Calytrix superba</i>	P4	14/09/2022	3	334317	6694141
<i>Calytrix superba</i>	P4	14/09/2022	2	334309	6694122
<i>Calytrix superba</i>	P4	14/09/2022	3	334355	6694119
<i>Calytrix superba</i>	P4	14/09/2022	3	334435	6694121
<i>Calytrix superba</i>	P4	14/09/2022	2	334364	6694104
<i>Calytrix superba</i>	P4	14/09/2022	3	334314	6694103
<i>Calytrix superba</i>	P4	14/09/2022	6	334389	6694272
<i>Calytrix superba</i>	P4	14/09/2022	5	334417	6694269
<i>Calytrix superba</i>	P4	14/09/2022	3	334443	6694271

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Calytrix superba</i>	P4	14/09/2022	3	334467	6694272
<i>Calytrix superba</i>	P4	14/09/2022	1	334456	6694289
<i>Calytrix superba</i>	P4	14/09/2022	5	334446	6694280
<i>Calytrix superba</i>	P4	14/09/2022	8	331621	6696387
<i>Calytrix superba</i>	P4	14/09/2022	3	331628	6696439
<i>Calytrix superba</i>	P4	14/09/2022	5	331638	6696461
<i>Calytrix superba</i>	P4	14/09/2022	7	331662	6696505
<i>Calytrix superba</i>	P4	14/09/2022	5	331658	6696489
<i>Calytrix superba</i>	P4	14/09/2022	3	331631	6696392
<i>Calytrix superba</i>	P4	14/09/2022	5	331626	6696362
<i>Calytrix superba</i>	P4	14/09/2022	3	331633	6696368
<i>Calytrix superba</i>	P4	14/09/2022	2	331664	6696485
<i>Calytrix superba</i>	P4	14/09/2022	3	331681	6696499
<i>Calytrix superba</i>	P4	14/09/2022	2	331675	6696483
<i>Calytrix superba</i>	P4	14/09/2022	3	331641	6696354
<i>Calytrix superba</i>	P4	14/09/2022	5	331633	6696322
<i>Calytrix superba</i>	P4	14/09/2022	1	333775	6694040
<i>Calytrix superba</i>	P4	14/09/2022	5	333134	6694200
<i>Calytrix superba</i>	P4	14/09/2022	6	333117	6694206
<i>Calytrix superba</i>	P4	14/09/2022	4	333094	6694215
<i>Calytrix superba</i>	P4	14/09/2022	7	333076	6694226
<i>Calytrix superba</i>	P4	14/09/2022	2	332720	6694419
<i>Calytrix superba</i>	P4	14/09/2022	1	332706	6694428
<i>Calytrix superba</i>	P4	14/09/2022	2	331455	6694988
<i>Conostephium magnum</i>	P4	8/09/2022	1	331030	6693825
<i>Conostephium magnum</i>	P4	6/09/2022	1	331840	6694867
<i>Conostephium magnum</i>	P4	9/09/2022	1	333497	6694075
<i>Conostephium magnum</i>	P4	8/09/2022	1	334170	6696291
<i>Conostephium magnum</i>	P4	8/09/2022	1	331121	6693261
<i>Conostephium magnum</i>	P4	8/09/2022	1	331147	6693123
<i>Conostephium magnum</i>	P4	8/09/2022	1	331160	6693131
<i>Conostephium magnum</i>	P4	14/09/2022	1	331149	6693116
<i>Desmocladius elongatus</i>	P4	6/09/2022	1	331507	6696118
<i>Desmocladius elongatus</i>	P4	6/09/2022	4	331300	6695555
<i>Desmocladius elongatus</i>	P4	6/09/2022	1	331313	6695594
<i>Desmocladius elongatus</i>	P4	6/09/2022	1	331312	6695599
<i>Desmocladius elongatus</i>	P4	6/09/2022	3	331515	6696072
<i>Desmocladius elongatus</i>	P4	8/09/2022	4	331051	6694626
<i>Desmocladius elongatus</i>	P4	8/09/2022	2	331052	6694632
<i>Desmocladius elongatus</i>	P4	8/09/2022	38	331058	6694647

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Desmocladius elongatus</i>	P4	8/09/2022	3	331061	6694659
<i>Desmocladius elongatus</i>	P4	8/09/2022	2	331060	6694665
<i>Desmocladius elongatus</i>	P4	8/09/2022	2	331172	6693164
<i>Desmocladius elongatus</i>	P4	9/09/2022	1	331322	6695022
<i>Desmocladius elongatus</i>	P4	5/09/2022	1	331258	6695441
<i>Desmocladius elongatus</i>	P4	5/09/2022	1	331283	6695517
<i>Desmocladius elongatus</i>	P4	5/09/2022	8	331284	6695523
<i>Desmocladius elongatus</i>	P4	5/09/2022	3	331292	6695553
<i>Desmocladius elongatus</i>	P4	5/09/2022	1	331293	6695571
<i>Desmocladius elongatus</i>	P4	5/09/2022	2	331301	6695584
<i>Desmocladius elongatus</i>	P4	5/09/2022	7	331300	6695598
<i>Desmocladius elongatus</i>	P4	5/09/2022	3	331310	6695620
<i>Desmocladius elongatus</i>	P4	5/09/2022	2	331435	6696086
<i>Desmocladius elongatus</i>	P4	5/09/2022	6	331435	6696097
<i>Desmocladius elongatus</i>	P4	5/09/2022	2	331496	6696314
<i>Desmocladius elongatus</i>	P4	6/09/2022	2	331569	6696221
<i>Desmocladius elongatus</i>	P4	8/09/2022	3	331165	6694754
<i>Desmocladius elongatus</i>	P4	8/09/2022	2	331019	6694540
<i>Desmocladius elongatus</i>	P4	8/09/2022	1	331043	6694630
<i>Desmocladius elongatus</i>	P4	8/09/2022	1	331047	6694648
<i>Desmocladius elongatus</i>	P4	8/09/2022	1	331044	6694639
<i>Desmocladius elongatus</i>	P4	8/09/2022	6	331110	6694882
<i>Desmocladius elongatus</i>	P4	8/09/2022	2	331114	6694899
<i>Desmocladius elongatus</i>	P4	8/09/2022	1	331123	6694924
<i>Desmocladius elongatus</i>	P4	9/09/2022	1	332946	6694309
<i>Desmocladius elongatus</i>	P4	9/09/2022	1	331329	6695036
<i>Desmocladius elongatus</i>	P4	6/09/2022	1	332743	6694433
<i>Desmocladius elongatus</i>	P4	6/09/2022	1	331842	6694874
<i>Desmocladius elongatus</i>	P4	8/09/2022	3	331207	6694985
<i>Desmocladius elongatus</i>	P4	8/09/2022	2	331188	6694888
<i>Desmocladius elongatus</i>	P4	8/09/2022	2	331142	6694735
<i>Desmocladius elongatus</i>	P4	8/09/2022	1	331042	6694561
<i>Desmocladius elongatus</i>	P4	8/09/2022	2	331059	6694644
<i>Desmocladius elongatus</i>	P4	8/09/2022	12	331101	6694798
<i>Desmocladius elongatus</i>	P4	8/09/2022	3	331120	6694865
<i>Desmocladius elongatus</i>	P4	8/09/2022	5	331131	6694890
<i>Desmocladius elongatus</i>	P4	8/09/2022	2	331173	6693121
<i>Desmocladius elongatus</i>	P4	9/09/2022	3	334284	6695545
<i>Desmocladius elongatus</i>	P4	9/09/2022	2	331376	6695024
<i>Desmocladius elongatus</i>	P4	6/09/2022	1	331448	6695895

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Desmocladius elongatus</i>	P4	6/09/2022	2	331366	6695596
<i>Desmocladius elongatus</i>	P4	8/09/2022	1	331212	6695028
<i>Desmocladius elongatus</i>	P4	8/09/2022	1	331160	6694834
<i>Desmocladius elongatus</i>	P4	8/09/2022	1	331092	6694577
<i>Desmocladius elongatus</i>	P4	8/09/2022	1	331060	6694460
<i>Desmocladius elongatus</i>	P4	8/09/2022	1	331006	6693942
<i>Desmocladius elongatus</i>	P4	8/09/2022	1	331007	6693942
<i>Desmocladius elongatus</i>	P4	8/09/2022	1	331003	6694013
<i>Desmocladius elongatus</i>	P4	8/09/2022	2	331140	6693168
<i>Desmocladius elongatus</i>	P4	8/09/2022	2	331148	6693164
<i>Desmocladius elongatus</i>	P4	8/09/2022	1	331156	6693138
<i>Desmocladius elongatus</i>	P4	8/09/2022	2	331156	6693159
<i>Desmocladius elongatus</i>	P4	8/09/2022	1	331152	6693172
<i>Desmocladius elongatus</i>	P4	9/09/2022	1	332966	6694277
<i>Desmocladius elongatus</i>	P4	9/09/2022	1	332749	6694397
<i>Desmocladius elongatus</i>	P4	9/09/2022	1	331931	6694833
<i>Desmocladius elongatus</i>	P4	9/09/2022	1	331904	6694846
<i>Desmocladius elongatus</i>	P4	9/09/2022	4	331345	6695013
<i>Desmocladius elongatus</i>	P4	12/09/2022	2	333966	6697354
<i>Desmocladius elongatus</i>	P4	12/09/2022	1	331108	6694235
<i>Desmocladius elongatus</i>	P4	14/09/2022	1	331279	6694966
<i>Desmocladius elongatus</i>	P4	14/09/2022	1	331274	6694952
<i>Desmocladius elongatus</i>	P4	14/09/2022	1	331586	6696068
<i>Desmocladius elongatus</i>	P4	14/09/2022	1	331387	6695445
<i>Desmocladius elongatus</i>	P4	14/09/2022	1	331322	6695092
<i>Desmocladius elongatus</i>	P4	14/09/2022	1	331312	6695045
<i>Desmocladius elongatus</i>	P4	13/09/2022	1	331594	6696243
<i>Desmocladius elongatus</i>	P4	12/09/2022	3	331285	6695030
<i>Desmocladius elongatus</i>	P4	12/09/2022	1	331246	6694893
<i>Desmocladius elongatus</i>	P4	12/09/2022	1	331225	6694797
<i>Desmocladius elongatus</i>	P4	13/09/2022	1	331530	6696022
<i>Desmocladius elongatus</i>	P4	13/09/2022	1	331574	6696077
<i>Desmocladius elongatus</i>	P4	13/09/2022	1	331596	6696142
<i>Desmocladius elongatus</i>	P4	13/09/2022	1	331599	6696161
<i>Desmocladius elongatus</i>	P4	13/09/2022	1	331613	6696206
<i>Desmocladius elongatus</i>	P4	13/09/2022	1	331626	6696263
<i>Desmocladius elongatus</i>	P4	14/09/2022	1	331370	6695428
<i>Desmocladius elongatus</i>	P4	14/09/2022	1	331468	6695674
<i>Desmocladius elongatus</i>	P4	14/09/2022	1	331452	6695614
<i>Desmocladius elongatus</i>	P4	14/09/2022	1	331303	6695062

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Desmocladius elongatus</i>	P4	14/09/2022	1	331303	6695051
<i>Desmocladius elongatus</i>	P4	12/09/2022	1	331195	6694747
<i>Desmocladius elongatus</i>	P4	12/09/2022	1	331191	6694811
<i>Desmocladius elongatus</i>	P4	14/09/2022	5	331571	6696209
<i>Desmocladius elongatus</i>	P4	14/09/2022	2	331480	6695758
<i>Desmocladius elongatus</i>	P4	14/09/2022	3	331595	6696193
<i>Desmocladius elongatus</i>	P4	14/09/2022	2	331286	6695151
<i>Desmocladius elongatus</i>	P4	14/09/2022	1	331435	6695698
<i>Desmocladius elongatus</i>	P4	14/09/2022	1	331289	6695049
<i>Desmocladius elongatus</i>	P4	14/09/2022	1	334386	6694104
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	1	334125	6694059
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	1	333739	6694069
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	1	333990	6694060
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	1	333985	6694061
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	1	333978	6694069
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	1	333956	6694063
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	1	333924	6694056
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	3	333890	6694068
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	3	333861	6694061
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	2	333849	6694065
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	1	333749	6694067
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	1	333723	6694066
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	1	333690	6694074
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	2	333673	6694078
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	1	333657	6694083
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	1	333569	6694090
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	1	333557	6694098
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	1	333541	6694098
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	1	333430	6694125
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	7/09/2022	3	334710	6694233
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	7/09/2022	1	334866	6694110
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	2	334050	6694069
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	1	333944	6694069
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	1	333914	6694071
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	4	333877	6694074
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	8	333870	6694071
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	6	333831	6694073
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	1	333804	6694073
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	1	333768	6694073
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	6/09/2022	1	331372	6695639

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	6/09/2022	1	331378	6695634
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	6/09/2022	1	334638	6694260
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	1	333753	6694028
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	3	333741	6694028
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	3	333733	6694028
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	1	333701	6694031
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	3	333561	6694052
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	1	333482	6694070
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	1	333471	6694069
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	7/09/2022	1	334626	6694238
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	9/09/2022	1	333818	6694036
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	9/09/2022	3	333704	6694048
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	9/09/2022	1	333578	6694064
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	9/09/2022	1	333546	6694069
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	9/09/2022	2	333525	6694073
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	9/09/2022	1	333477	6694085
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	9/09/2022	1	333075	6694219
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	4	333884	6694015
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	4	333719	6694019
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	4	333706	6694025
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	1	333635	6694035
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	1	333491	6694056
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	3	333526	6694042
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	5/09/2022	3	333452	6694064
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	6/09/2022	4	334773	6694245
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	6/09/2022	2	334642	6694253
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	6/09/2022	4	334790	6694208
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	6/09/2022	3	334808	6694211
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	8/09/2022	1	334537	6693744
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	8/09/2022	1	334558	6693745
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	8/09/2022	2	334556	6693762
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	13/09/2022	2	334491	6693913
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	9/09/2022	1	334125	6694055
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	9/09/2022	2	334063	6694051
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	9/09/2022	1	333972	6694050
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	9/09/2022	2	333958	6694050
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	9/09/2022	3	333916	6694051
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	9/09/2022	1	333605	6694081
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	9/09/2022	2	333532	6694095
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	9/09/2022	1	333517	6694095

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	13/09/2022	1	334304	6693953
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	13/09/2022	1	334491	6694032
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	13/09/2022	1	334531	6694033
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	13/09/2022	3	334486	6694053
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	13/09/2022	8	334489	6694069
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	14/09/2022	4	334197	6694071
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	14/09/2022	1	334176	6694091
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	14/09/2022	2	334397	6694112
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	14/09/2022	1	334466	6694113
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	14/09/2022	2	334491	6694091
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	14/09/2022	3	334475	6694093
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	13/09/2022	3	334493	6693939
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	13/09/2022	1	334489	6694044
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	13/09/2022	1	334537	6694024
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	13/09/2022	3	334493	6694058
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	13/09/2022	5	334487	6694082
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	14/09/2022	1	334198	6694066
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	14/09/2022	1	334431	6694106
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	14/09/2022	1	334398	6694103
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	14/09/2022	3	334386	6694104
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	2	331097	6694534
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	2	331093	6694529
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	20	331084	6694511
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	2	331069	6694478
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	1	331065	6694440
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	12	331059	6694426
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	6	331059	6694410
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	2	331057	6694386
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	1	330998	6694403
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	1	331103	6694810
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	6/09/2022	1	332534	6694556
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	1	331069	6694478
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	1	331058	6694461
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	1	331061	6694454
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	9/09/2022	1	332763	6694413
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	6/09/2022	2	331646	6694963
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	4	331101	6694507
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	6	331078	6694429
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	3	331078	6694419
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	11	331080	6694411

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	11	331075	6694398
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	3	331072	6694383
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	6	330968	6694330
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	12/09/2022	7	331165	6693496
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	14/09/2022	2	331598	6696241
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	12/09/2022	4	331172	6693509
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	12/09/2022	8	331181	6693490
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	12/09/2022	18	331088	6694404
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	12/09/2022	6	331091	6694420
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	12/09/2022	1	331103	6694483
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	12/09/2022	1	331111	6694516
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	12/09/2022	1	331118	6694524
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	12/09/2022	1	331151	6694546
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	12/09/2022	1	331071	6694169
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	14/09/2022	1	334368	6694222
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	14/09/2022	1	334441	6694213
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	12/09/2022	1	331117	6693862
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	12/09/2022	1	331117	6694503
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	12/09/2022	1	331116	6694482
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	12/09/2022	1	331113	6694438
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	12/09/2022	8	331100	6694420
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	14/09/2022	1	331284	6695067
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	14/09/2022	2	331285	6695076
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	13/09/2022	2	334321	6694069
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	4	331197	6694884
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	31	331095	6694514
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	1	331086	6694490
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	1	331079	6694455
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	2	331075	6694447
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	11	331072	6694424
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	16	331070	6694416
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	1	330998	6694424
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	8/09/2022	1	331060	6694665
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	13/09/2022	1	334320	6694061
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	P3	13/09/2022	3	334351	6694084
<i>Grevillea rudis</i>	P4	9/09/2022	5	334375	6695061
<i>Grevillea rudis</i>	P4	9/09/2022	3	334376	6695050
<i>Grevillea rudis</i>	P4	9/09/2022	1	334372	6695076
<i>Grevillea rudis</i>	P4	9/09/2022	1	334358	6695129
<i>Grevillea rudis</i>	P4	9/09/2022	1	334331	6695285

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Grevillea rudis</i>	P4	9/09/2022	3	334372	6695243
<i>Grevillea rudis</i>	P4	9/09/2022	1	334389	6695140
<i>Grevillea rudis</i>	P4	9/09/2022	1	334396	6695103
<i>Grevillea rudis</i>	P4	9/09/2022	1	334399	6695085
<i>Grevillea rudis</i>	P4	9/09/2022	1	334377	6695061
<i>Grevillea rudis</i>	P4	9/09/2022	1	334388	6695102
<i>Haemodorum loratum</i>	P3	5/09/2022	1	333467	6694082
<i>Haemodorum loratum</i>	P3	6/09/2022	2	331386	6695601
<i>Haemodorum loratum</i>	P3	6/09/2022	1	331980	6694804
<i>Haemodorum loratum</i>	P3	6/09/2022	2	331709	6694903
<i>Haemodorum loratum</i>	P3	6/09/2022	1	331676	6694909
<i>Haemodorum loratum</i>	P3	7/09/2022	1	334765	6694202
<i>Haemodorum loratum</i>	P3	7/09/2022	1	334803	6694204
<i>Haemodorum loratum</i>	P3	7/09/2022	2	334795	6694160
<i>Haemodorum loratum</i>	P3	7/09/2022	1	334553	6694163
<i>Haemodorum loratum</i>	P3	7/09/2022	1	334626	6694082
<i>Haemodorum loratum</i>	P3	7/09/2022	1	334628	6693922
<i>Haemodorum loratum</i>	P3	7/09/2022	1	334613	6693922
<i>Haemodorum loratum</i>	P3	7/09/2022	1	333100	6694172
<i>Haemodorum loratum</i>	P3	8/09/2022	1	331203	6694914
<i>Haemodorum loratum</i>	P3	8/09/2022	1	331200	6694904
<i>Haemodorum loratum</i>	P3	8/09/2022	1	331197	6694903
<i>Haemodorum loratum</i>	P3	8/09/2022	2	331194	6694890
<i>Haemodorum loratum</i>	P3	8/09/2022	2	331196	6694885
<i>Haemodorum loratum</i>	P3	8/09/2022	1	331197	6694884
<i>Haemodorum loratum</i>	P3	8/09/2022	1	331184	6694843
<i>Haemodorum loratum</i>	P3	8/09/2022	1	331090	6694499
<i>Haemodorum loratum</i>	P3	8/09/2022	3	331051	6694626
<i>Haemodorum loratum</i>	P3	8/09/2022	1	331051	6694635
<i>Haemodorum loratum</i>	P3	8/09/2022	1	331114	6694855
<i>Haemodorum loratum</i>	P3	8/09/2022	1	331118	6694869
<i>Haemodorum loratum</i>	P3	8/09/2022	2	331141	6694957
<i>Haemodorum loratum</i>	P3	9/09/2022	1	334131	6696461
<i>Haemodorum loratum</i>	P3	9/09/2022	1	334159	6696324
<i>Haemodorum loratum</i>	P3	9/09/2022	1	334090	6694036
<i>Haemodorum loratum</i>	P3	9/09/2022	1	333064	6694228
<i>Haemodorum loratum</i>	P3	5/09/2022	2	334011	6694020
<i>Haemodorum loratum</i>	P3	5/09/2022	1	333910	6694014
<i>Haemodorum loratum</i>	P3	5/09/2022	1	333588	6694040
<i>Haemodorum loratum</i>	P3	5/09/2022	1	333579	6694033

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Haemodorum loratum</i>	P3	5/09/2022	1	333569	6694033
<i>Haemodorum loratum</i>	P3	5/09/2022	1	333552	6694042
<i>Haemodorum loratum</i>	P3	5/09/2022	1	331323	6695685
<i>Haemodorum loratum</i>	P3	6/09/2022	1	331510	6696008
<i>Haemodorum loratum</i>	P3	6/09/2022	1	331410	6695646
<i>Haemodorum loratum</i>	P3	6/09/2022	2	331408	6695635
<i>Haemodorum loratum</i>	P3	6/09/2022	1	332836	6694328
<i>Haemodorum loratum</i>	P3	6/09/2022	1	331989	6694790
<i>Haemodorum loratum</i>	P3	6/09/2022	1	331979	6694795
<i>Haemodorum loratum</i>	P3	6/09/2022	1	331917	6694816
<i>Haemodorum loratum</i>	P3	6/09/2022	1	331865	6694838
<i>Haemodorum loratum</i>	P3	6/09/2022	1	331848	6694848
<i>Haemodorum loratum</i>	P3	6/09/2022	1	331841	6694849
<i>Haemodorum loratum</i>	P3	6/09/2022	1	331823	6694862
<i>Haemodorum loratum</i>	P3	6/09/2022	1	331794	6694866
<i>Haemodorum loratum</i>	P3	6/09/2022	2	331711	6694889
<i>Haemodorum loratum</i>	P3	6/09/2022	1	331666	6694904
<i>Haemodorum loratum</i>	P3	6/09/2022	1	334773	6694245
<i>Haemodorum loratum</i>	P3	6/09/2022	1	334759	6694241
<i>Haemodorum loratum</i>	P3	6/09/2022	1	334850	6694091
<i>Haemodorum loratum</i>	P3	6/09/2022	1	334775	6694016
<i>Haemodorum loratum</i>	P3	6/09/2022	1	334756	6694010
<i>Haemodorum loratum</i>	P3	6/09/2022	1	334726	6694013
<i>Haemodorum loratum</i>	P3	6/09/2022	1	334673	6694009
<i>Haemodorum loratum</i>	P3	6/09/2022	1	334609	6693932
<i>Haemodorum loratum</i>	P3	6/09/2022	1	334590	6693930
<i>Haemodorum loratum</i>	P3	6/09/2022	1	334637	6693850
<i>Haemodorum loratum</i>	P3	8/09/2022	2	331214	6694918
<i>Haemodorum loratum</i>	P3	8/09/2022	3	331206	6694879
<i>Haemodorum loratum</i>	P3	8/09/2022	2	331193	6694841
<i>Haemodorum loratum</i>	P3	8/09/2022	1	331184	6694811
<i>Haemodorum loratum</i>	P3	8/09/2022	1	331044	6694639
<i>Haemodorum loratum</i>	P3	8/09/2022	1	331096	6693653
<i>Haemodorum loratum</i>	P3	8/09/2022	1	334102	6696489
<i>Haemodorum loratum</i>	P3	8/09/2022	1	334117	6696571
<i>Haemodorum loratum</i>	P3	8/09/2022	3	334129	6696515
<i>Haemodorum loratum</i>	P3	8/09/2022	1	334134	6696485
<i>Haemodorum loratum</i>	P3	9/09/2022	1	334498	6694409
<i>Haemodorum loratum</i>	P3	9/09/2022	1	334495	6694429
<i>Haemodorum loratum</i>	P3	9/09/2022	1	334453	6694710

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Haemodorum loratum</i>	P3	9/09/2022	1	333805	6694053
<i>Haemodorum loratum</i>	P3	9/09/2022	1	333579	6694087
<i>Haemodorum loratum</i>	P3	5/09/2022	1	333673	6694078
<i>Haemodorum loratum</i>	P3	5/09/2022	3	333490	6694113
<i>Haemodorum loratum</i>	P3	5/09/2022	1	333266	6694173
<i>Haemodorum loratum</i>	P3	6/09/2022	1	331235	6695085
<i>Haemodorum loratum</i>	P3	6/09/2022	1	331344	6695683
<i>Haemodorum loratum</i>	P3	6/09/2022	1	331493	6696034
<i>Haemodorum loratum</i>	P3	6/09/2022	1	331374	6695601
<i>Haemodorum loratum</i>	P3	6/09/2022	1	333176	6694209
<i>Haemodorum loratum</i>	P3	6/09/2022	3	333130	6694221
<i>Haemodorum loratum</i>	P3	6/09/2022	2	333106	6694233
<i>Haemodorum loratum</i>	P3	6/09/2022	1	333074	6694250
<i>Haemodorum loratum</i>	P3	6/09/2022	1	333056	6694259
<i>Haemodorum loratum</i>	P3	6/09/2022	1	333011	6694282
<i>Haemodorum loratum</i>	P3	6/09/2022	1	331984	6694847
<i>Haemodorum loratum</i>	P3	6/09/2022	1	331965	6694853
<i>Haemodorum loratum</i>	P3	6/09/2022	1	331945	6694861
<i>Haemodorum loratum</i>	P3	7/09/2022	2	334714	6694269
<i>Haemodorum loratum</i>	P3	7/09/2022	1	334738	6694263
<i>Haemodorum loratum</i>	P3	7/09/2022	1	334836	6694153
<i>Haemodorum loratum</i>	P3	7/09/2022	1	334743	6694153
<i>Haemodorum loratum</i>	P3	7/09/2022	2	334696	6694156
<i>Haemodorum loratum</i>	P3	7/09/2022	3	334695	6694070
<i>Haemodorum loratum</i>	P3	7/09/2022	1	334615	6694069
<i>Haemodorum loratum</i>	P3	7/09/2022	5	334629	6693987
<i>Haemodorum loratum</i>	P3	7/09/2022	1	334633	6693906
<i>Haemodorum loratum</i>	P3	7/09/2022	5	334621	6693913
<i>Haemodorum loratum</i>	P3	7/09/2022	2	334581	6693656
<i>Haemodorum loratum</i>	P3	8/09/2022	4	331192	6694904
<i>Haemodorum loratum</i>	P3	8/09/2022	2	331188	6694888
<i>Haemodorum loratum</i>	P3	8/09/2022	6	331178	6694873
<i>Haemodorum loratum</i>	P3	8/09/2022	3	331119	6694643
<i>Haemodorum loratum</i>	P3	8/09/2022	1	331059	6694644
<i>Haemodorum loratum</i>	P3	8/09/2022	1	331078	6694702
<i>Haemodorum loratum</i>	P3	8/09/2022	1	331090	6694744
<i>Haemodorum loratum</i>	P3	8/09/2022	2	331120	6694865
<i>Haemodorum loratum</i>	P3	8/09/2022	1	331053	6693775
<i>Haemodorum loratum</i>	P3	9/09/2022	1	334220	6695868
<i>Haemodorum loratum</i>	P3	9/09/2022	5	334271	6695606

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Haemodorum loratum</i>	P3	9/09/2022	5	334270	6695626
<i>Haemodorum loratum</i>	P3	9/09/2022	3	334285	6695656
<i>Haemodorum loratum</i>	P3	9/09/2022	6	334304	6695594
<i>Haemodorum loratum</i>	P3	9/09/2022	1	332440	6694593
<i>Haemodorum loratum</i>	P3	5/09/2022	1	333648	6694091
<i>Haemodorum loratum</i>	P3	5/09/2022	1	333494	6694124
<i>Haemodorum loratum</i>	P3	5/09/2022	1	333490	6694124
<i>Haemodorum loratum</i>	P3	5/09/2022	1	333391	6694142
<i>Haemodorum loratum</i>	P3	5/09/2022	1	333285	6694172
<i>Haemodorum loratum</i>	P3	5/09/2022	1	333270	6694178
<i>Haemodorum loratum</i>	P3	6/09/2022	1	331363	6695592
<i>Haemodorum loratum</i>	P3	6/09/2022	1	331375	6695639
<i>Haemodorum loratum</i>	P3	6/09/2022	1	331378	6695634
<i>Haemodorum loratum</i>	P3	6/09/2022	1	331363	6695584
<i>Haemodorum loratum</i>	P3	6/09/2022	1	333182	6694214
<i>Haemodorum loratum</i>	P3	6/09/2022	1	333137	6694230
<i>Haemodorum loratum</i>	P3	6/09/2022	1	333073	6694256
<i>Haemodorum loratum</i>	P3	6/09/2022	1	334586	6694267
<i>Haemodorum loratum</i>	P3	6/09/2022	1	334709	6694261
<i>Haemodorum loratum</i>	P3	6/09/2022	1	334742	6694184
<i>Haemodorum loratum</i>	P3	6/09/2022	1	334866	6694141
<i>Haemodorum loratum</i>	P3	6/09/2022	1	334827	6694151
<i>Haemodorum loratum</i>	P3	6/09/2022	1	334854	6694102
<i>Haemodorum loratum</i>	P3	6/09/2022	5	334618	6694024
<i>Haemodorum loratum</i>	P3	6/09/2022	1	334580	6693943
<i>Haemodorum loratum</i>	P3	6/09/2022	2	334590	6693940
<i>Haemodorum loratum</i>	P3	6/09/2022	1	334604	6693938
<i>Haemodorum loratum</i>	P3	6/09/2022	2	334615	6693939
<i>Haemodorum loratum</i>	P3	7/09/2022	1	333109	6694173
<i>Haemodorum loratum</i>	P3	8/09/2022	1	331176	6694892
<i>Haemodorum loratum</i>	P3	8/09/2022	1	331172	6694878
<i>Haemodorum loratum</i>	P3	8/09/2022	2	331173	6694873
<i>Haemodorum loratum</i>	P3	8/09/2022	1	331164	6694854
<i>Haemodorum loratum</i>	P3	8/09/2022	1	331160	6694834
<i>Haemodorum loratum</i>	P3	9/09/2022	1	334198	6695955
<i>Haemodorum loratum</i>	P3	9/09/2022	2	334304	6695586
<i>Haemodorum loratum</i>	P3	12/09/2022	1	331156	6694628
<i>Haemodorum loratum</i>	P3	13/09/2022	1	335043	6694048
<i>Haemodorum loratum</i>	P3	13/09/2022	1	334383	6693973
<i>Haemodorum loratum</i>	P3	13/09/2022	1	334266	6693970

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Haemodorum loratum</i>	P3	13/09/2022	1	334545	6693993
<i>Haemodorum loratum</i>	P3	13/09/2022	1	334358	6694070
<i>Haemodorum loratum</i>	P3	13/09/2022	1	334337	6694068
<i>Haemodorum loratum</i>	P3	14/09/2022	1	334416	6694192
<i>Haemodorum loratum</i>	P3	14/09/2022	1	334336	6694172
<i>Haemodorum loratum</i>	P3	14/09/2022	1	334325	6694168
<i>Haemodorum loratum</i>	P3	14/09/2022	1	334486	6694260
<i>Haemodorum loratum</i>	P3	14/09/2022	1	334474	6694259
<i>Haemodorum loratum</i>	P3	14/09/2022	1	334409	6694257
<i>Haemodorum loratum</i>	P3	14/09/2022	2	331240	6694819
<i>Haemodorum loratum</i>	P3	14/09/2022	1	331590	6696090
<i>Haemodorum loratum</i>	P3	14/09/2022	1	331441	6695638
<i>Haemodorum loratum</i>	P3	14/09/2022	1	331473	6695648
<i>Haemodorum loratum</i>	P3	14/09/2022	1	331468	6695628
<i>Haemodorum loratum</i>	P3	14/09/2022	1	331436	6695509
<i>Haemodorum loratum</i>	P3	12/09/2022	2	331229	6694820
<i>Haemodorum loratum</i>	P3	12/09/2022	2	331211	6694822
<i>Haemodorum loratum</i>	P3	12/09/2022	1	331220	6694868
<i>Haemodorum loratum</i>	P3	13/09/2022	1	331574	6696077
<i>Haemodorum loratum</i>	P3	14/09/2022	1	331417	6695613
<i>Haemodorum loratum</i>	P3	14/09/2022	1	331429	6695643
<i>Haemodorum loratum</i>	P3	14/09/2022	1	331468	6695674
<i>Haemodorum loratum</i>	P3	12/09/2022	1	331217	6694827
<i>Haemodorum loratum</i>	P3	14/09/2022	1	331571	6696209
<i>Haemodorum loratum</i>	P3	14/09/2022	1	331408	6695621
<i>Haemodorum loratum</i>	P3	14/09/2022	1	331418	6695642
<i>Haemodorum loratum</i>	P3	14/09/2022	1	331446	6695642
<i>Haemodorum loratum</i>	P3	14/09/2022	1	331448	6695634
<i>Haemodorum loratum</i>	P3	12/09/2022	2	333971	6697148
<i>Haemodorum loratum</i>	P3	12/09/2022	1	334088	6696578
<i>Haemodorum loratum</i>	P3	12/09/2022	1	331160	6693580
<i>Haemodorum loratum</i>	P3	12/09/2022	1	331159	6693566
<i>Haemodorum loratum</i>	P3	12/09/2022	1	331126	6694551
<i>Haemodorum loratum</i>	P3	13/09/2022	1	335189	6694077
<i>Haemodorum loratum</i>	P3	13/09/2022	1	335155	6694075
<i>Haemodorum loratum</i>	P3	13/09/2022	1	334928	6694034
<i>Haemodorum loratum</i>	P3	13/09/2022	1	334893	6694003
<i>Haemodorum loratum</i>	P3	13/09/2022	1	335057	6694002
<i>Haemodorum loratum</i>	P3	13/09/2022	1	335083	6694006
<i>Haemodorum loratum</i>	P3	13/09/2022	1	335087	6694013

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Haemodorum loratum</i>	P3	13/09/2022	1	334350	6694044
<i>Haemodorum loratum</i>	P3	13/09/2022	1	334523	6693980
<i>Haemodorum loratum</i>	P3	14/09/2022	1	334404	6694212
<i>Haemodorum loratum</i>	P3	14/09/2022	2	334381	6694220
<i>Haemodorum loratum</i>	P3	14/09/2022	2	334362	6694213
<i>Haemodorum loratum</i>	P3	14/09/2022	1	334391	6694201
<i>Haemodorum loratum</i>	P3	14/09/2022	1	334416	6694182
<i>Haemodorum loratum</i>	P3	14/09/2022	1	334304	6694161
<i>Haemodorum loratum</i>	P3	14/09/2022	2	334356	6694161
<i>Haemodorum loratum</i>	P3	14/09/2022	1	334317	6694141
<i>Haemodorum loratum</i>	P3	14/09/2022	1	334355	6694119
<i>Haemodorum loratum</i>	P3	14/09/2022	1	334446	6694280
<i>Haemodorum loratum</i>	P3	14/09/2022	1	333724	6694045
<i>Haemodorum loratum</i>	P3	14/09/2022	2	333062	6694229
<i>Haemodorum loratum</i>	P3	14/09/2022	1	333049	6694228
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	5/09/2022	1	331204	6695233
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	331222	6695258
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	331329	6695653
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	331407	6695952
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	331415	6695964
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	331571	6694938
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	7/09/2022	1	334768	6694198
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	7/09/2022	1	334646	6694122
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	7/09/2022	3	334861	6694088
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	7/09/2022	2	334703	6693841
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331235	6695041
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331162	6694783
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331060	6694368
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331060	6694362
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331091	6694777
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331141	6694957
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	330957	6694099
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331044	6693895
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331051	6693825
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331054	6693797
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331056	6693783
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	330990	6693759
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	331024	6693574
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	331029	6693554
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331180	6693124

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331138	6693399
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	331083	6693637
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331083	6693654
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331083	6693660
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	1	334173	6696255
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	1	334430	6694720
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	1	334454	6694679
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	1	333836	6694036
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	1	333793	6694038
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	1	333775	6694042
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	1	333563	6694066
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	1	333510	6694075
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	1	333365	6694113
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	1	333319	6694129
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	1	333230	6694159
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	1	331326	6695022
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	5/09/2022	2	331216	6695270
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	5/09/2022	1	331393	6695929
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	5/09/2022	3	331397	6695939
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	331502	6695976
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	331462	6695833
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	331454	6695812
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	2	331770	6694873
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	331748	6694884
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	331574	6694924
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	2	331334	6694994
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	334754	6694210
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	334800	6694174
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	334554	6694090
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331243	6695025
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331112	6694543
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331067	6694368
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331062	6694330
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331064	6694314
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	4	331057	6694305
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	331147	6695019
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	330960	6693861
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	4	330960	6693901
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	330962	6693957
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	4	330953	6693993

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	330958	6694240
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	330958	6694251
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331045	6694209
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331049	6693900
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	331059	6693857
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331061	6693833
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	330989	6693724
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	3	331001	6693651
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331012	6693586
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	331051	6693405
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	331056	6693324
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331079	6693248
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331084	6693199
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331110	6693520
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	331092	6693675
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331084	6693688
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331086	6693701
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	3	331076	6693720
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	334161	6696173
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	334163	6696332
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	1	334417	6694784
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	1	334479	6694384
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	2	333890	6694051
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	1	333880	6694051
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	1	333854	6694051
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	5/09/2022	1	334093	6694066
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	5/09/2022	1	333565	6694101
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	5/09/2022	3	333318	6694155
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	331226	6695254
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	331258	6695365
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	3	331266	6695384
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	331312	6695571
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	331352	6695717
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	4	331359	6695742
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	331376	6695808
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	331376	6695821
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	8	331477	6696182
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	3	331493	6696226
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	5	331496	6696253
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	2	331574	6696335

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	2	331406	6695700
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	2	331646	6694963
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	2	331611	6694973
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	331515	6695000
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	7/09/2022	1	334801	6694233
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	7/09/2022	2	334744	6694196
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	7/09/2022	1	334625	6694106
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	7/09/2022	1	334763	6694077
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	7/09/2022	1	334800	6694027
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	7/09/2022	1	334683	6693992
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	7/09/2022	1	334733	6693949
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	331093	6694529
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	331084	6694511
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	6	331167	6695018
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	330998	6693752
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	3	330994	6693763
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	330991	6693825
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	330983	6693855
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	3	330977	6693871
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	330973	6693897
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	330967	6693927
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	330963	6694165
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	4	330965	6694195
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	331028	6694251
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	331039	6693833
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331018	6693643
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	331025	6693620
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	331032	6693574
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331038	6693552
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331067	6693413
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331083	6693326
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	331088	6693282
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331082	6693570
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331070	6693629
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	8	331074	6693646
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	331065	6693672
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	3	331062	6693706
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331059	6693737
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	3	331058	6693753
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	331049	6693767

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	1	334200	6696120
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	4	332682	6694457
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	3	332223	6694713
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	2	332167	6694743
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	2	331759	6694919
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	1	331610	6694960
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	1	331585	6694966
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	1	331430	6695009
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	1	331395	6695019
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	331221	6695104
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	331265	6695213
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	331365	6695636
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	332483	6694592
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	334633	6694103
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	2	334575	6694062
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	1	334624	6694024
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	6/09/2022	2	334703	6693943
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331204	6695005
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	331108	6694641
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	331074	6694548
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	331098	6694646
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331032	6693795
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331012	6693867
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331005	6693907
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	331000	6694003
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	330998	6694163
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331013	6694222
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331005	6694000
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	331019	6693936
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331034	6693747
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331045	6693678
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331055	6693641
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331058	6693625
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331112	6693382
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	331082	6693555
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	331051	6693713
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	1	331044	6693731
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	8/09/2022	2	331040	6693755
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	2	334186	6696026
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	9/09/2022	2	334212	6695878

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	333958	6697404
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	334015	6697111
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	334048	6696924
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	334090	6696723
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331094	6693990
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331092	6694013
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331083	6694133
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331089	6694167
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331179	6694562
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331136	6694411
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331122	6694322
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	2	331114	6694257
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331112	6694247
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331108	6694238
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	3	331102	6694185
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	5	331097	6694163
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	2	331099	6694149
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331094	6694100
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331103	6693995
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331105	6693983
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	2	331123	6693801
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331064	6693973
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331066	6694082
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	2	331081	6694236
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	3	331082	6694255
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331099	6694354
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331100	6694405
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	2	331096	6694395
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331090	6694362
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331082	6694301
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	2	331075	6694274
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	2	331071	6694238
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331075	6693938
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	13/09/2022	2	335201	6694073
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	13/09/2022	1	334898	6694044
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	13/09/2022	3	335303	6694025
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	13/09/2022	1	335455	6694015
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	13/09/2022	1	334512	6693969
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	334285	6694241
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	2	334316	6694193

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	3	334283	6694151
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	2	331232	6694761
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	331238	6694781
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	331277	6694931
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	331639	6696306
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	2	331677	6696452
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	331469	6695750
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	331536	6695894
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	331572	6696028
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	331334	6695249
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	331335	6695263
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	331480	6695677
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	331403	6695393
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331134	6693651
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331145	6693584
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	2	331154	6693566
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	2	331160	6693509
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331181	6693411
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331204	6693260
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	335501	6693923
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	2	335512	6693922
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	2	335515	6693943
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	2	335503	6693940
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	13/09/2022	1	331598	6696267
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	13/09/2022	1	331475	6695811
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	13/09/2022	1	331460	6695757
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	13/09/2022	2	331515	6695858
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	13/09/2022	2	331527	6695898
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	13/09/2022	1	331572	6696061
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	331308	6695197
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	331367	6695284
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	331353	6695236
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	331302	6695041
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	334379	6695225
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331234	6694883
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	13/09/2022	1	335527	6693933
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	331484	6695767
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	331276	6695114
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	331288	6695170
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	2	333886	6697562

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	3	333898	6697525
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	5	333904	6697491
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	2	333909	6697471
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	7	333910	6697453
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	5	333946	6697284
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	7	333949	6697261
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	2	334007	6696977
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	2	334009	6696959
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	334029	6696881
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	2	331123	6693785
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	3	331146	6693651
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331160	6693580
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331172	6693509
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331181	6693490
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331253	6693130
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	3	331194	6693451
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	5	331186	6693492
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	4	331178	6693505
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	2	331146	6693688
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	3	331139	6693736
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331130	6693780
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	2	331072	6693826
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	5	331057	6693923
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	2	331048	6694205
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	2	331112	6694376
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	2	331099	6694300
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	2	331086	6694217
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	1	331084	6694197
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	12/09/2022	2	331070	6694139
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	13/09/2022	1	335174	6694081
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	13/09/2022	1	335322	6694064
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	13/09/2022	1	335390	6694067
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	13/09/2022	1	335401	6694031
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	13/09/2022	1	335359	6694011
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	334246	6694061
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	334482	6694181
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	334340	6694180
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	334506	6694142
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	334523	6694118
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	334389	6694272

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	3	331095	6693247
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	2	331641	6696438
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	2	331612	6696321
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	3	331612	6696310
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	333775	6694040
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	333595	6694075
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	333581	6694065
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	1	333340	6694123
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	14/09/2022	2	332151	6694737
<i>Hypocalymma gardneri</i>	P3	5/09/2022	1	333624	6694097
<i>Hypocalymma gardneri</i>	P3	5/09/2022	1	333472	6694113
<i>Hypocalymma gardneri</i>	P3	8/09/2022	2	334119	6696402
<i>Hypocalymma gardneri</i>	P3	5/09/2022	1	333910	6694014
<i>Hypocalymma gardneri</i>	P3	5/09/2022	1	333845	6694014
<i>Hypocalymma gardneri</i>	P3	5/09/2022	2	333719	6694019
<i>Hypocalymma gardneri</i>	P3	5/09/2022	1	333635	6694035
<i>Hypocalymma gardneri</i>	P3	5/09/2022	1	333205	6694143
<i>Hypocalymma gardneri</i>	P3	5/09/2022	1	331184	6695149
<i>Hypocalymma gardneri</i>	P3	5/09/2022	1	334171	6694031
<i>Hypocalymma gardneri</i>	P3	5/09/2022	1	333328	6694107
<i>Hypocalymma gardneri</i>	P3	6/09/2022	1	332993	6694248
<i>Hypocalymma gardneri</i>	P3	8/09/2022	1	331015	6694488
<i>Hypocalymma gardneri</i>	P3	8/09/2022	1	331125	6694903
<i>Hypocalymma gardneri</i>	P3	9/09/2022	1	334458	6694673
<i>Hypocalymma gardneri</i>	P3	6/09/2022	1	331395	6695663
<i>Hypocalymma gardneri</i>	P3	6/09/2022	2	331363	6695554
<i>Hypocalymma gardneri</i>	P3	6/09/2022	1	332888	6694354
<i>Hypocalymma gardneri</i>	P3	6/09/2022	1	332669	6694476
<i>Hypocalymma gardneri</i>	P3	6/09/2022	1	332554	6694544
<i>Hypocalymma gardneri</i>	P3	6/09/2022	1	331965	6694853
<i>Hypocalymma gardneri</i>	P3	6/09/2022	1	331912	6694880
<i>Hypocalymma gardneri</i>	P3	6/09/2022	1	331646	6694963
<i>Hypocalymma gardneri</i>	P3	7/09/2022	1	334537	6694269
<i>Hypocalymma gardneri</i>	P3	7/09/2022	1	334620	6694111
<i>Hypocalymma gardneri</i>	P3	7/09/2022	1	334616	6693993
<i>Hypocalymma gardneri</i>	P3	8/09/2022	2	331164	6694815
<i>Hypocalymma gardneri</i>	P3	6/09/2022	1	333226	6694200
<i>Hypocalymma gardneri</i>	P3	6/09/2022	1	332863	6694378
<i>Hypocalymma gardneri</i>	P3	6/09/2022	1	332671	6694484
<i>Hypocalymma gardneri</i>	P3	6/09/2022	1	332262	6694706

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Hypocalymma gardneri</i>	P3	6/09/2022	1	334607	6694221
<i>Hypocalymma gardneri</i>	P3	8/09/2022	1	331187	6694930
<i>Hypocalymma gardneri</i>	P3	8/09/2022	2	331154	6694811
<i>Hypocalymma gardneri</i>	P3	8/09/2022	1	331118	6694677
<i>Hypocalymma gardneri</i>	P3	9/09/2022	1	332443	6694567
<i>Hypocalymma gardneri</i>	P3	12/09/2022	6	333936	6697505
<i>Hypocalymma gardneri</i>	P3	12/09/2022	1	334068	6696827
<i>Hypocalymma gardneri</i>	P3	12/09/2022	2	331142	6694464
<i>Hypocalymma gardneri</i>	P3	12/09/2022	1	331179	6694673
<i>Hypocalymma gardneri</i>	P3	13/09/2022	1	334385	6693991
<i>Hypocalymma gardneri</i>	P3	13/09/2022	1	334555	6693853
<i>Hypocalymma gardneri</i>	P3	14/09/2022	1	334325	6694168
<i>Hypocalymma gardneri</i>	P3	14/09/2022	1	331609	6696269
<i>Hypocalymma gardneri</i>	P3	14/09/2022	2	331497	6695860
<i>Hypocalymma gardneri</i>	P3	14/09/2022	1	331564	6696175
<i>Hypocalymma gardneri</i>	P3	14/09/2022	1	334300	6694222
<i>Hypocalymma gardneri</i>	P3	14/09/2022	1	331641	6696438
<i>Paracaleana dixonii</i>	T	7/11/2022	1	333663	6694040
<i>Paracaleana dixonii</i>	T	7/11/2022	2	333455	6694080
<i>Paracaleana dixonii</i>	T	7/11/2022	1	333020	6694244
<i>Paracaleana dixonii</i>	T	8/11/2022	2	331422	6695537
<i>Paracaleana dixonii</i>	T	8/11/2022	4	331376	6695361
<i>Paracaleana dixonii</i>	T	8/11/2022	1	331367	6695331
<i>Paracaleana dixonii</i>	T	8/11/2022	2	331345	6695242
<i>Paracaleana dixonii</i>	T	8/11/2022	2	331342	6695233
<i>Paracaleana dixonii</i>	T	8/11/2022	3	331430	6695721
<i>Paracaleana dixonii</i>	T	8/11/2022	1	331443	6695776
<i>Paracaleana dixonii</i>	T	8/11/2022	1	331551	6696180
<i>Paracaleana dixonii</i>	T	8/11/2022	1	331408	6695756
<i>Paracaleana dixonii</i>	T	7/11/2022	1	331115	6694597
<i>Paracaleana dixonii</i>	T	8/11/2022	1	331453	6695683
<i>Paracaleana dixonii</i>	T	8/11/2022	2	331325	6695197
<i>Paracaleana dixonii</i>	T	8/11/2022	2	331295	6695261
<i>Paracaleana dixonii</i>	T	8/11/2022	1	331350	6695469
<i>Paracaleana dixonii</i>	T	8/11/2022	2	331440	6695824
<i>Paracaleana dixonii</i>	T	8/11/2022	1	331533	6696177
<i>Paracaleana dixonii</i>	T	8/11/2022	1	331385	6695900
<i>Paracaleana dixonii</i>	T	8/11/2022	1	331351	6695771
<i>Paracaleana dixonii</i>	T	9/11/2022	2	334401	6694263
<i>Paracaleana dixonii</i>	T	9/11/2022	1	334214	6694142

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Paracaleana dixonii</i>	T	7/11/2022	2	331506	6695812
<i>Paracaleana dixonii</i>	T	7/11/2022	5	331367	6695299
<i>Paracaleana dixonii</i>	T	7/11/2022	1	334324	6694001
<i>Paracaleana dixonii</i>	T	7/11/2022	2	334393	6693962
<i>Paracaleana dixonii</i>	T	7/11/2022	3	334399	6693962
<i>Paracaleana dixonii</i>	T	8/11/2022	1	331500	6695756
<i>Paracaleana dixonii</i>	T	8/11/2022	1	331390	6695353
<i>Paracaleana dixonii</i>	T	8/11/2022	1	331390	6695352
<i>Paracaleana dixonii</i>	T	8/11/2022	1	331388	6695494
<i>Paracaleana dixonii</i>	T	8/11/2022	2	331460	6695756
<i>Paracaleana dixonii</i>	T	8/11/2022	1	331459	6695757
<i>Paracaleana dixonii</i>	T	8/11/2022	1	331462	6695767
<i>Paracaleana dixonii</i>	T	8/11/2022	1	331462	6695772
<i>Paracaleana dixonii</i>	T	9/11/2022	1	334402	6693967
<i>Paracaleana dixonii</i>	T	9/11/2022	1	334402	6693967
<i>Paracaleana dixonii</i>	T	9/11/2022	1	334403	6693965
<i>Persoonia filiformis</i>	P3	9/09/2022	1	334253	6695852
<i>Persoonia filiformis</i>	P3	7/09/2022	2	334836	6694153
<i>Persoonia filiformis</i>	P3	6/09/2022	1	334615	6693939
<i>Persoonia filiformis</i>	P3	9/09/2022	1	334345	6695357
<i>Persoonia filiformis</i>	P3	9/09/2022	1	334353	6695314
<i>Persoonia filiformis</i>	P3	9/09/2022	1	334395	6695106
<i>Persoonia filiformis</i>	P3	13/09/2022	2	334311	6693973
<i>Persoonia filiformis</i>	P3	13/09/2022	1	334398	6694000
<i>Persoonia filiformis</i>	P3	13/09/2022	1	334194	6694022
<i>Persoonia filiformis</i>	P3	13/09/2022	1	334553	6693902
<i>Persoonia filiformis</i>	P3	14/09/2022	1	334248	6694104
<i>Persoonia filiformis</i>	P3	14/09/2022	1	334472	6694224
<i>Persoonia filiformis</i>	P3	14/09/2022	1	334414	6694162
<i>Persoonia filiformis</i>	P3	14/09/2022	1	333967	6694052
<i>Schoenus griffinianus</i>	P4	5/09/2022	1	331375	6695864
<i>Schoenus griffinianus</i>	P4	8/09/2022	1	331040	6694269
<i>Schoenus griffinianus</i>	P4	5/09/2022	16	331516	6696393
<i>Schoenus griffinianus</i>	P4	5/09/2022	31	331521	6696410
<i>Schoenus griffinianus</i>	P4	5/09/2022	28	331525	6696425
<i>Schoenus griffinianus</i>	P4	5/09/2022	16	331534	6696451
<i>Schoenus griffinianus</i>	P4	5/09/2022	15	331540	6696482
<i>Schoenus griffinianus</i>	P4	5/09/2022	12	331550	6696511
<i>Schoenus griffinianus</i>	P4	5/09/2022	8	331558	6696541
<i>Schoenus griffinianus</i>	P4	5/09/2022	2	331584	6696306

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Schoenus griffinianus</i>	P4	6/09/2022	1	334841	6694175
<i>Schoenus griffinianus</i>	P4	6/09/2022	4	334715	6693973
<i>Schoenus griffinianus</i>	P4	6/09/2022	2	334725	6694263
<i>Schoenus griffinianus</i>	P4	6/09/2022	3	331182	6695087
<i>Schoenus griffinianus</i>	P4	6/09/2022	5	331211	6695195
<i>Schoenus griffinianus</i>	P4	6/09/2022	6	331370	6695784
<i>Schoenus griffinianus</i>	P4	6/09/2022	7	331397	6695879
<i>Schoenus griffinianus</i>	P4	7/09/2022	2	334744	6694196
<i>Schoenus griffinianus</i>	P4	6/09/2022	1	334810	6694177
<i>Schoenus griffinianus</i>	P4	6/09/2022	1	334841	6694046
<i>Schoenus griffinianus</i>	P4	9/09/2022	1	334352	6695365
<i>Schoenus griffinianus</i>	P4	12/09/2022	1	331149	6694445
<i>Schoenus griffinianus</i>	P4	13/09/2022	1	334878	6694006
<i>Schoenus griffinianus</i>	P4	14/09/2022	5	331677	6696452
<i>Schoenus griffinianus</i>	P4	13/09/2022	4	335004	6694077
<i>Schoenus griffinianus</i>	P4	13/09/2022	2	334945	6694062
<i>Schoenus griffinianus</i>	P4	13/09/2022	2	334426	6694000
<i>Schoenus griffinianus</i>	P4	14/09/2022	17	331659	6696418
<i>Schoenus griffinianus</i>	P4	14/09/2022	1	333861	6694047
<i>Schoenus griffinianus</i>	P4	14/09/2022	9	331676	6694930
<i>Stylidium carnosum</i> subsp. Narrow leaves (J.A. Wege 490)	P1	12/09/2022	1	333971	6697148
<i>Styphelia filamentosa</i>	P3	8/09/2022	1	334161	6696166
<i>Styphelia filamentosa</i>	P3	8/09/2022	2	331039	6693833
<i>Styphelia filamentosa</i>	P3	8/09/2022	3	331046	6693792
<i>Styphelia filamentosa</i>	P3	9/09/2022	1	334012	6694035
<i>Styphelia filamentosa</i>	P3	5/09/2022	7	331284	6695523
<i>Styphelia filamentosa</i>	P3	8/09/2022	7	331064	6694314
<i>Styphelia filamentosa</i>	P3	8/09/2022	2	331057	6694300
<i>Styphelia filamentosa</i>	P3	9/09/2022	1	334093	6694053
<i>Styphelia filamentosa</i>	P3	9/09/2022	1	334041	6694051
<i>Styphelia filamentosa</i>	P3	9/09/2022	1	332970	6694296
<i>Styphelia filamentosa</i>	P3	9/09/2022	2	333854	6694051
<i>Styphelia filamentosa</i>	P3	9/09/2022	1	333831	6694053
<i>Styphelia filamentosa</i>	P3	9/09/2022	1	333785	6694054
<i>Styphelia filamentosa</i>	P3	9/09/2022	3	333750	6694056
<i>Styphelia filamentosa</i>	P3	9/09/2022	1	332842	6694365
<i>Styphelia filamentosa</i>	P3	9/09/2022	1	331322	6695038
<i>Styphelia filamentosa</i>	P3	5/09/2022	1	333953	6694072
<i>Styphelia filamentosa</i>	P3	5/09/2022	1	334175	6694052
<i>Styphelia filamentosa</i>	P3	8/09/2022	1	331172	6694836

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Styphelia filamentosa</i>	P3	8/09/2022	1	331142	6694735
<i>Styphelia filamentosa</i>	P3	9/09/2022	1	332841	6694367
<i>Styphelia filamentosa</i>	P3	9/09/2022	1	331395	6695019
<i>Styphelia filamentosa</i>	P3	5/09/2022	1	333646	6694093
<i>Styphelia filamentosa</i>	P3	8/09/2022	1	331173	6694880
<i>Styphelia filamentosa</i>	P3	8/09/2022	1	331160	6694834
<i>Styphelia filamentosa</i>	P3	8/09/2022	1	331071	6694513
<i>Styphelia filamentosa</i>	P3	8/09/2022	1	331022	6694272
<i>Styphelia filamentosa</i>	P3	8/09/2022	1	331012	6693895
<i>Styphelia filamentosa</i>	P3	8/09/2022	2	331000	6693970
<i>Styphelia filamentosa</i>	P3	8/09/2022	1	331015	6693955
<i>Styphelia filamentosa</i>	P3	8/09/2022	1	331024	6693900
<i>Styphelia filamentosa</i>	P3	8/09/2022	1	331028	6693837
<i>Styphelia filamentosa</i>	P3	8/09/2022	1	331030	6693822
<i>Styphelia filamentosa</i>	P3	8/09/2022	1	331032	6693801
<i>Styphelia filamentosa</i>	P3	9/09/2022	1	334362	6695119
<i>Styphelia filamentosa</i>	P3	9/09/2022	1	331679	6694919
<i>Styphelia filamentosa</i>	P3	12/09/2022	1	331100	6693866
<i>Styphelia filamentosa</i>	P3	12/09/2022	4	331101	6693877
<i>Styphelia filamentosa</i>	P3	12/09/2022	2	331097	6693894
<i>Styphelia filamentosa</i>	P3	12/09/2022	3	331096	6693923
<i>Styphelia filamentosa</i>	P3	12/09/2022	6	331093	6693927
<i>Styphelia filamentosa</i>	P3	12/09/2022	8	331094	6693945
<i>Styphelia filamentosa</i>	P3	12/09/2022	4	331089	6694170
<i>Styphelia filamentosa</i>	P3	12/09/2022	1	331107	6694286
<i>Styphelia filamentosa</i>	P3	12/09/2022	1	331118	6694325
<i>Styphelia filamentosa</i>	P3	12/09/2022	1	331123	6694352
<i>Styphelia filamentosa</i>	P3	12/09/2022	2	331130	6694355
<i>Styphelia filamentosa</i>	P3	12/09/2022	5	331124	6694323
<i>Styphelia filamentosa</i>	P3	12/09/2022	1	331103	6693995
<i>Styphelia filamentosa</i>	P3	12/09/2022	1	331077	6693844
<i>Styphelia filamentosa</i>	P3	12/09/2022	1	331066	6693931
<i>Styphelia filamentosa</i>	P3	12/09/2022	1	331091	6694290
<i>Styphelia filamentosa</i>	P3	12/09/2022	3	331089	6694298
<i>Styphelia filamentosa</i>	P3	12/09/2022	4	331091	6694306
<i>Styphelia filamentosa</i>	P3	12/09/2022	2	331093	6694311
<i>Styphelia filamentosa</i>	P3	12/09/2022	3	331082	6694301
<i>Styphelia filamentosa</i>	P3	12/09/2022	3	331081	6694292
<i>Styphelia filamentosa</i>	P3	12/09/2022	2	331077	6694282
<i>Styphelia filamentosa</i>	P3	12/09/2022	1	331053	6694141

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Styphelia filamentosa</i>	P3	12/09/2022	1	331078	6693927
<i>Styphelia filamentosa</i>	P3	12/09/2022	3	331084	6693901
<i>Styphelia filamentosa</i>	P3	12/09/2022	8	331084	6693890
<i>Styphelia filamentosa</i>	P3	12/09/2022	3	331088	6693864
<i>Styphelia filamentosa</i>	P3	14/09/2022	1	334217	6694056
<i>Styphelia filamentosa</i>	P3	14/09/2022	1	334171	6694052
<i>Styphelia filamentosa</i>	P3	14/09/2022	1	334287	6694152
<i>Styphelia filamentosa</i>	P3	14/09/2022	1	331604	6696256
<i>Styphelia filamentosa</i>	P3	14/09/2022	1	331427	6695594
<i>Styphelia filamentosa</i>	P3	13/09/2022	1	331567	6696044
<i>Styphelia filamentosa</i>	P3	13/09/2022	2	334226	6694044
<i>Styphelia filamentosa</i>	P3	14/09/2022	1	334407	6694201
<i>Styphelia filamentosa</i>	P3	14/09/2022	1	334431	6694161
<i>Styphelia filamentosa</i>	P3	14/09/2022	1	334020	6694048
<i>Styphelia filamentosa</i>	P3	14/09/2022	1	333852	6694047
<i>Styphelia filamentosa</i>	P3	14/09/2022	1	333791	6694051
<i>Styphelia filamentosa</i>	P3	14/09/2022	1	333696	6694048
<i>Styphelia filamentosa</i>	P3	14/09/2022	2	333404	6694106
<i>Styphelia filamentosa</i>	P3	14/09/2022	5	332740	6694409
<i>Styphelia filamentosa</i>	P3	14/09/2022	3	332720	6694419
<i>Styphelia filamentosa</i>	P3	14/09/2022	2	332706	6694428
<i>Styphelia filamentosa</i>	P3	14/09/2022	3	332690	6694436
<i>Styphelia filamentosa</i>	P3	14/09/2022	2	332638	6694464
<i>Styphelia filamentosa</i>	P3	14/09/2022	1	332583	6694496
<i>Styphelia filamentosa</i>	P3	14/09/2022	3	332537	6694518
<i>Styphelia filamentosa</i>	P3	14/09/2022	1	332456	6694567
<i>Styphelia filamentosa</i>	P3	14/09/2022	1	332375	6694612
<i>Styphelia filamentosa</i>	P3	14/09/2022	1	332311	6694647
<i>Styphelia filamentosa</i>	P3	14/09/2022	3	332293	6694657
<i>Styphelia filamentosa</i>	P3	14/09/2022	1	332232	6694692
<i>Styphelia filamentosa</i>	P3	14/09/2022	1	332206	6694707
<i>Styphelia filamentosa</i>	P3	12/09/2022	3	331123	6693785
<i>Styphelia filamentosa</i>	P3	12/09/2022	5	331088	6693945
<i>Styphelia filamentosa</i>	P3	12/09/2022	2	331088	6693919
<i>Styphelia filamentosa</i>	P3	12/09/2022	3	331096	6693873
<i>Thelymitra pulcherrima</i>	P2	7/09/2022	2	332904	6694236
<i>Thelymitra pulcherrima</i>	P2	8/09/2022	1	331100	6694799
<i>Thelymitra pulcherrima</i>	P2	8/09/2022	1	331113	6694857
<i>Thelymitra pulcherrima</i>	P2	8/09/2022	1	330960	6693901
<i>Thelymitra pulcherrima</i>	P2	9/09/2022	1	331301	6695047

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Thelymitra pulcherrima</i>	P2	7/09/2022	3	334661	6693787
<i>Thelymitra pulcherrima</i>	P2	7/09/2022	1	334667	6693791
<i>Thelymitra pulcherrima</i>	P2	7/09/2022	1	332887	6694264
<i>Thelymitra pulcherrima</i>	P2	7/09/2022	1	332894	6694267
<i>Thelymitra pulcherrima</i>	P2	7/09/2022	1	333048	6694228
<i>Thelymitra pulcherrima</i>	P2	7/09/2022	1	332984	6694308
<i>Thelymitra pulcherrima</i>	P2	7/09/2022	1	332987	6694306
<i>Thelymitra pulcherrima</i>	P2	7/09/2022	1	333002	6694288
<i>Thelymitra pulcherrima</i>	P2	7/09/2022	1	333003	6694290
<i>Thelymitra pulcherrima</i>	P2	8/09/2022	1	331062	6694620
<i>Thelymitra pulcherrima</i>	P2	8/09/2022	1	331083	6694727
<i>Thelymitra pulcherrima</i>	P2	7/09/2022	1	332908	6694281
<i>Thelymitra pulcherrima</i>	P2	7/09/2022	1	332912	6694266
<i>Thelymitra pulcherrima</i>	P2	7/09/2022	1	332900	6694295
<i>Thelymitra pulcherrima</i>	P2	7/09/2022	1	332904	6694275
<i>Thelymitra pulcherrima</i>	P2	7/09/2022	1	332962	6694258
<i>Thelymitra pulcherrima</i>	P2	7/09/2022	1	333007	6694241
<i>Thelymitra pulcherrima</i>	P2	9/09/2022	1	334317	6695355
<i>Thelymitra pulcherrima</i>	P2	14/09/2022	1	333049	6694228
<i>Thryptomene spicata</i>	P2	8/09/2022	20	331123	6693288
<i>Thryptomene spicata</i>	P2	8/09/2022	15	331147	6693152
<i>Thryptomene spicata</i>	P2	8/09/2022	30	331148	6693143
<i>Thryptomene spicata</i>	P2	12/09/2022	1	331055	6694035
<i>Thryptomene spicata</i>	P2	12/09/2022	2	331066	6694147
<i>Thryptomene spicata</i>	P2	12/09/2022	1	331072	6694021
<i>Thryptomene spicata</i>	P2	14/09/2022	8	331169	6693089
<i>Thryptomene spicata</i>	P2	14/09/2022	15	331160	6693155
<i>Thryptomene spicata</i>	P2	14/09/2022	15	331137	6693300
<i>Thryptomene spicata</i>	P2	14/09/2022	2	331063	6693707
<i>Thryptomene spicata</i>	P2	14/09/2022	1	331132	6693689
<i>Thryptomene spicata</i>	P2	14/09/2022	10	331205	6693256
<i>Thryptomene spicata</i>	P2	14/09/2022	10	331213	6693247
<i>Thryptomene spicata</i>	P2	14/09/2022	5	331224	6693095
<i>Thryptomene spicata</i>	P2	14/09/2022	1	331199	6693391
<i>Thryptomene spicata</i>	P2	14/09/2022	8	331200	6693372
<i>Thryptomene spicata</i>	P2	14/09/2022	2	331204	6693351
<i>Thryptomene spicata</i>	P2	14/09/2022	20	331213	6693333
<i>Thryptomene spicata</i>	P2	14/09/2022	5	331212	6693303
<i>Thryptomene spicata</i>	P2	14/09/2022	5	331222	6693262
<i>Thryptomene spicata</i>	P2	14/09/2022	5	331229	6693230

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Thryptomene spicata</i>	P2	14/09/2022	25	331234	6693216
<i>Thryptomene spicata</i>	P2	8/09/2022	6	331025	6693928
<i>Thryptomene spicata</i>	P2	8/09/2022	150	331059	6693441
<i>Thryptomene spicata</i>	P2	8/09/2022	60	331091	6693251
<i>Thryptomene spicata</i>	P2	12/09/2022	28	331070	6694139
<i>Thryptomene spicata</i>	P2	12/09/2022	6	331073	6694123
<i>Thryptomene spicata</i>	P2	12/09/2022	16	331091	6693895
<i>Thryptomene spicata</i>	P2	12/09/2022	2	331096	6693873
<i>Thryptomene spicata</i>	P2	14/09/2022	30	331187	6693089
<i>Thryptomene spicata</i>	P2	14/09/2022	3	331195	6693117
<i>Thryptomene spicata</i>	P2	14/09/2022	20	331182	6693130
<i>Thryptomene spicata</i>	P2	14/09/2022	5	331163	6693258
<i>Thryptomene spicata</i>	P2	14/09/2022	22	331148	6693342
<i>Thryptomene spicata</i>	P2	14/09/2022	1	331118	6693454
<i>Thryptomene spicata</i>	P2	14/09/2022	1	331112	6693534
<i>Thryptomene spicata</i>	P2	14/09/2022	22	331086	6693595
<i>Thryptomene spicata</i>	P2	14/09/2022	2	331070	6693680
<i>Thryptomene spicata</i>	P2	14/09/2022	12	331075	6693772
<i>Thryptomene spicata</i>	P2	14/09/2022	1	331121	6693576
<i>Thryptomene spicata</i>	P2	14/09/2022	5	331126	6693541
<i>Thryptomene spicata</i>	P2	14/09/2022	9	331185	6693297
<i>Thryptomene spicata</i>	P2	14/09/2022	8	331189	6693215
<i>Thryptomene spicata</i>	P2	14/09/2022	3	331206	6693220
<i>Thryptomene spicata</i>	P2	14/09/2022	7	331186	6693196
<i>Thryptomene spicata</i>	P2	14/09/2022	3	331196	6693147
<i>Thryptomene spicata</i>	P2	14/09/2022	8	331212	6693131
<i>Thryptomene spicata</i>	P2	14/09/2022	60	331206	6693101
<i>Thryptomene spicata</i>	P2	14/09/2022	250	331115	6693080
<i>Thryptomene spicata</i>	P2	14/09/2022	120	331116	6693100
<i>Thryptomene spicata</i>	P2	14/09/2022	250	331113	6693121
<i>Thryptomene spicata</i>	P2	14/09/2022	160	331109	6693132
<i>Thryptomene spicata</i>	P2	14/09/2022	90	331098	6693134
<i>Thryptomene spicata</i>	P2	14/09/2022	5	331113	6693146
<i>Thryptomene spicata</i>	P2	14/09/2022	25	331108	6693157
<i>Thryptomene spicata</i>	P2	14/09/2022	23	331092	6693172
<i>Thryptomene spicata</i>	P2	14/09/2022	3	331089	6693202
<i>Thryptomene spicata</i>	P2	14/09/2022	12	331101	6693222
<i>Thryptomene spicata</i>	P2	14/09/2022	12	331090	6693227
<i>Thryptomene spicata</i>	P2	14/09/2022	65	331066	6693429
<i>Thryptomene spicata</i>	P2	14/09/2022	20	331047	6693496

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia amphigia</i>	P3	6/09/2022	1	332875	6694303
<i>Verticordia argentea</i>	P2	12/09/2022	20	331067	6693917
<i>Verticordia argentea</i>	P2	8/09/2022	1	331107	6693414
<i>Verticordia argentea</i>	P2	8/09/2022	1	331049	6693716
<i>Verticordia argentea</i>	P2	12/09/2022	3	333931	6697545
<i>Verticordia argentea</i>	P2	12/09/2022	4	334025	6697050
<i>Verticordia argentea</i>	P2	12/09/2022	15	331100	6693866
<i>Verticordia argentea</i>	P2	12/09/2022	1	331102	6693882
<i>Verticordia argentea</i>	P2	12/09/2022	15	331097	6693899
<i>Verticordia argentea</i>	P2	12/09/2022	2	331096	6693923
<i>Verticordia argentea</i>	P2	12/09/2022	4	331094	6693945
<i>Verticordia argentea</i>	P2	12/09/2022	3	331085	6694032
<i>Verticordia argentea</i>	P2	12/09/2022	3	331086	6694064
<i>Verticordia argentea</i>	P2	12/09/2022	1	331117	6694278
<i>Verticordia argentea</i>	P2	12/09/2022	1	331109	6694230
<i>Verticordia argentea</i>	P2	12/09/2022	1	331099	6694026
<i>Verticordia argentea</i>	P2	12/09/2022	1	331104	6693970
<i>Verticordia argentea</i>	P2	12/09/2022	4	331114	6693892
<i>Verticordia argentea</i>	P2	12/09/2022	10	331116	6693876
<i>Verticordia argentea</i>	P2	12/09/2022	1	331117	6693862
<i>Verticordia argentea</i>	P2	12/09/2022	3	331118	6693848
<i>Verticordia argentea</i>	P2	12/09/2022	2	331078	6693867
<i>Verticordia argentea</i>	P2	12/09/2022	4	331075	6693894
<i>Verticordia argentea</i>	P2	12/09/2022	1	331074	6693900
<i>Verticordia argentea</i>	P2	12/09/2022	2	331068	6693910
<i>Verticordia argentea</i>	P2	12/09/2022	2	331067	6693938
<i>Verticordia argentea</i>	P2	12/09/2022	3	331058	6694011
<i>Verticordia argentea</i>	P2	12/09/2022	1	331058	6694054
<i>Verticordia argentea</i>	P2	12/09/2022	25	331062	6694069
<i>Verticordia argentea</i>	P2	12/09/2022	4	331066	6694082
<i>Verticordia argentea</i>	P2	12/09/2022	8	331091	6694323
<i>Verticordia argentea</i>	P2	12/09/2022	2	331145	6694546
<i>Verticordia argentea</i>	P2	12/09/2022	1	331096	6694395
<i>Verticordia argentea</i>	P2	12/09/2022	2	331084	6694323
<i>Verticordia argentea</i>	P2	12/09/2022	3	331066	6694210
<i>Verticordia argentea</i>	P2	12/09/2022	15	331068	6694044
<i>Verticordia argentea</i>	P2	12/09/2022	1	331068	6694006
<i>Verticordia argentea</i>	P2	12/09/2022	2	331073	6693971
<i>Verticordia argentea</i>	P2	12/09/2022	6	331081	6693913
<i>Verticordia argentea</i>	P2	12/09/2022	4	331084	6693890

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia argentea</i>	P2	12/09/2022	2	331089	6693877
<i>Verticordia argentea</i>	P2	12/09/2022	8	331093	6693832
<i>Verticordia argentea</i>	P2	14/09/2022	2	334518	6694174
<i>Verticordia argentea</i>	P2	14/09/2022	1	331259	6694860
<i>Verticordia argentea</i>	P2	14/09/2022	3	331531	6695875
<i>Verticordia argentea</i>	P2	14/09/2022	1	331546	6695932
<i>Verticordia argentea</i>	P2	5/09/2022	1	333472	6694113
<i>Verticordia argentea</i>	P2	12/09/2022	3	331185	6693208
<i>Verticordia argentea</i>	P2	12/09/2022	8	331120	6693563
<i>Verticordia argentea</i>	P2	12/09/2022	4	331118	6693570
<i>Verticordia argentea</i>	P2	12/09/2022	1	331116	6693591
<i>Verticordia argentea</i>	P2	12/09/2022	1	331116	6693591
<i>Verticordia argentea</i>	P2	12/09/2022	25	331100	6693668
<i>Verticordia argentea</i>	P2	12/09/2022	12	331093	6693685
<i>Verticordia argentea</i>	P2	12/09/2022	6	331125	6693694
<i>Verticordia argentea</i>	P2	12/09/2022	5	331138	6693626
<i>Verticordia argentea</i>	P2	12/09/2022	8	331154	6693550
<i>Verticordia argentea</i>	P2	6/09/2022	1	332402	6694624
<i>Verticordia argentea</i>	P2	8/09/2022	1	331084	6694511
<i>Verticordia argentea</i>	P2	8/09/2022	3	330986	6693810
<i>Verticordia argentea</i>	P2	8/09/2022	1	331069	6694478
<i>Verticordia argentea</i>	P2	8/09/2022	1	331090	6694767
<i>Verticordia argentea</i>	P2	8/09/2022	1	331175	6695046
<i>Verticordia argentea</i>	P2	8/09/2022	1	331020	6694007
<i>Verticordia argentea</i>	P2	8/09/2022	1	330962	6694079
<i>Verticordia argentea</i>	P2	8/09/2022	6	331023	6694187
<i>Verticordia argentea</i>	P2	8/09/2022	5	331017	6694083
<i>Verticordia argentea</i>	P2	8/09/2022	12	331015	6694071
<i>Verticordia argentea</i>	P2	8/09/2022	30	331023	6693998
<i>Verticordia argentea</i>	P2	8/09/2022	1	331032	6693959
<i>Verticordia argentea</i>	P2	8/09/2022	1	331030	6693902
<i>Verticordia argentea</i>	P2	8/09/2022	3	331035	6693891
<i>Verticordia argentea</i>	P2	8/09/2022	7	331033	6693882
<i>Verticordia argentea</i>	P2	8/09/2022	1	331032	6693862
<i>Verticordia argentea</i>	P2	8/09/2022	5	331172	6693099
<i>Verticordia argentea</i>	P2	8/09/2022	6	331166	6693135
<i>Verticordia argentea</i>	P2	8/09/2022	12	331161	6693201
<i>Verticordia argentea</i>	P2	8/09/2022	3	331150	6693224
<i>Verticordia argentea</i>	P2	8/09/2022	1	331117	6693400
<i>Verticordia argentea</i>	P2	8/09/2022	2	331115	6693416

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia argentea</i>	P2	8/09/2022	1	331095	6693556
<i>Verticordia argentea</i>	P2	8/09/2022	1	331065	6693672
<i>Verticordia argentea</i>	P2	8/09/2022	1	331053	6693775
<i>Verticordia argentea</i>	P2	9/09/2022	6	332780	6694404
<i>Verticordia argentea</i>	P2	9/09/2022	2	332763	6694413
<i>Verticordia argentea</i>	P2	9/09/2022	1	331862	6694882
<i>Verticordia argentea</i>	P2	5/09/2022	50	333472	6694163
<i>Verticordia argentea</i>	P2	5/09/2022	50	333464	6694176
<i>Verticordia argentea</i>	P2	5/09/2022	50	333450	6694184
<i>Verticordia argentea</i>	P2	5/09/2022	1	333278	6694179
<i>Verticordia argentea</i>	P2	6/09/2022	1	334615	6693939
<i>Verticordia argentea</i>	P2	7/09/2022	10	334624	6693820
<i>Verticordia argentea</i>	P2	8/09/2022	1	331019	6694260
<i>Verticordia argentea</i>	P2	8/09/2022	20	331007	6694069
<i>Verticordia argentea</i>	P2	8/09/2022	3	331019	6693870
<i>Verticordia argentea</i>	P2	8/09/2022	1	331131	6693228
<i>Verticordia argentea</i>	P2	8/09/2022	2	331134	6693206
<i>Verticordia argentea</i>	P2	8/09/2022	1	331148	6693164
<i>Verticordia argentea</i>	P2	8/09/2022	2	331142	6693149
<i>Verticordia argentea</i>	P2	8/09/2022	2	331148	6693143
<i>Verticordia argentea</i>	P2	8/09/2022	2	331147	6693127
<i>Verticordia argentea</i>	P2	8/09/2022	1	331153	6693103
<i>Verticordia argentea</i>	P2	8/09/2022	1	331158	6693092
<i>Verticordia argentea</i>	P2	8/09/2022	1	331161	6693111
<i>Verticordia argentea</i>	P2	8/09/2022	2	331142	6693217
<i>Verticordia argentea</i>	P2	8/09/2022	8	331030	6694004
<i>Verticordia argentea</i>	P2	8/09/2022	8	331033	6693990
<i>Verticordia argentea</i>	P2	8/09/2022	2	331035	6693963
<i>Verticordia argentea</i>	P2	8/09/2022	4	331045	6693882
<i>Verticordia argentea</i>	P2	8/09/2022	1	331098	6693562
<i>Verticordia argentea</i>	P2	8/09/2022	1	331077	6693701
<i>Verticordia argentea</i>	P2	9/09/2022	2	333212	6694166
<i>Verticordia argentea</i>	P2	6/09/2022	1	331317	6695005
<i>Verticordia argentea</i>	P2	7/09/2022	8	334604	6693800
<i>Verticordia argentea</i>	P2	8/09/2022	1	331093	6694508
<i>Verticordia argentea</i>	P2	8/09/2022	1	331076	6694436
<i>Verticordia argentea</i>	P2	8/09/2022	10	330980	6694310
<i>Verticordia argentea</i>	P2	8/09/2022	3	330987	6694376
<i>Verticordia argentea</i>	P2	8/09/2022	2	330994	6694417
<i>Verticordia argentea</i>	P2	8/09/2022	4	331001	6694430

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia argentea</i>	P2	8/09/2022	1	330960	6694066
<i>Verticordia argentea</i>	P2	8/09/2022	1	331026	6694143
<i>Verticordia argentea</i>	P2	8/09/2022	2	331032	6693972
<i>Verticordia argentea</i>	P2	8/09/2022	1	331122	6693424
<i>Verticordia argentea</i>	P2	8/09/2022	1	331077	6693674
<i>Verticordia argentea</i>	P2	9/09/2022	1	334174	6696132
<i>Verticordia argentea</i>	P2	9/09/2022	2	334476	6694500
<i>Verticordia argentea</i>	P2	9/09/2022	1	334436	6694779
<i>Verticordia argentea</i>	P2	9/09/2022	8	333413	6694094
<i>Verticordia argentea</i>	P2	9/09/2022	1	333379	6694106
<i>Verticordia argentea</i>	P2	9/09/2022	15	333358	6694114
<i>Verticordia argentea</i>	P2	9/09/2022	6	333230	6694159
<i>Verticordia argentea</i>	P2	8/09/2022	2	331068	6694341
<i>Verticordia argentea</i>	P2	8/09/2022	3	330984	6694409
<i>Verticordia argentea</i>	P2	8/09/2022	13	330984	6694417
<i>Verticordia argentea</i>	P2	8/09/2022	2	330990	6694438
<i>Verticordia argentea</i>	P2	8/09/2022	3	330952	6694206
<i>Verticordia argentea</i>	P2	8/09/2022	4	331036	6694134
<i>Verticordia argentea</i>	P2	8/09/2022	6	331030	6694110
<i>Verticordia argentea</i>	P2	8/09/2022	8	331034	6694069
<i>Verticordia argentea</i>	P2	8/09/2022	4	331046	6693975
<i>Verticordia argentea</i>	P2	8/09/2022	8	331047	6693962
<i>Verticordia argentea</i>	P2	8/09/2022	1	331052	6693909
<i>Verticordia argentea</i>	P2	8/09/2022	8	331059	6693857
<i>Verticordia argentea</i>	P2	8/09/2022	9	331060	6693845
<i>Verticordia argentea</i>	P2	8/09/2022	6	331061	6693833
<i>Verticordia argentea</i>	P2	8/09/2022	2	331063	6693801
<i>Verticordia argentea</i>	P2	8/09/2022	39	331111	6693557
<i>Verticordia argentea</i>	P2	8/09/2022	22	331111	6693569
<i>Verticordia argentea</i>	P2	8/09/2022	12	331092	6693675
<i>Verticordia argentea</i>	P2	8/09/2022	6	331086	6693701
<i>Verticordia argentea</i>	P2	8/09/2022	1	331075	6693764
<i>Verticordia argentea</i>	P2	9/09/2022	1	334460	6694498
<i>Verticordia argentea</i>	P2	9/09/2022	2	334461	6694493
<i>Verticordia argentea</i>	P2	9/09/2022	1	333785	6694054
<i>Verticordia argentea</i>	P2	9/09/2022	1	333374	6694127
<i>Verticordia argentea</i>	P2	9/09/2022	1	333358	6694131
<i>Verticordia argentea</i>	P2	9/09/2022	1	333243	6694173
<i>Verticordia argentea</i>	P2	9/09/2022	2	333233	6694175
<i>Verticordia argentea</i>	P2	9/09/2022	6	333214	6694181

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia argentea</i>	P2	9/09/2022	1	333197	6694188
<i>Verticordia argentea</i>	P2	7/09/2022	1	334687	6694002
<i>Verticordia argentea</i>	P2	13/09/2022	2	334455	6693016
<i>Verticordia argentea</i>	P2	12/09/2022	2	334003	6697013
<i>Verticordia argentea</i>	P2	12/09/2022	1	331131	6693742
<i>Verticordia argentea</i>	P2	12/09/2022	1	331142	6693693
<i>Verticordia argentea</i>	P2	12/09/2022	12	331145	6693633
<i>Verticordia argentea</i>	P2	12/09/2022	10	331160	6693550
<i>Verticordia argentea</i>	P2	12/09/2022	1	331172	6693509
<i>Verticordia argentea</i>	P2	12/09/2022	42	331158	6693632
<i>Verticordia argentea</i>	P2	12/09/2022	1	331151	6693661
<i>Verticordia argentea</i>	P2	12/09/2022	1	331146	6693688
<i>Verticordia argentea</i>	P2	12/09/2022	1	331137	6693718
<i>Verticordia argentea</i>	P2	12/09/2022	1	331139	6693754
<i>Verticordia argentea</i>	P2	12/09/2022	76	331078	6693802
<i>Verticordia argentea</i>	P2	12/09/2022	1	331062	6693879
<i>Verticordia argentea</i>	P2	12/09/2022	1	331067	6693897
<i>Verticordia argentea</i>	P2	12/09/2022	1	331053	6693908
<i>Verticordia argentea</i>	P2	12/09/2022	1	331057	6693923
<i>Verticordia argentea</i>	P2	12/09/2022	7	331056	6693965
<i>Verticordia argentea</i>	P2	12/09/2022	1	331052	6693992
<i>Verticordia argentea</i>	P2	12/09/2022	14	331052	6694005
<i>Verticordia argentea</i>	P2	12/09/2022	20	331051	6694046
<i>Verticordia argentea</i>	P2	12/09/2022	1	331043	6694131
<i>Verticordia argentea</i>	P2	12/09/2022	1	331079	6694333
<i>Verticordia argentea</i>	P2	12/09/2022	1	331102	6694465
<i>Verticordia argentea</i>	P2	12/09/2022	1	331136	6694570
<i>Verticordia argentea</i>	P2	12/09/2022	1	331151	6694546
<i>Verticordia argentea</i>	P2	12/09/2022	1	331120	6694426
<i>Verticordia argentea</i>	P2	12/09/2022	1	331107	6694342
<i>Verticordia argentea</i>	P2	12/09/2022	1	331099	6694300
<i>Verticordia argentea</i>	P2	12/09/2022	3	331079	6694072
<i>Verticordia argentea</i>	P2	12/09/2022	2	331080	6694043
<i>Verticordia argentea</i>	P2	12/09/2022	1	331081	6694031
<i>Verticordia argentea</i>	P2	12/09/2022	1	331085	6693968
<i>Verticordia argentea</i>	P2	12/09/2022	3	331088	6693945
<i>Verticordia argentea</i>	P2	12/09/2022	12	331090	6693908
<i>Verticordia argentea</i>	P2	12/09/2022	4	331091	6693895
<i>Verticordia argentea</i>	P2	12/09/2022	9	331096	6693873
<i>Verticordia argentea</i>	P2	12/09/2022	4	331100	6693835

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia argentea</i>	P2	12/09/2022	1	331105	6693812
<i>Verticordia argentea</i>	P2	13/09/2022	3	334928	6694034
<i>Verticordia argentea</i>	P2	13/09/2022	9	334447	6693005
<i>Verticordia argentea</i>	P2	14/09/2022	2	334234	6694059
<i>Verticordia argentea</i>	P2	14/09/2022	1	334454	6694214
<i>Verticordia argentea</i>	P2	14/09/2022	5	333358	6694116
<i>Verticordia argentea</i>	P2	14/09/2022	5	333223	6694162
<i>Verticordia argentea</i>	P2	14/09/2022	6	333201	6694172
<i>Verticordia argentea</i>	P2	14/09/2022	2	333177	6694182
<i>Verticordia argentea</i>	P2	7/11/2022	1	332398	6694626
<i>Verticordia argentea</i>	P2	7/11/2022	1	331319	6695004
<i>Verticordia argentea</i>	P2	7/11/2022	1	331142	6693188
<i>Verticordia argentea</i>	P2	12/09/2022	2	331099	6694045
<i>Verticordia argentea</i>	P2	12/09/2022	1	331100	6693803
<i>Verticordia aurea</i>	P4	12/09/2022	1	331116	6693876
<i>Verticordia aurea</i>	P4	12/09/2022	25	331118	6693848
<i>Verticordia aurea</i>	P4	12/09/2022	25	331123	6693827
<i>Verticordia aurea</i>	P4	12/09/2022	12	331125	6693809
<i>Verticordia aurea</i>	P4	12/09/2022	15	331066	6693931
<i>Verticordia aurea</i>	P4	12/09/2022	15	331067	6693938
<i>Verticordia aurea</i>	P4	12/09/2022	15	331066	6694082
<i>Verticordia aurea</i>	P4	12/09/2022	30	331065	6694098
<i>Verticordia aurea</i>	P4	12/09/2022	15	331062	6694113
<i>Verticordia aurea</i>	P4	12/09/2022	25	331091	6694290
<i>Verticordia aurea</i>	P4	12/09/2022	9	331093	6694311
<i>Verticordia aurea</i>	P4	12/09/2022	1	331134	6694546
<i>Verticordia aurea</i>	P4	12/09/2022	1	331113	6694468
<i>Verticordia aurea</i>	P4	12/09/2022	25	331053	6694116
<i>Verticordia aurea</i>	P4	12/09/2022	15	331056	6694107
<i>Verticordia aurea</i>	P4	12/09/2022	10	331053	6694097
<i>Verticordia aurea</i>	P4	12/09/2022	15	331056	6694081
<i>Verticordia aurea</i>	P4	12/09/2022	15	331069	6694063
<i>Verticordia aurea</i>	P4	12/09/2022	2	331068	6694044
<i>Verticordia aurea</i>	P4	12/09/2022	6	331072	6694028
<i>Verticordia aurea</i>	P4	12/09/2022	3	331068	6694006
<i>Verticordia aurea</i>	P4	12/09/2022	4	331077	6693958
<i>Verticordia aurea</i>	P4	12/09/2022	50	331078	6693944
<i>Verticordia aurea</i>	P4	12/09/2022	25	331078	6693927
<i>Verticordia aurea</i>	P4	12/09/2022	15	331081	6693913
<i>Verticordia aurea</i>	P4	12/09/2022	4	331090	6693851

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia aurea</i>	P4	12/09/2022	1	331093	6693814
<i>Verticordia aurea</i>	P4	14/09/2022	1	334239	6694070
<i>Verticordia aurea</i>	P4	14/09/2022	3	334202	6694116
<i>Verticordia aurea</i>	P4	14/09/2022	8	334249	6694132
<i>Verticordia aurea</i>	P4	14/09/2022	1	334225	6694131
<i>Verticordia aurea</i>	P4	14/09/2022	6	334193	6694129
<i>Verticordia aurea</i>	P4	14/09/2022	1	334208	6694152
<i>Verticordia aurea</i>	P4	14/09/2022	8	334403	6694243
<i>Verticordia aurea</i>	P4	14/09/2022	5	334409	6694232
<i>Verticordia aurea</i>	P4	14/09/2022	5	334432	6694171
<i>Verticordia aurea</i>	P4	14/09/2022	1	334308	6694170
<i>Verticordia aurea</i>	P4	14/09/2022	15	334373	6694110
<i>Verticordia aurea</i>	P4	14/09/2022	3	334428	6694111
<i>Verticordia aurea</i>	P4	14/09/2022	1	334328	6694088
<i>Verticordia aurea</i>	P4	14/09/2022	30	334393	6694251
<i>Verticordia aurea</i>	P4	14/09/2022	1	334443	6694254
<i>Verticordia aurea</i>	P4	14/09/2022	1	334413	6694260
<i>Verticordia aurea</i>	P4	14/09/2022	5	331606	6696260
<i>Verticordia aurea</i>	P4	14/09/2022	1	331546	6695932
<i>Verticordia aurea</i>	P4	14/09/2022	1	331614	6696179
<i>Verticordia aurea</i>	P4	14/09/2022	1	331311	6695055
<i>Verticordia aurea</i>	P4	12/09/2022	12	331130	6693500
<i>Verticordia aurea</i>	P4	12/09/2022	3	331118	6693570
<i>Verticordia aurea</i>	P4	12/09/2022	1	331108	6693627
<i>Verticordia aurea</i>	P4	12/09/2022	1	331106	6693644
<i>Verticordia aurea</i>	P4	12/09/2022	2	331078	6693759
<i>Verticordia aurea</i>	P4	12/09/2022	1	331118	6693744
<i>Verticordia aurea</i>	P4	12/09/2022	1	331138	6693626
<i>Verticordia aurea</i>	P4	12/09/2022	23	331144	6693594
<i>Verticordia aurea</i>	P4	12/09/2022	14	331157	6693527
<i>Verticordia aurea</i>	P4	12/09/2022	2	331177	6693433
<i>Verticordia aurea</i>	P4	12/09/2022	11	331181	6693411
<i>Verticordia aurea</i>	P4	12/09/2022	1	335531	6693919
<i>Verticordia aurea</i>	P4	12/09/2022	2	331166	6694701
<i>Verticordia aurea</i>	P4	14/09/2022	2	334204	6694089
<i>Verticordia aurea</i>	P4	5/09/2022	1	333950	6694058
<i>Verticordia aurea</i>	P4	5/09/2022	1	333909	6694066
<i>Verticordia aurea</i>	P4	5/09/2022	1	333849	6694065
<i>Verticordia aurea</i>	P4	5/09/2022	10	333490	6694113
<i>Verticordia aurea</i>	P4	5/09/2022	23	333472	6694113

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia aurea</i>	P4	5/09/2022	3	333454	6694121
<i>Verticordia aurea</i>	P4	5/09/2022	8	333393	6694135
<i>Verticordia aurea</i>	P4	5/09/2022	1	333266	6694173
<i>Verticordia aurea</i>	P4	5/09/2022	5	333254	6694184
<i>Verticordia aurea</i>	P4	5/09/2022	3	333233	6694184
<i>Verticordia aurea</i>	P4	6/09/2022	1	331199	6695145
<i>Verticordia aurea</i>	P4	6/09/2022	20	331233	6695276
<i>Verticordia aurea</i>	P4	6/09/2022	5	331258	6695365
<i>Verticordia aurea</i>	P4	6/09/2022	1	331285	6695447
<i>Verticordia aurea</i>	P4	6/09/2022	1	331327	6695607
<i>Verticordia aurea</i>	P4	6/09/2022	5	331406	6695920
<i>Verticordia aurea</i>	P4	6/09/2022	7	331434	6695809
<i>Verticordia aurea</i>	P4	6/09/2022	1	333210	6694199
<i>Verticordia aurea</i>	P4	6/09/2022	8	333062	6694253
<i>Verticordia aurea</i>	P4	6/09/2022	1	332582	6694520
<i>Verticordia aurea</i>	P4	7/09/2022	12	334625	6694106
<i>Verticordia aurea</i>	P4	7/09/2022	1	334763	6694077
<i>Verticordia aurea</i>	P4	7/09/2022	1	334601	6693879
<i>Verticordia aurea</i>	P4	7/09/2022	16	334573	6693680
<i>Verticordia aurea</i>	P4	7/09/2022	3	334584	6693679
<i>Verticordia aurea</i>	P4	8/09/2022	1	331076	6694492
<i>Verticordia aurea</i>	P4	8/09/2022	1	331053	6694368
<i>Verticordia aurea</i>	P4	8/09/2022	1	331044	6694317
<i>Verticordia aurea</i>	P4	8/09/2022	17	331030	6694255
<i>Verticordia aurea</i>	P4	8/09/2022	4	330981	6694292
<i>Verticordia aurea</i>	P4	8/09/2022	4	330992	6694373
<i>Verticordia aurea</i>	P4	8/09/2022	1	331073	6694665
<i>Verticordia aurea</i>	P4	8/09/2022	5	331078	6694702
<i>Verticordia aurea</i>	P4	8/09/2022	46	331101	6694798
<i>Verticordia aurea</i>	P4	8/09/2022	6	331103	6694810
<i>Verticordia aurea</i>	P4	8/09/2022	1	331135	6694914
<i>Verticordia aurea</i>	P4	8/09/2022	2	330994	6693763
<i>Verticordia aurea</i>	P4	8/09/2022	3	330986	6693810
<i>Verticordia aurea</i>	P4	8/09/2022	9	331033	6694233
<i>Verticordia aurea</i>	P4	8/09/2022	4	331013	6694137
<i>Verticordia aurea</i>	P4	8/09/2022	7	331019	6694036
<i>Verticordia aurea</i>	P4	8/09/2022	22	331020	6694023
<i>Verticordia aurea</i>	P4	8/09/2022	1	331020	6694007
<i>Verticordia aurea</i>	P4	8/09/2022	2	331023	6693998
<i>Verticordia aurea</i>	P4	8/09/2022	50	331035	6693891

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia aurea</i>	P4	8/09/2022	14	331033	6693882
<i>Verticordia aurea</i>	P4	8/09/2022	12	331032	6693862
<i>Verticordia aurea</i>	P4	8/09/2022	30	331034	6693846
<i>Verticordia aurea</i>	P4	8/09/2022	20	331039	6693833
<i>Verticordia aurea</i>	P4	8/09/2022	1	331088	6693282
<i>Verticordia aurea</i>	P4	8/09/2022	1	331122	6693389
<i>Verticordia aurea</i>	P4	9/09/2022	1	334198	6696098
<i>Verticordia aurea</i>	P4	9/09/2022	2	334216	6696018
<i>Verticordia aurea</i>	P4	9/09/2022	1	334377	6695061
<i>Verticordia aurea</i>	P4	9/09/2022	1	334339	6695248
<i>Verticordia aurea</i>	P4	9/09/2022	1	334326	6695452
<i>Verticordia aurea</i>	P4	9/09/2022	1	334334	6695388
<i>Verticordia aurea</i>	P4	9/09/2022	1	334340	6695365
<i>Verticordia aurea</i>	P4	9/09/2022	1	334345	6695357
<i>Verticordia aurea</i>	P4	9/09/2022	1	334400	6695068
<i>Verticordia aurea</i>	P4	9/09/2022	1	334395	6695051
<i>Verticordia aurea</i>	P4	9/09/2022	1	332751	6694420
<i>Verticordia aurea</i>	P4	9/09/2022	2	332651	6694474
<i>Verticordia aurea</i>	P4	9/09/2022	1	332620	6694491
<i>Verticordia aurea</i>	P4	9/09/2022	4	332604	6694501
<i>Verticordia aurea</i>	P4	9/09/2022	1	332576	6694517
<i>Verticordia aurea</i>	P4	9/09/2022	1	332479	6694569
<i>Verticordia aurea</i>	P4	9/09/2022	1	332455	6694584
<i>Verticordia aurea</i>	P4	9/09/2022	1	332330	6694654
<i>Verticordia aurea</i>	P4	9/09/2022	3	332296	6694671
<i>Verticordia aurea</i>	P4	9/09/2022	1	332267	6694687
<i>Verticordia aurea</i>	P4	9/09/2022	4	332254	6694694
<i>Verticordia aurea</i>	P4	9/09/2022	1	332234	6694705
<i>Verticordia aurea</i>	P4	9/09/2022	5	332223	6694713
<i>Verticordia aurea</i>	P4	9/09/2022	3	332201	6694726
<i>Verticordia aurea</i>	P4	9/09/2022	1	332182	6694734
<i>Verticordia aurea</i>	P4	9/09/2022	4	332167	6694743
<i>Verticordia aurea</i>	P4	9/09/2022	2	332108	6694775
<i>Verticordia aurea</i>	P4	9/09/2022	1	332041	6694812
<i>Verticordia aurea</i>	P4	9/09/2022	3	331759	6694919
<i>Verticordia aurea</i>	P4	9/09/2022	14	331774	6694913
<i>Verticordia aurea</i>	P4	9/09/2022	1	331794	6694906
<i>Verticordia aurea</i>	P4	9/09/2022	2	331806	6694901
<i>Verticordia aurea</i>	P4	9/09/2022	1	331821	6694896
<i>Verticordia aurea</i>	P4	9/09/2022	1	331713	6694933

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia aurea</i>	P4	9/09/2022	1	331697	6694936
<i>Verticordia aurea</i>	P4	9/09/2022	2	331630	6694954
<i>Verticordia aurea</i>	P4	5/09/2022	5	334128	6694068
<i>Verticordia aurea</i>	P4	5/09/2022	5	333854	6694075
<i>Verticordia aurea</i>	P4	5/09/2022	3	333479	6694121
<i>Verticordia aurea</i>	P4	5/09/2022	1	333472	6694123
<i>Verticordia aurea</i>	P4	5/09/2022	14	333450	6694127
<i>Verticordia aurea</i>	P4	5/09/2022	10	333432	6694132
<i>Verticordia aurea</i>	P4	5/09/2022	4	333424	6694138
<i>Verticordia aurea</i>	P4	5/09/2022	1	333363	6694149
<i>Verticordia aurea</i>	P4	6/09/2022	24	333219	6694200
<i>Verticordia aurea</i>	P4	6/09/2022	1	333013	6694290
<i>Verticordia aurea</i>	P4	6/09/2022	2	332848	6694389
<i>Verticordia aurea</i>	P4	6/09/2022	1	332198	6694751
<i>Verticordia aurea</i>	P4	6/09/2022	25	332189	6694754
<i>Verticordia aurea</i>	P4	6/09/2022	5	332021	6694842
<i>Verticordia aurea</i>	P4	6/09/2022	16	334644	6694063
<i>Verticordia aurea</i>	P4	6/09/2022	4	334601	6694060
<i>Verticordia aurea</i>	P4	6/09/2022	4	334679	6693820
<i>Verticordia aurea</i>	P4	7/09/2022	10	334587	6693672
<i>Verticordia aurea</i>	P4	7/09/2022	2	334596	6693672
<i>Verticordia aurea</i>	P4	8/09/2022	1	331087	6694552
<i>Verticordia aurea</i>	P4	8/09/2022	2	331064	6694473
<i>Verticordia aurea</i>	P4	8/09/2022	8	331020	6694255
<i>Verticordia aurea</i>	P4	8/09/2022	25	331008	6693911
<i>Verticordia aurea</i>	P4	8/09/2022	15	331001	6693974
<i>Verticordia aurea</i>	P4	8/09/2022	8	330999	6694057
<i>Verticordia aurea</i>	P4	8/09/2022	1	331009	6694134
<i>Verticordia aurea</i>	P4	8/09/2022	2	331000	6694121
<i>Verticordia aurea</i>	P4	8/09/2022	1	331007	6694069
<i>Verticordia aurea</i>	P4	8/09/2022	20	331007	6694060
<i>Verticordia aurea</i>	P4	8/09/2022	8	331008	6694038
<i>Verticordia aurea</i>	P4	8/09/2022	2	331012	6694026
<i>Verticordia aurea</i>	P4	8/09/2022	20	331011	6694013
<i>Verticordia aurea</i>	P4	8/09/2022	2	331011	6693991
<i>Verticordia aurea</i>	P4	8/09/2022	25	331012	6693986
<i>Verticordia aurea</i>	P4	8/09/2022	15	331017	6693930
<i>Verticordia aurea</i>	P4	8/09/2022	2	331021	6693897
<i>Verticordia aurea</i>	P4	8/09/2022	10	331024	6693867
<i>Verticordia aurea</i>	P4	8/09/2022	10	331026	6693852

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia aurea</i>	P4	8/09/2022	20	331027	6693842
<i>Verticordia aurea</i>	P4	8/09/2022	10	331026	6693831
<i>Verticordia aurea</i>	P4	8/09/2022	5	331110	6693389
<i>Verticordia aurea</i>	P4	9/09/2022	1	334242	6695767
<i>Verticordia aurea</i>	P4	9/09/2022	1	334243	6695727
<i>Verticordia aurea</i>	P4	9/09/2022	1	334298	6695632
<i>Verticordia aurea</i>	P4	9/09/2022	1	334252	6695878
<i>Verticordia aurea</i>	P4	9/09/2022	2	334358	6695155
<i>Verticordia aurea</i>	P4	9/09/2022	1	334352	6695176
<i>Verticordia aurea</i>	P4	9/09/2022	1	334338	6695239
<i>Verticordia aurea</i>	P4	9/09/2022	4	334303	6695432
<i>Verticordia aurea</i>	P4	9/09/2022	15	334297	6695460
<i>Verticordia aurea</i>	P4	9/09/2022	5	334278	6695553
<i>Verticordia aurea</i>	P4	9/09/2022	1	334315	6695543
<i>Verticordia aurea</i>	P4	9/09/2022	1	334341	6695398
<i>Verticordia aurea</i>	P4	9/09/2022	3	334356	6695331
<i>Verticordia aurea</i>	P4	9/09/2022	2	334389	6695140
<i>Verticordia aurea</i>	P4	9/09/2022	2	332616	6694470
<i>Verticordia aurea</i>	P4	9/09/2022	4	332414	6694581
<i>Verticordia aurea</i>	P4	9/09/2022	3	332249	6694674
<i>Verticordia aurea</i>	P4	9/09/2022	5	332242	6694680
<i>Verticordia aurea</i>	P4	9/09/2022	2	332194	6694710
<i>Verticordia aurea</i>	P4	9/09/2022	3	332185	6694714
<i>Verticordia aurea</i>	P4	9/09/2022	50	331779	6694892
<i>Verticordia aurea</i>	P4	12/09/2022	4	333931	6697545
<i>Verticordia aurea</i>	P4	12/09/2022	3	333972	6697326
<i>Verticordia aurea</i>	P4	12/09/2022	3	333991	6697241
<i>Verticordia aurea</i>	P4	12/09/2022	8	333999	6697197
<i>Verticordia aurea</i>	P4	12/09/2022	2	334046	6696950
<i>Verticordia aurea</i>	P4	12/09/2022	1	331107	6693816
<i>Verticordia aurea</i>	P4	12/09/2022	20	331110	6693838
<i>Verticordia aurea</i>	P4	12/09/2022	20	331102	6693882
<i>Verticordia aurea</i>	P4	12/09/2022	10	331092	6693934
<i>Verticordia aurea</i>	P4	12/09/2022	4	331094	6693965
<i>Verticordia aurea</i>	P4	12/09/2022	15	331094	6693975
<i>Verticordia aurea</i>	P4	12/09/2022	25	331094	6693990
<i>Verticordia aurea</i>	P4	12/09/2022	30	331093	6694006
<i>Verticordia aurea</i>	P4	12/09/2022	15	331091	6694021
<i>Verticordia aurea</i>	P4	12/09/2022	40	331085	6694032
<i>Verticordia aurea</i>	P4	12/09/2022	2	331088	6694056

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia aurea</i>	P4	12/09/2022	3	331080	6694101
<i>Verticordia aurea</i>	P4	12/09/2022	10	331093	6694205
<i>Verticordia aurea</i>	P4	12/09/2022	35	331093	6694213
<i>Verticordia aurea</i>	P4	12/09/2022	2	331102	6694254
<i>Verticordia aurea</i>	P4	12/09/2022	1	331133	6694427
<i>Verticordia aurea</i>	P4	12/09/2022	15	331155	6694500
<i>Verticordia aurea</i>	P4	12/09/2022	1	331171	6694561
<i>Verticordia aurea</i>	P4	12/09/2022	1	331173	6694544
<i>Verticordia aurea</i>	P4	12/09/2022	1	331139	6694420
<i>Verticordia aurea</i>	P4	12/09/2022	8	331120	6694299
<i>Verticordia aurea</i>	P4	12/09/2022	4	331114	6694268
<i>Verticordia aurea</i>	P4	12/09/2022	1	331108	6694235
<i>Verticordia aurea</i>	P4	12/09/2022	1	331103	6694204
<i>Verticordia aurea</i>	P4	12/09/2022	1	331094	6694130
<i>Verticordia aurea</i>	P4	12/09/2022	20	331095	6694083
<i>Verticordia aurea</i>	P4	12/09/2022	1	331099	6694044
<i>Verticordia aurea</i>	P4	12/09/2022	10	331099	6694026
<i>Verticordia aurea</i>	P4	12/09/2022	50	331100	6694004
<i>Verticordia aurea</i>	P4	12/09/2022	15	331103	6693995
<i>Verticordia aurea</i>	P4	12/09/2022	4	331104	6693976
<i>Verticordia aurea</i>	P4	12/09/2022	1	331105	6693947
<i>Verticordia aurea</i>	P4	12/09/2022	4	331106	6693935
<i>Verticordia aurea</i>	P4	12/09/2022	4	331109	6693917
<i>Verticordia aurea</i>	P4	12/09/2022	20	331117	6693862
<i>Verticordia aurea</i>	P4	12/09/2022	8	331085	6693801
<i>Verticordia aurea</i>	P4	12/09/2022	10	331082	6693809
<i>Verticordia aurea</i>	P4	12/09/2022	8	331081	6693826
<i>Verticordia aurea</i>	P4	12/09/2022	15	331077	6693839
<i>Verticordia aurea</i>	P4	12/09/2022	15	331077	6693853
<i>Verticordia aurea</i>	P4	12/09/2022	1	331064	6694167
<i>Verticordia aurea</i>	P4	12/09/2022	25	331092	6694352
<i>Verticordia aurea</i>	P4	12/09/2022	15	331084	6694314
<i>Verticordia aurea</i>	P4	12/09/2022	1	331081	6694292
<i>Verticordia aurea</i>	P4	12/09/2022	4	331070	6694254
<i>Verticordia aurea</i>	P4	12/09/2022	3	331071	6694230
<i>Verticordia aurea</i>	P4	12/09/2022	1	331066	6694210
<i>Verticordia aurea</i>	P4	12/09/2022	4	331063	6694187
<i>Verticordia aurea</i>	P4	12/09/2022	2	331055	6694150
<i>Verticordia aurea</i>	P4	14/09/2022	1	331224	6694722
<i>Verticordia aurea</i>	P4	12/09/2022	1	331186	6693396

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia aurea</i>	P4	12/09/2022	1	331205	6693277
<i>Verticordia aurea</i>	P4	12/09/2022	6	331206	6693250
<i>Verticordia aurea</i>	P4	12/09/2022	5	331214	6693229
<i>Verticordia aurea</i>	P4	5/09/2022	1	333512	6694058
<i>Verticordia aurea</i>	P4	5/09/2022	18	334059	6694033
<i>Verticordia aurea</i>	P4	5/09/2022	3	333992	6694027
<i>Verticordia aurea</i>	P4	5/09/2022	1	333974	6694025
<i>Verticordia aurea</i>	P4	5/09/2022	6	333595	6694054
<i>Verticordia aurea</i>	P4	5/09/2022	1	333394	6694087
<i>Verticordia aurea</i>	P4	5/09/2022	1	333371	6694094
<i>Verticordia aurea</i>	P4	5/09/2022	1	333292	6694114
<i>Verticordia aurea</i>	P4	5/09/2022	1	333240	6694137
<i>Verticordia aurea</i>	P4	6/09/2022	1	331228	6695277
<i>Verticordia aurea</i>	P4	6/09/2022	1	331243	6695327
<i>Verticordia aurea</i>	P4	6/09/2022	3	331249	6695363
<i>Verticordia aurea</i>	P4	6/09/2022	2	331283	6695210
<i>Verticordia aurea</i>	P4	6/09/2022	3	331255	6695111
<i>Verticordia aurea</i>	P4	6/09/2022	1	331306	6695580
<i>Verticordia aurea</i>	P4	6/09/2022	1	331412	6695983
<i>Verticordia aurea</i>	P4	6/09/2022	1	331463	6696161
<i>Verticordia aurea</i>	P4	6/09/2022	1	331492	6696272
<i>Verticordia aurea</i>	P4	6/09/2022	4	332411	6694573
<i>Verticordia aurea</i>	P4	6/09/2022	3	332285	6694646
<i>Verticordia aurea</i>	P4	6/09/2022	2	331837	6694867
<i>Verticordia aurea</i>	P4	6/09/2022	1	331794	6694878
<i>Verticordia aurea</i>	P4	6/09/2022	1	331362	6694996
<i>Verticordia aurea</i>	P4	7/09/2022	2	334660	6694124
<i>Verticordia aurea</i>	P4	7/09/2022	1	334723	6694087
<i>Verticordia aurea</i>	P4	7/09/2022	12	334756	6693961
<i>Verticordia aurea</i>	P4	7/09/2022	1	334766	6693957
<i>Verticordia aurea</i>	P4	7/09/2022	5	334620	6693842
<i>Verticordia aurea</i>	P4	7/09/2022	6	334671	6693795
<i>Verticordia aurea</i>	P4	7/09/2022	2	334549	6693694
<i>Verticordia aurea</i>	P4	8/09/2022	1	331070	6694416
<i>Verticordia aurea</i>	P4	8/09/2022	1	331053	6694339
<i>Verticordia aurea</i>	P4	8/09/2022	3	331054	6694316
<i>Verticordia aurea</i>	P4	8/09/2022	24	331041	6694257
<i>Verticordia aurea</i>	P4	8/09/2022	2	330975	6694282
<i>Verticordia aurea</i>	P4	8/09/2022	1	330980	6694326
<i>Verticordia aurea</i>	P4	8/09/2022	1	330989	6694369

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia aurea</i>	P4	8/09/2022	3	330987	6694376
<i>Verticordia aurea</i>	P4	8/09/2022	1	331094	6694789
<i>Verticordia aurea</i>	P4	8/09/2022	4	330955	6694085
<i>Verticordia aurea</i>	P4	8/09/2022	1	331038	6694240
<i>Verticordia aurea</i>	P4	8/09/2022	1	331028	6694048
<i>Verticordia aurea</i>	P4	8/09/2022	40	331032	6694030
<i>Verticordia aurea</i>	P4	8/09/2022	30	331031	6694017
<i>Verticordia aurea</i>	P4	8/09/2022	10	331030	6694004
<i>Verticordia aurea</i>	P4	8/09/2022	4	331044	6693895
<i>Verticordia aurea</i>	P4	8/09/2022	4	331043	6693891
<i>Verticordia aurea</i>	P4	8/09/2022	8	331043	6693875
<i>Verticordia aurea</i>	P4	8/09/2022	3	331051	6693853
<i>Verticordia aurea</i>	P4	8/09/2022	30	331050	6693834
<i>Verticordia aurea</i>	P4	8/09/2022	2	331041	6693481
<i>Verticordia aurea</i>	P4	8/09/2022	1	331138	6693399
<i>Verticordia aurea</i>	P4	8/09/2022	2	331107	6693522
<i>Verticordia aurea</i>	P4	8/09/2022	10	331064	6693757
<i>Verticordia aurea</i>	P4	9/09/2022	2	334123	6696507
<i>Verticordia aurea</i>	P4	9/09/2022	2	334146	6696402
<i>Verticordia aurea</i>	P4	9/09/2022	1	334474	6694517
<i>Verticordia aurea</i>	P4	9/09/2022	1	334443	6694739
<i>Verticordia aurea</i>	P4	9/09/2022	1	334399	6695035
<i>Verticordia aurea</i>	P4	9/09/2022	2	334125	6694038
<i>Verticordia aurea</i>	P4	9/09/2022	15	334070	6694037
<i>Verticordia aurea</i>	P4	9/09/2022	12	334049	6694037
<i>Verticordia aurea</i>	P4	9/09/2022	8	333999	6694034
<i>Verticordia aurea</i>	P4	9/09/2022	8	333803	6694036
<i>Verticordia aurea</i>	P4	9/09/2022	4	333793	6694038
<i>Verticordia aurea</i>	P4	9/09/2022	1	333597	6694062
<i>Verticordia aurea</i>	P4	9/09/2022	1	333578	6694064
<i>Verticordia aurea</i>	P4	9/09/2022	2	333374	6694110
<i>Verticordia aurea</i>	P4	9/09/2022	2	333325	6694124
<i>Verticordia aurea</i>	P4	9/09/2022	40	333265	6694143
<i>Verticordia aurea</i>	P4	9/09/2022	20	333249	6694150
<i>Verticordia aurea</i>	P4	9/09/2022	4	333230	6694159
<i>Verticordia aurea</i>	P4	9/09/2022	3	333212	6694166
<i>Verticordia aurea</i>	P4	9/09/2022	5	333191	6694169
<i>Verticordia aurea</i>	P4	9/09/2022	2	333174	6694182
<i>Verticordia aurea</i>	P4	9/09/2022	1	333121	6694198
<i>Verticordia aurea</i>	P4	9/09/2022	1	333051	6694237

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia aurea</i>	P4	5/09/2022	1	334174	6694018
<i>Verticordia aurea</i>	P4	5/09/2022	1	334097	6694016
<i>Verticordia aurea</i>	P4	5/09/2022	1	333614	6694029
<i>Verticordia aurea</i>	P4	5/09/2022	6	333559	6694039
<i>Verticordia aurea</i>	P4	5/09/2022	7	333552	6694042
<i>Verticordia aurea</i>	P4	5/09/2022	2	333497	6694056
<i>Verticordia aurea</i>	P4	5/09/2022	2	333415	6694076
<i>Verticordia aurea</i>	P4	5/09/2022	1	333372	6694084
<i>Verticordia aurea</i>	P4	5/09/2022	1	333338	6694095
<i>Verticordia aurea</i>	P4	5/09/2022	8	333324	6694098
<i>Verticordia aurea</i>	P4	5/09/2022	1	333301	6694105
<i>Verticordia aurea</i>	P4	5/09/2022	5	333291	6694105
<i>Verticordia aurea</i>	P4	5/09/2022	1	333205	6694143
<i>Verticordia aurea</i>	P4	5/09/2022	4	331292	6695204
<i>Verticordia aurea</i>	P4	5/09/2022	1	331459	6696166
<i>Verticordia aurea</i>	P4	6/09/2022	1	332426	6694549
<i>Verticordia aurea</i>	P4	6/09/2022	5	332186	6694683
<i>Verticordia aurea</i>	P4	6/09/2022	3	332100	6694733
<i>Verticordia aurea</i>	P4	6/09/2022	1	331504	6694945
<i>Verticordia aurea</i>	P4	6/09/2022	1	331334	6694994
<i>Verticordia aurea</i>	P4	6/09/2022	9	334651	6694171
<i>Verticordia aurea</i>	P4	6/09/2022	2	334541	6694135
<i>Verticordia aurea</i>	P4	6/09/2022	2	334854	6694133
<i>Verticordia aurea</i>	P4	6/09/2022	1	334754	6694090
<i>Verticordia aurea</i>	P4	6/09/2022	8	334736	6694089
<i>Verticordia aurea</i>	P4	6/09/2022	1	334722	6694089
<i>Verticordia aurea</i>	P4	6/09/2022	8	334669	6694091
<i>Verticordia aurea</i>	P4	6/09/2022	6	334767	6694052
<i>Verticordia aurea</i>	P4	6/09/2022	2	334623	6693976
<i>Verticordia aurea</i>	P4	6/09/2022	2	334746	6693976
<i>Verticordia aurea</i>	P4	6/09/2022	3	334796	6693971
<i>Verticordia aurea</i>	P4	8/09/2022	6	334664	6693815
<i>Verticordia aurea</i>	P4	8/09/2022	1	334651	6693771
<i>Verticordia aurea</i>	P4	8/09/2022	1	331112	6694543
<i>Verticordia aurea</i>	P4	8/09/2022	1	331090	6694470
<i>Verticordia aurea</i>	P4	8/09/2022	1	331067	6694368
<i>Verticordia aurea</i>	P4	8/09/2022	1	331066	6694351
<i>Verticordia aurea</i>	P4	8/09/2022	2	331057	6694305
<i>Verticordia aurea</i>	P4	8/09/2022	3	331054	6694272
<i>Verticordia aurea</i>	P4	8/09/2022	2	331053	6694260

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia aurea</i>	P4	8/09/2022	10	331052	6694251
<i>Verticordia aurea</i>	P4	8/09/2022	9	331049	6694241
<i>Verticordia aurea</i>	P4	8/09/2022	27	331047	6694233
<i>Verticordia aurea</i>	P4	8/09/2022	11	330969	6694301
<i>Verticordia aurea</i>	P4	8/09/2022	33	330969	6694315
<i>Verticordia aurea</i>	P4	8/09/2022	24	330969	6694319
<i>Verticordia aurea</i>	P4	8/09/2022	1	330980	6694385
<i>Verticordia aurea</i>	P4	8/09/2022	1	331044	6694639
<i>Verticordia aurea</i>	P4	8/09/2022	1	331062	6694708
<i>Verticordia aurea</i>	P4	8/09/2022	3	331095	6694813
<i>Verticordia aurea</i>	P4	8/09/2022	7	331110	6694882
<i>Verticordia aurea</i>	P4	8/09/2022	4	330953	6693993
<i>Verticordia aurea</i>	P4	8/09/2022	21	330958	6694240
<i>Verticordia aurea</i>	P4	8/09/2022	6	331049	6694222
<i>Verticordia aurea</i>	P4	8/09/2022	2	331040	6694181
<i>Verticordia aurea</i>	P4	8/09/2022	24	331037	6694045
<i>Verticordia aurea</i>	P4	8/09/2022	11	331041	6694028
<i>Verticordia aurea</i>	P4	8/09/2022	7	331041	6694017
<i>Verticordia aurea</i>	P4	8/09/2022	3	331040	6694007
<i>Verticordia aurea</i>	P4	8/09/2022	18	331002	6693637
<i>Verticordia aurea</i>	P4	8/09/2022	1	331139	6693398
<i>Verticordia aurea</i>	P4	8/09/2022	17	331125	6693495
<i>Verticordia aurea</i>	P4	8/09/2022	1	334165	6696149
<i>Verticordia aurea</i>	P4	8/09/2022	4	334173	6696281
<i>Verticordia aurea</i>	P4	9/09/2022	6	334405	6694858
<i>Verticordia aurea</i>	P4	9/09/2022	1	334414	6694802
<i>Verticordia aurea</i>	P4	9/09/2022	13	334444	6694600
<i>Verticordia aurea</i>	P4	9/09/2022	1	334458	6694508
<i>Verticordia aurea</i>	P4	9/09/2022	2	334467	6694605
<i>Verticordia aurea</i>	P4	9/09/2022	14	334461	6694635
<i>Verticordia aurea</i>	P4	9/09/2022	3	334090	6694053
<i>Verticordia aurea</i>	P4	9/09/2022	6	334068	6694052
<i>Verticordia aurea</i>	P4	9/09/2022	1	334041	6694051
<i>Verticordia aurea</i>	P4	9/09/2022	10	333995	6694050
<i>Verticordia aurea</i>	P4	9/09/2022	1	333972	6694050
<i>Verticordia aurea</i>	P4	9/09/2022	1	333958	6694050
<i>Verticordia aurea</i>	P4	9/09/2022	8	333854	6694051
<i>Verticordia aurea</i>	P4	9/09/2022	16	333841	6694052
<i>Verticordia aurea</i>	P4	9/09/2022	31	333831	6694053
<i>Verticordia aurea</i>	P4	9/09/2022	8	333816	6694054

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia aurea</i>	P4	9/09/2022	6	333805	6694053
<i>Verticordia aurea</i>	P4	9/09/2022	3	333795	6694054
<i>Verticordia aurea</i>	P4	9/09/2022	2	333785	6694054
<i>Verticordia aurea</i>	P4	9/09/2022	2	333776	6694055
<i>Verticordia aurea</i>	P4	9/09/2022	2	333669	6694066
<i>Verticordia aurea</i>	P4	9/09/2022	1	333558	6694088
<i>Verticordia aurea</i>	P4	9/09/2022	3	333483	6694102
<i>Verticordia aurea</i>	P4	9/09/2022	35	333474	6694108
<i>Verticordia aurea</i>	P4	9/09/2022	3	333429	6694115
<i>Verticordia aurea</i>	P4	9/09/2022	18	333411	6694119
<i>Verticordia aurea</i>	P4	9/09/2022	34	333398	6694121
<i>Verticordia aurea</i>	P4	9/09/2022	14	333385	6694125
<i>Verticordia aurea</i>	P4	9/09/2022	4	333374	6694127
<i>Verticordia aurea</i>	P4	9/09/2022	3	333313	6694147
<i>Verticordia aurea</i>	P4	9/09/2022	1	333274	6694160
<i>Verticordia aurea</i>	P4	9/09/2022	1	333265	6694163
<i>Verticordia aurea</i>	P4	9/09/2022	8	333243	6694173
<i>Verticordia aurea</i>	P4	9/09/2022	19	333233	6694175
<i>Verticordia aurea</i>	P4	9/09/2022	26	333220	6694180
<i>Verticordia aurea</i>	P4	9/09/2022	8	333214	6694181
<i>Verticordia aurea</i>	P4	9/09/2022	8	333197	6694188
<i>Verticordia aurea</i>	P4	9/09/2022	5	333185	6694193
<i>Verticordia aurea</i>	P4	9/09/2022	1	333149	6694207
<i>Verticordia aurea</i>	P4	9/09/2022	1	333140	6694212
<i>Verticordia aurea</i>	P4	9/09/2022	3	333054	6694247
<i>Verticordia aurea</i>	P4	9/09/2022	1	331341	6695033
<i>Verticordia aurea</i>	P4	13/09/2022	8	334575	6693012
<i>Verticordia aurea</i>	P4	13/09/2022	4	334543	6693013
<i>Verticordia aurea</i>	P4	13/09/2022	1	334434	6693892
<i>Verticordia aurea</i>	P4	13/09/2022	30	334487	6693955
<i>Verticordia aurea</i>	P4	13/09/2022	5	334427	6693967
<i>Verticordia aurea</i>	P4	13/09/2022	1	334181	6694033
<i>Verticordia aurea</i>	P4	13/09/2022	2	331598	6696267
<i>Verticordia aurea</i>	P4	13/09/2022	3	331483	6695727
<i>Verticordia aurea</i>	P4	13/09/2022	2	335527	6693933
<i>Verticordia aurea</i>	P4	12/09/2022	1	333867	6697706
<i>Verticordia aurea</i>	P4	12/09/2022	1	333929	6697378
<i>Verticordia aurea</i>	P4	12/09/2022	5	331153	6693608
<i>Verticordia aurea</i>	P4	12/09/2022	10	331164	6693530
<i>Verticordia aurea</i>	P4	12/09/2022	1	331182	6693433

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia aurea</i>	P4	12/09/2022	12	331188	6693416
<i>Verticordia aurea</i>	P4	12/09/2022	3	331192	6693398
<i>Verticordia aurea</i>	P4	12/09/2022	1	331207	6693277
<i>Verticordia aurea</i>	P4	12/09/2022	17	331230	6693228
<i>Verticordia aurea</i>	P4	12/09/2022	7	331234	6693207
<i>Verticordia aurea</i>	P4	12/09/2022	1	331238	6693200
<i>Verticordia aurea</i>	P4	12/09/2022	7	331234	6693221
<i>Verticordia aurea</i>	P4	12/09/2022	2	331228	6693243
<i>Verticordia aurea</i>	P4	12/09/2022	2	331227	6693265
<i>Verticordia aurea</i>	P4	12/09/2022	2	331223	6693289
<i>Verticordia aurea</i>	P4	12/09/2022	1	331216	6693315
<i>Verticordia aurea</i>	P4	12/09/2022	22	331204	6693389
<i>Verticordia aurea</i>	P4	12/09/2022	19	331201	6693404
<i>Verticordia aurea</i>	P4	12/09/2022	5	331197	6693417
<i>Verticordia aurea</i>	P4	12/09/2022	5	331193	6693433
<i>Verticordia aurea</i>	P4	12/09/2022	3	331194	6693451
<i>Verticordia aurea</i>	P4	12/09/2022	3	331186	6693492
<i>Verticordia aurea</i>	P4	12/09/2022	3	331171	6693534
<i>Verticordia aurea</i>	P4	12/09/2022	1	331076	6693791
<i>Verticordia aurea</i>	P4	12/09/2022	1	331078	6693802
<i>Verticordia aurea</i>	P4	12/09/2022	3	331072	6693826
<i>Verticordia aurea</i>	P4	12/09/2022	10	331070	6693840
<i>Verticordia aurea</i>	P4	12/09/2022	17	331068	6693852
<i>Verticordia aurea</i>	P4	12/09/2022	7	331057	6693923
<i>Verticordia aurea</i>	P4	12/09/2022	1	331047	6694091
<i>Verticordia aurea</i>	P4	12/09/2022	18	331046	6694110
<i>Verticordia aurea</i>	P4	12/09/2022	8	331045	6694154
<i>Verticordia aurea</i>	P4	12/09/2022	3	331047	6694174
<i>Verticordia aurea</i>	P4	12/09/2022	3	331060	6694222
<i>Verticordia aurea</i>	P4	12/09/2022	4	331060	6694235
<i>Verticordia aurea</i>	P4	12/09/2022	16	331063	6694250
<i>Verticordia aurea</i>	P4	12/09/2022	4	331061	6694270
<i>Verticordia aurea</i>	P4	12/09/2022	4	331073	6694314
<i>Verticordia aurea</i>	P4	12/09/2022	2	331079	6694354
<i>Verticordia aurea</i>	P4	12/09/2022	1	331102	6694465
<i>Verticordia aurea</i>	P4	12/09/2022	1	331118	6694524
<i>Verticordia aurea</i>	P4	12/09/2022	2	331126	6694551
<i>Verticordia aurea</i>	P4	12/09/2022	1	331130	6694456
<i>Verticordia aurea</i>	P4	12/09/2022	9	331120	6694426
<i>Verticordia aurea</i>	P4	12/09/2022	3	331101	6694318

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia aurea</i>	P4	12/09/2022	30	331099	6694300
<i>Verticordia aurea</i>	P4	12/09/2022	3	331086	6694217
<i>Verticordia aurea</i>	P4	12/09/2022	2	331070	6694139
<i>Verticordia aurea</i>	P4	12/09/2022	12	331073	6694123
<i>Verticordia aurea</i>	P4	12/09/2022	12	331072	6694105
<i>Verticordia aurea</i>	P4	12/09/2022	2	331077	6694060
<i>Verticordia aurea</i>	P4	12/09/2022	12	331080	6694043
<i>Verticordia aurea</i>	P4	12/09/2022	70	331081	6694031
<i>Verticordia aurea</i>	P4	12/09/2022	14	331083	6694016
<i>Verticordia aurea</i>	P4	12/09/2022	12	331085	6693995
<i>Verticordia aurea</i>	P4	12/09/2022	12	331084	6693978
<i>Verticordia aurea</i>	P4	12/09/2022	3	331085	6693968
<i>Verticordia aurea</i>	P4	12/09/2022	18	331088	6693945
<i>Verticordia aurea</i>	P4	12/09/2022	7	331088	6693919
<i>Verticordia aurea</i>	P4	12/09/2022	1	331097	6693850
<i>Verticordia aurea</i>	P4	12/09/2022	3	331100	6693835
<i>Verticordia aurea</i>	P4	12/09/2022	1	331105	6693812
<i>Verticordia aurea</i>	P4	13/09/2022	3	335022	6694079
<i>Verticordia aurea</i>	P4	13/09/2022	1	334505	6693006
<i>Verticordia aurea</i>	P4	13/09/2022	3	334429	6693966
<i>Verticordia aurea</i>	P4	13/09/2022	3	334462	6693985
<i>Verticordia aurea</i>	P4	13/09/2022	1	334175	6694022
<i>Verticordia aurea</i>	P4	13/09/2022	2	334339	6694061
<i>Verticordia aurea</i>	P4	13/09/2022	2	334351	6694084
<i>Verticordia aurea</i>	P4	14/09/2022	3	334183	6694097
<i>Verticordia aurea</i>	P4	14/09/2022	12	334198	6694122
<i>Verticordia aurea</i>	P4	14/09/2022	2	334225	6694124
<i>Verticordia aurea</i>	P4	14/09/2022	5	334251	6694128
<i>Verticordia aurea</i>	P4	14/09/2022	1	334209	6694140
<i>Verticordia aurea</i>	P4	14/09/2022	3	334191	6694144
<i>Verticordia aurea</i>	P4	14/09/2022	5	334218	6694161
<i>Verticordia aurea</i>	P4	14/09/2022	5	334232	6694183
<i>Verticordia aurea</i>	P4	14/09/2022	1	334256	6694211
<i>Verticordia aurea</i>	P4	14/09/2022	3	334381	6694220
<i>Verticordia aurea</i>	P4	14/09/2022	4	334410	6694225
<i>Verticordia aurea</i>	P4	14/09/2022	4	334484	6694222
<i>Verticordia aurea</i>	P4	14/09/2022	5	334286	6694209
<i>Verticordia aurea</i>	P4	14/09/2022	5	334416	6694182
<i>Verticordia aurea</i>	P4	14/09/2022	6	334431	6694161
<i>Verticordia aurea</i>	P4	14/09/2022	1	334301	6694140

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia aurea</i>	P4	14/09/2022	1	334431	6694106
<i>Verticordia aurea</i>	P4	14/09/2022	1	334443	6694271
<i>Verticordia aurea</i>	P4	14/09/2022	1	333969	6694047
<i>Verticordia aurea</i>	P4	14/09/2022	2	333387	6694112
<i>Verticordia aurea</i>	P4	14/09/2022	1	333327	6694127
<i>Verticordia aurea</i>	P4	14/09/2022	5	333223	6694162
<i>Verticordia aurea</i>	P4	14/09/2022	2	333201	6694172
<i>Verticordia aurea</i>	P4	14/09/2022	2	333177	6694182
<i>Verticordia aurea</i>	P4	14/09/2022	1	332690	6694436
<i>Verticordia aurea</i>	P4	14/09/2022	1	332638	6694464
<i>Verticordia aurea</i>	P4	14/09/2022	1	332375	6694612
<i>Verticordia aurea</i>	P4	14/09/2022	2	332206	6694707
<i>Verticordia aurea</i>	P4	14/09/2022	1	332067	6694781
<i>Verticordia aurea</i>	P4	14/09/2022	2	332033	6694798
<i>Verticordia aurea</i>	P4	14/09/2022	1	332008	6694811
<i>Verticordia aurea</i>	P4	14/09/2022	1	331995	6694816
<i>Verticordia aurea</i>	P4	14/09/2022	1	331691	6694922
<i>Verticordia aurea</i>	P4	14/09/2022	3	331676	6694930
<i>Verticordia fragrans</i>	P3	9/09/2022	5	334330	6695418
<i>Verticordia fragrans</i>	P3	9/09/2022	1	334366	6695230
<i>Verticordia fragrans</i>	P3	9/09/2022	2	334370	6695199
<i>Verticordia fragrans</i>	P3	9/09/2022	1	334377	6695173
<i>Verticordia fragrans</i>	P3	9/09/2022	3	334379	6695151
<i>Verticordia fragrans</i>	P3	9/09/2022	3	334387	6695115
<i>Verticordia fragrans</i>	P3	9/09/2022	3	334388	6695102
<i>Verticordia fragrans</i>	P3	9/09/2022	3	334400	6695068
<i>Verticordia fragrans</i>	P3	9/09/2022	5	334395	6695051
<i>Verticordia fragrans</i>	P3	5/09/2022	20	334143	6694068
<i>Verticordia fragrans</i>	P3	6/09/2022	2	331396	6695702
<i>Verticordia fragrans</i>	P3	6/09/2022	10	334527	6694219
<i>Verticordia fragrans</i>	P3	6/09/2022	4	334538	6694142
<i>Verticordia fragrans</i>	P3	6/09/2022	1	334547	6694101
<i>Verticordia fragrans</i>	P3	6/09/2022	1	334797	6694103
<i>Verticordia fragrans</i>	P3	6/09/2022	1	334557	6694061
<i>Verticordia fragrans</i>	P3	6/09/2022	4	334591	6693942
<i>Verticordia fragrans</i>	P3	6/09/2022	2	334587	6693900
<i>Verticordia fragrans</i>	P3	8/09/2022	1	330999	6694057
<i>Verticordia fragrans</i>	P3	8/09/2022	2	331013	6694193
<i>Verticordia fragrans</i>	P3	8/09/2022	1	331007	6694069
<i>Verticordia fragrans</i>	P3	8/09/2022	4	331013	6693997

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia fragrans</i>	P3	8/09/2022	1	331030	6693822
<i>Verticordia fragrans</i>	P3	8/09/2022	5	331045	6693693
<i>Verticordia fragrans</i>	P3	8/09/2022	15	331045	6693682
<i>Verticordia fragrans</i>	P3	8/09/2022	35	331048	6693676
<i>Verticordia fragrans</i>	P3	8/09/2022	5	331052	6693652
<i>Verticordia fragrans</i>	P3	8/09/2022	1	331054	6693634
<i>Verticordia fragrans</i>	P3	8/09/2022	1	331063	6693589
<i>Verticordia fragrans</i>	P3	8/09/2022	1	331071	6693559
<i>Verticordia fragrans</i>	P3	8/09/2022	4	331117	6693304
<i>Verticordia fragrans</i>	P3	8/09/2022	1	331126	6693266
<i>Verticordia fragrans</i>	P3	8/09/2022	15	331126	6693254
<i>Verticordia fragrans</i>	P3	8/09/2022	1	331148	6693143
<i>Verticordia fragrans</i>	P3	8/09/2022	4	331131	6693249
<i>Verticordia fragrans</i>	P3	8/09/2022	15	331079	6693570
<i>Verticordia fragrans</i>	P3	8/09/2022	50	331075	6693580
<i>Verticordia fragrans</i>	P3	8/09/2022	50	331072	6693592
<i>Verticordia fragrans</i>	P3	8/09/2022	25	331072	6693600
<i>Verticordia fragrans</i>	P3	8/09/2022	10	331071	6693610
<i>Verticordia fragrans</i>	P3	8/09/2022	10	331070	6693615
<i>Verticordia fragrans</i>	P3	8/09/2022	25	331056	6693676
<i>Verticordia fragrans</i>	P3	9/09/2022	5	334393	6694948
<i>Verticordia fragrans</i>	P3	9/09/2022	1	334381	6695023
<i>Verticordia fragrans</i>	P3	9/09/2022	4	334354	6695165
<i>Verticordia fragrans</i>	P3	9/09/2022	1	334387	6695156
<i>Verticordia fragrans</i>	P3	12/09/2022	1	334035	6697002
<i>Verticordia fragrans</i>	P3	12/09/2022	1	334045	6696959
<i>Verticordia fragrans</i>	P3	12/09/2022	1	334062	6696874
<i>Verticordia fragrans</i>	P3	12/09/2022	5	331094	6693990
<i>Verticordia fragrans</i>	P3	12/09/2022	2	331088	6694038
<i>Verticordia fragrans</i>	P3	12/09/2022	4	331086	6694064
<i>Verticordia fragrans</i>	P3	12/09/2022	10	331080	6694101
<i>Verticordia fragrans</i>	P3	12/09/2022	3	331078	6694116
<i>Verticordia fragrans</i>	P3	12/09/2022	1	331155	6694500
<i>Verticordia fragrans</i>	P3	12/09/2022	3	331194	6694656
<i>Verticordia fragrans</i>	P3	12/09/2022	2	331206	6694662
<i>Verticordia fragrans</i>	P3	12/09/2022	8	331198	6694642
<i>Verticordia fragrans</i>	P3	12/09/2022	1	331112	6694249
<i>Verticordia fragrans</i>	P3	12/09/2022	1	331108	6694238
<i>Verticordia fragrans</i>	P3	12/09/2022	1	331103	6694204
<i>Verticordia fragrans</i>	P3	12/09/2022	3	331095	6694089

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia fragrans</i>	P3	12/09/2022	10	331095	6694083
<i>Verticordia fragrans</i>	P3	12/09/2022	20	331095	6694075
<i>Verticordia fragrans</i>	P3	12/09/2022	6	331100	6694001
<i>Verticordia fragrans</i>	P3	12/09/2022	2	331105	6693983
<i>Verticordia fragrans</i>	P3	12/09/2022	1	331116	6693876
<i>Verticordia fragrans</i>	P3	12/09/2022	1	331118	6693848
<i>Verticordia fragrans</i>	P3	12/09/2022	1	331085	6693791
<i>Verticordia fragrans</i>	P3	12/09/2022	1	331066	6693931
<i>Verticordia fragrans</i>	P3	12/09/2022	8	331062	6694069
<i>Verticordia fragrans</i>	P3	12/09/2022	45	331065	6694098
<i>Verticordia fragrans</i>	P3	12/09/2022	30	331062	6694113
<i>Verticordia fragrans</i>	P3	12/09/2022	2	331066	6694147
<i>Verticordia fragrans</i>	P3	12/09/2022	1	331168	6694632
<i>Verticordia fragrans</i>	P3	12/09/2022	1	331095	6694388
<i>Verticordia fragrans</i>	P3	12/09/2022	4	331049	6694130
<i>Verticordia fragrans</i>	P3	12/09/2022	1	331053	6694116
<i>Verticordia fragrans</i>	P3	12/09/2022	35	331056	6694107
<i>Verticordia fragrans</i>	P3	12/09/2022	40	331053	6694097
<i>Verticordia fragrans</i>	P3	12/09/2022	30	331056	6694081
<i>Verticordia fragrans</i>	P3	12/09/2022	3	331068	6694044
<i>Verticordia fragrans</i>	P3	14/09/2022	1	334191	6694053
<i>Verticordia fragrans</i>	P3	14/09/2022	2	334180	6694053
<i>Verticordia fragrans</i>	P3	14/09/2022	20	334153	6694052
<i>Verticordia fragrans</i>	P3	14/09/2022	2	334219	6694072
<i>Verticordia fragrans</i>	P3	14/09/2022	25	334467	6694230
<i>Verticordia fragrans</i>	P3	14/09/2022	30	334509	6694191
<i>Verticordia fragrans</i>	P3	14/09/2022	1	334518	6694174
<i>Verticordia fragrans</i>	P3	12/09/2022	5	331130	6693500
<i>Verticordia fragrans</i>	P3	12/09/2022	1	331114	6693580
<i>Verticordia fragrans</i>	P3	12/09/2022	1	331108	6693621
<i>Verticordia fragrans</i>	P3	12/09/2022	22	331079	6693769
<i>Verticordia fragrans</i>	P3	12/09/2022	1	331119	6693751
<i>Verticordia fragrans</i>	P3	12/09/2022	1	331122	6693702
<i>Verticordia fragrans</i>	P3	12/09/2022	4	331136	6693634
<i>Verticordia fragrans</i>	P3	12/09/2022	1	331138	6693626
<i>Verticordia fragrans</i>	P3	12/09/2022	2	331154	6693550
<i>Verticordia fragrans</i>	P3	12/09/2022	1	331177	6693433
<i>Verticordia fragrans</i>	P3	12/09/2022	1	331222	6693156
<i>Verticordia fragrans</i>	P3	12/09/2022	3	331226	6693144
<i>Verticordia fragrans</i>	P3	8/09/2022	1	331057	6694386

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia fragrans</i>	P3	8/09/2022	1	331103	6694810
<i>Verticordia fragrans</i>	P3	8/09/2022	6	330994	6693763
<i>Verticordia fragrans</i>	P3	8/09/2022	7	330993	6693785
<i>Verticordia fragrans</i>	P3	8/09/2022	2	330973	6693897
<i>Verticordia fragrans</i>	P3	8/09/2022	4	331020	6694023
<i>Verticordia fragrans</i>	P3	8/09/2022	1	331033	6693882
<i>Verticordia fragrans</i>	P3	8/09/2022	25	331043	6693813
<i>Verticordia fragrans</i>	P3	8/09/2022	16	331048	6693782
<i>Verticordia fragrans</i>	P3	8/09/2022	18	331025	6693620
<i>Verticordia fragrans</i>	P3	8/09/2022	17	331028	6693601
<i>Verticordia fragrans</i>	P3	8/09/2022	2	331032	6693574
<i>Verticordia fragrans</i>	P3	8/09/2022	60	331046	6693509
<i>Verticordia fragrans</i>	P3	8/09/2022	70	331049	6693496
<i>Verticordia fragrans</i>	P3	8/09/2022	2	331055	6693465
<i>Verticordia fragrans</i>	P3	8/09/2022	6	331059	6693441
<i>Verticordia fragrans</i>	P3	8/09/2022	3	331067	6693413
<i>Verticordia fragrans</i>	P3	8/09/2022	2	331074	6693363
<i>Verticordia fragrans</i>	P3	8/09/2022	28	331083	6693326
<i>Verticordia fragrans</i>	P3	8/09/2022	12	331088	6693301
<i>Verticordia fragrans</i>	P3	8/09/2022	8	331088	6693282
<i>Verticordia fragrans</i>	P3	8/09/2022	50	331093	6693266
<i>Verticordia fragrans</i>	P3	8/09/2022	20	331091	6693251
<i>Verticordia fragrans</i>	P3	8/09/2022	5	331099	6693234
<i>Verticordia fragrans</i>	P3	8/09/2022	6	331105	6693210
<i>Verticordia fragrans</i>	P3	8/09/2022	9	331110	6693178
<i>Verticordia fragrans</i>	P3	8/09/2022	7	331113	6693141
<i>Verticordia fragrans</i>	P3	8/09/2022	9	331142	6693252
<i>Verticordia fragrans</i>	P3	8/09/2022	18	331082	6693570
<i>Verticordia fragrans</i>	P3	8/09/2022	90	331082	6693587
<i>Verticordia fragrans</i>	P3	8/09/2022	25	331080	6693603
<i>Verticordia fragrans</i>	P3	8/09/2022	15	331074	6693617
<i>Verticordia fragrans</i>	P3	8/09/2022	10	331065	6693672
<i>Verticordia fragrans</i>	P3	8/09/2022	1	331058	6693753
<i>Verticordia fragrans</i>	P3	9/09/2022	6	334392	6694960
<i>Verticordia fragrans</i>	P3	9/09/2022	2	334366	6695141
<i>Verticordia fragrans</i>	P3	9/09/2022	2	334356	6695169
<i>Verticordia fragrans</i>	P3	9/09/2022	1	334340	6695270
<i>Verticordia fragrans</i>	P3	9/09/2022	1	334307	6695440
<i>Verticordia fragrans</i>	P3	9/09/2022	2	334303	6695455
<i>Verticordia fragrans</i>	P3	9/09/2022	1	334291	6695527

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia fragrans</i>	P3	9/09/2022	1	334319	6695475
<i>Verticordia fragrans</i>	P3	9/09/2022	2	334326	6695452
<i>Verticordia fragrans</i>	P3	9/09/2022	3	334325	6695433
<i>Verticordia fragrans</i>	P3	5/09/2022	20	334152	6694032
<i>Verticordia fragrans</i>	P3	5/09/2022	1	333810	6694029
<i>Verticordia fragrans</i>	P3	5/09/2022	3	333591	6694050
<i>Verticordia fragrans</i>	P3	5/09/2022	1	333432	6694077
<i>Verticordia fragrans</i>	P3	5/09/2022	2	333230	6694141
<i>Verticordia fragrans</i>	P3	5/09/2022	8	333219	6694144
<i>Verticordia fragrans</i>	P3	5/09/2022	1	333208	6694151
<i>Verticordia fragrans</i>	P3	6/09/2022	5	333190	6694152
<i>Verticordia fragrans</i>	P3	7/09/2022	1	334523	6694244
<i>Verticordia fragrans</i>	P3	7/09/2022	1	334530	6694199
<i>Verticordia fragrans</i>	P3	7/09/2022	1	334552	6694082
<i>Verticordia fragrans</i>	P3	7/09/2022	3	334560	6694044
<i>Verticordia fragrans</i>	P3	8/09/2022	1	331101	6694540
<i>Verticordia fragrans</i>	P3	8/09/2022	1	331055	6694334
<i>Verticordia fragrans</i>	P3	8/09/2022	1	331003	6694446
<i>Verticordia fragrans</i>	P3	8/09/2022	20	330970	6693879
<i>Verticordia fragrans</i>	P3	8/09/2022	2	330969	6693900
<i>Verticordia fragrans</i>	P3	8/09/2022	1	330953	6694091
<i>Verticordia fragrans</i>	P3	8/09/2022	10	331032	6694030
<i>Verticordia fragrans</i>	P3	8/09/2022	5	331055	6693786
<i>Verticordia fragrans</i>	P3	8/09/2022	12	331008	6693674
<i>Verticordia fragrans</i>	P3	8/09/2022	2	331012	6693643
<i>Verticordia fragrans</i>	P3	8/09/2022	10	331023	6693610
<i>Verticordia fragrans</i>	P3	8/09/2022	10	331019	6693599
<i>Verticordia fragrans</i>	P3	8/09/2022	2	331024	6693574
<i>Verticordia fragrans</i>	P3	8/09/2022	30	331035	6693531
<i>Verticordia fragrans</i>	P3	8/09/2022	40	331038	6693505
<i>Verticordia fragrans</i>	P3	8/09/2022	40	331039	6693490
<i>Verticordia fragrans</i>	P3	8/09/2022	40	331053	6693433
<i>Verticordia fragrans</i>	P3	8/09/2022	30	331052	6693422
<i>Verticordia fragrans</i>	P3	8/09/2022	10	331102	6693153
<i>Verticordia fragrans</i>	P3	8/09/2022	1	331102	6693543
<i>Verticordia fragrans</i>	P3	8/09/2022	10	331097	6693581
<i>Verticordia fragrans</i>	P3	8/09/2022	10	331091	6693592
<i>Verticordia fragrans</i>	P3	8/09/2022	2	331077	6693674
<i>Verticordia fragrans</i>	P3	8/09/2022	1	331073	6693685
<i>Verticordia fragrans</i>	P3	9/09/2022	1	334398	6694933

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia fragrans</i>	P3	9/09/2022	2	334477	6694487
<i>Verticordia fragrans</i>	P3	9/09/2022	1	334474	6694517
<i>Verticordia fragrans</i>	P3	9/09/2022	1	334466	6694582
<i>Verticordia fragrans</i>	P3	9/09/2022	2	334443	6694739
<i>Verticordia fragrans</i>	P3	9/09/2022	3	334440	6694750
<i>Verticordia fragrans</i>	P3	9/09/2022	2	334434	6694791
<i>Verticordia fragrans</i>	P3	9/09/2022	3	334433	6694802
<i>Verticordia fragrans</i>	P3	9/09/2022	4	334432	6694813
<i>Verticordia fragrans</i>	P3	9/09/2022	4	334432	6694831
<i>Verticordia fragrans</i>	P3	9/09/2022	1	334427	6694850
<i>Verticordia fragrans</i>	P3	9/09/2022	3	334426	6694859
<i>Verticordia fragrans</i>	P3	9/09/2022	5	334422	6694875
<i>Verticordia fragrans</i>	P3	9/09/2022	4	334420	6694891
<i>Verticordia fragrans</i>	P3	9/09/2022	5	334419	6694900
<i>Verticordia fragrans</i>	P3	9/09/2022	10	334416	6694913
<i>Verticordia fragrans</i>	P3	9/09/2022	12	334414	6694936
<i>Verticordia fragrans</i>	P3	9/09/2022	4	334414	6694948
<i>Verticordia fragrans</i>	P3	9/09/2022	4	334410	6694966
<i>Verticordia fragrans</i>	P3	9/09/2022	3	334409	6694976
<i>Verticordia fragrans</i>	P3	9/09/2022	1	334405	6694993
<i>Verticordia fragrans</i>	P3	9/09/2022	1	334404	6695004
<i>Verticordia fragrans</i>	P3	9/09/2022	4	334403	6695016
<i>Verticordia fragrans</i>	P3	9/09/2022	4	334399	6695035
<i>Verticordia fragrans</i>	P3	9/09/2022	12	334159	6694039
<i>Verticordia fragrans</i>	P3	9/09/2022	10	334153	6694038
<i>Verticordia fragrans</i>	P3	9/09/2022	15	334135	6694038
<i>Verticordia fragrans</i>	P3	9/09/2022	10	334125	6694038
<i>Verticordia fragrans</i>	P3	9/09/2022	1	334103	6694037
<i>Verticordia fragrans</i>	P3	9/09/2022	1	334044	6694037
<i>Verticordia fragrans</i>	P3	9/09/2022	1	333874	6694035
<i>Verticordia fragrans</i>	P3	9/09/2022	1	333742	6694043
<i>Verticordia fragrans</i>	P3	9/09/2022	1	333625	6694058
<i>Verticordia fragrans</i>	P3	9/09/2022	1	333614	6694058
<i>Verticordia fragrans</i>	P3	9/09/2022	4	333597	6694062
<i>Verticordia fragrans</i>	P3	9/09/2022	1	333230	6694159
<i>Verticordia fragrans</i>	P3	9/09/2022	2	333212	6694166
<i>Verticordia fragrans</i>	P3	5/09/2022	5	334137	6694019
<i>Verticordia fragrans</i>	P3	5/09/2022	3	333198	6694140
<i>Verticordia fragrans</i>	P3	6/09/2022	25	333168	6694146
<i>Verticordia fragrans</i>	P3	6/09/2022	12	333152	6694154

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia fragrans</i>	P3	6/09/2022	3	332970	6694248
<i>Verticordia fragrans</i>	P3	6/09/2022	1	334518	6694258
<i>Verticordia fragrans</i>	P3	6/09/2022	1	334581	6693928
<i>Verticordia fragrans</i>	P3	6/09/2022	1	334589	6693895
<i>Verticordia fragrans</i>	P3	8/09/2022	1	331112	6694543
<i>Verticordia fragrans</i>	P3	8/09/2022	1	331064	6694314
<i>Verticordia fragrans</i>	P3	8/09/2022	1	330969	6694301
<i>Verticordia fragrans</i>	P3	8/09/2022	1	330980	6694385
<i>Verticordia fragrans</i>	P3	8/09/2022	1	330981	6694392
<i>Verticordia fragrans</i>	P3	8/09/2022	1	330968	6693847
<i>Verticordia fragrans</i>	P3	8/09/2022	3	330960	6693873
<i>Verticordia fragrans</i>	P3	8/09/2022	18	330959	6693881
<i>Verticordia fragrans</i>	P3	8/09/2022	22	330958	6693893
<i>Verticordia fragrans</i>	P3	8/09/2022	6	330947	6694053
<i>Verticordia fragrans</i>	P3	8/09/2022	3	330945	6694071
<i>Verticordia fragrans</i>	P3	8/09/2022	1	331065	6693829
<i>Verticordia fragrans</i>	P3	8/09/2022	7	331002	6693637
<i>Verticordia fragrans</i>	P3	8/09/2022	12	331010	6693603
<i>Verticordia fragrans</i>	P3	8/09/2022	29	331012	6693586
<i>Verticordia fragrans</i>	P3	8/09/2022	3	331017	6693571
<i>Verticordia fragrans</i>	P3	8/09/2022	12	331020	6693554
<i>Verticordia fragrans</i>	P3	8/09/2022	13	331027	6693495
<i>Verticordia fragrans</i>	P3	8/09/2022	6	331032	6693477
<i>Verticordia fragrans</i>	P3	8/09/2022	18	331040	6693429
<i>Verticordia fragrans</i>	P3	8/09/2022	15	331048	6693417
<i>Verticordia fragrans</i>	P3	8/09/2022	2	331085	6693207
<i>Verticordia fragrans</i>	P3	8/09/2022	4	331095	6693153
<i>Verticordia fragrans</i>	P3	8/09/2022	29	331125	6693495
<i>Verticordia fragrans</i>	P3	8/09/2022	7	331117	6693508
<i>Verticordia fragrans</i>	P3	8/09/2022	1	331112	6693540
<i>Verticordia fragrans</i>	P3	8/09/2022	2	331102	6693583
<i>Verticordia fragrans</i>	P3	8/09/2022	1	331100	6693610
<i>Verticordia fragrans</i>	P3	8/09/2022	8	334401	6694902
<i>Verticordia fragrans</i>	P3	8/09/2022	22	334401	6694890
<i>Verticordia fragrans</i>	P3	8/09/2022	6	334404	6694876
<i>Verticordia fragrans</i>	P3	8/09/2022	13	334405	6694858
<i>Verticordia fragrans</i>	P3	9/09/2022	3	334409	6694838
<i>Verticordia fragrans</i>	P3	9/09/2022	1	334417	6694784
<i>Verticordia fragrans</i>	P3	9/09/2022	2	334487	6694336
<i>Verticordia fragrans</i>	P3	9/09/2022	2	334492	6694305

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia fragrans</i>	P3	9/09/2022	1	334427	6694876
<i>Verticordia fragrans</i>	P3	9/09/2022	18	334426	6694894
<i>Verticordia fragrans</i>	P3	9/09/2022	1	334422	6694914
<i>Verticordia fragrans</i>	P3	9/09/2022	8	334152	6694056
<i>Verticordia fragrans</i>	P3	9/09/2022	23	334133	6694053
<i>Verticordia fragrans</i>	P3	9/09/2022	4	334115	6694054
<i>Verticordia fragrans</i>	P3	9/09/2022	3	334106	6694053
<i>Verticordia fragrans</i>	P3	9/09/2022	2	334093	6694053
<i>Verticordia fragrans</i>	P3	9/09/2022	2	334068	6694052
<i>Verticordia fragrans</i>	P3	9/09/2022	3	334063	6694051
<i>Verticordia fragrans</i>	P3	9/09/2022	2	334007	6694048
<i>Verticordia fragrans</i>	P3	9/09/2022	1	333927	6694049
<i>Verticordia fragrans</i>	P3	7/09/2022	2	334518	6694270
<i>Verticordia fragrans</i>	P3	7/09/2022	1	334538	6694190
<i>Verticordia fragrans</i>	P3	7/09/2022	6	334539	6694150
<i>Verticordia fragrans</i>	P3	7/09/2022	4	334546	6694108
<i>Verticordia fragrans</i>	P3	7/09/2022	4	334562	6694031
<i>Verticordia fragrans</i>	P3	7/09/2022	8	334572	6693989
<i>Verticordia fragrans</i>	P3	7/09/2022	1	334578	6693951
<i>Verticordia fragrans</i>	P3	7/09/2022	5	334595	6693947
<i>Verticordia fragrans</i>	P3	7/09/2022	2	334585	6693915
<i>Verticordia fragrans</i>	P3	13/09/2022	8	334162	6694034
<i>Verticordia fragrans</i>	P3	13/09/2022	4	334547	6694028
<i>Verticordia fragrans</i>	P3	13/09/2022	2	334549	6694015
<i>Verticordia fragrans</i>	P3	13/09/2022	8	334557	6693986
<i>Verticordia fragrans</i>	P3	13/09/2022	1	334579	6693856
<i>Verticordia fragrans</i>	P3	12/09/2022	30	334003	6697013
<i>Verticordia fragrans</i>	P3	12/09/2022	17	334012	6696939
<i>Verticordia fragrans</i>	P3	12/09/2022	6	334021	6696922
<i>Verticordia fragrans</i>	P3	12/09/2022	2	331153	6693608
<i>Verticordia fragrans</i>	P3	12/09/2022	1	331160	6693580
<i>Verticordia fragrans</i>	P3	12/09/2022	1	331182	6693433
<i>Verticordia fragrans</i>	P3	12/09/2022	1	331213	6693296
<i>Verticordia fragrans</i>	P3	12/09/2022	1	331225	6693242
<i>Verticordia fragrans</i>	P3	12/09/2022	12	331237	6693171
<i>Verticordia fragrans</i>	P3	12/09/2022	16	331239	6693146
<i>Verticordia fragrans</i>	P3	12/09/2022	2	331250	6693117
<i>Verticordia fragrans</i>	P3	12/09/2022	21	331253	6693104
<i>Verticordia fragrans</i>	P3	12/09/2022	2	331253	6693130
<i>Verticordia fragrans</i>	P3	12/09/2022	23	331249	6693149

Taxon	Status (WA)	Date	Count	Easting	Northing
<i>Verticordia fragrans</i>	P3	12/09/2022	9	331241	6693176
<i>Verticordia fragrans</i>	P3	12/09/2022	5	331239	6693185
<i>Verticordia fragrans</i>	P3	12/09/2022	2	331204	6693389
<i>Verticordia fragrans</i>	P3	12/09/2022	3	331172	6693554
<i>Verticordia fragrans</i>	P3	12/09/2022	7	331172	6693575
<i>Verticordia fragrans</i>	P3	12/09/2022	3	331166	6693592
<i>Verticordia fragrans</i>	P3	12/09/2022	1	331052	6693992
<i>Verticordia fragrans</i>	P3	12/09/2022	9	331041	6694099
<i>Verticordia fragrans</i>	P3	12/09/2022	18	331046	6694110
<i>Verticordia fragrans</i>	P3	12/09/2022	5	331043	6694131
<i>Verticordia fragrans</i>	P3	12/09/2022	1	331179	6694622
<i>Verticordia fragrans</i>	P3	12/09/2022	2	331101	6694318
<i>Verticordia fragrans</i>	P3	12/09/2022	3	331070	6694139
<i>Verticordia fragrans</i>	P3	12/09/2022	9	331073	6694123
<i>Verticordia fragrans</i>	P3	12/09/2022	12	331072	6694105
<i>Verticordia fragrans</i>	P3	12/09/2022	4	331077	6694060
<i>Verticordia fragrans</i>	P3	12/09/2022	1	331080	6694043
<i>Verticordia fragrans</i>	P3	13/09/2022	1	335117	6694041
<i>Verticordia fragrans</i>	P3	13/09/2022	8	334156	6694041
<i>Verticordia fragrans</i>	P3	13/09/2022	5	334177	6694042
<i>Verticordia fragrans</i>	P3	13/09/2022	5	334536	6694044
<i>Verticordia fragrans</i>	P3	13/09/2022	2	334547	6694019
<i>Verticordia fragrans</i>	P3	13/09/2022	1	334470	6694002
<i>Verticordia fragrans</i>	P3	13/09/2022	1	334518	6694003
<i>Verticordia fragrans</i>	P3	13/09/2022	1	334552	6694003
<i>Verticordia fragrans</i>	P3	13/09/2022	4	334553	6693981
<i>Verticordia fragrans</i>	P3	13/09/2022	1	334541	6694061
<i>Verticordia fragrans</i>	P3	14/09/2022	4	334444	6694222
<i>Verticordia fragrans</i>	P3	14/09/2022	10	334464	6694221
<i>Verticordia fragrans</i>	P3	14/09/2022	3	334510	6694210
<i>Verticordia fragrans</i>	P3	14/09/2022	5	334513	6694201
<i>Verticordia fragrans</i>	P3	14/09/2022	1	334523	6694118
<i>Verticordia fragrans</i>	P3	14/09/2022	16	334530	6694102
<i>Verticordia fragrans</i>	P3	14/09/2022	2	334514	6694104
<i>Verticordia fragrans</i>	P3	14/09/2022	5	334495	6694293
<i>Verticordia fragrans</i>	P3	14/09/2022	2	333387	6694112



APPENDIX J

**Likelihood of Occurrence of Further
Significant Flora Taxa in the Survey Area**

Taxon	Status (WA)	Status (EPBC)	Flowering Period*	Habitat		Identifiable During Survey?	Nearest Location to Survey Area (DBCA Databases) [§]	Likelihood of Occurrence
				WA Herbarium (1998-)*	FCTs [#]			
<i>Acacia epacantha</i>	P3		July–August	Breakaways, slopes, flats and along drainage lines with gravelly sand or clay loam over laterite	-	Y	7.2 km to east	Unlikely – similar habitat to that preferred may be present in the Survey Area, but habitat at nearest known location not present in Survey Area
<i>Acacia flabellifolia</i>	P3		August–September	Low hills and ridges with rocky loam, lateritic gravelly soils	8c [^] , 12a [^]	Y	3.0 km to south	Unlikely – similar habitat to that preferred may be present in the Survey Area, but habitat at nearest known location not present in Survey Area
<i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i> Cockleshell Gully variant (E.A. Griffin 2039)	P2		August–October	Undulating sandplains, flats and breakaways with grey-yellow sand and laterite	7 [^] , CL	Y	3.8 km to west	Unlikely – while Survey Area occurs within known range, habitat is unlikely to be present. Taxon not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Acacia retrorsa</i>	P2		August–September	Slopes, gullies and flats with grey or brown sand, sandy loam or clay loam over laterite, gravelly and sometimes rocky. Eucalyptus or <i>Corymbia calophylla</i> woodland	-	Y	10.4 km to southeast	Unlikely – habitat unlikely to be present, and nearest known location represents most northerly extent of known range
<i>Acacia telmica</i>	P3		July–September	Low-lying seasonally moist areas on sand, loam or loamy clay	-	Y	9.6 km to west	Unlikely – habitat not considered to be present
<i>Acacia vittata</i>	P2		June–August, November	Margins of seasonal lakes with grey or brown sand or sandy clay	-	Y	9.9 km to west	Unlikely – habitat not considered to be present

Taxon	Status (WA)	Status (EPBC)	Flowering Period*	Habitat		Identifiable During Survey?	Nearest Location to Survey Area (DBCA Databases) [§]	Likelihood of Occurrence
				WA Herbarium (1998-)*	FCTs [#]			
<i>Acacia wilsonii</i>	T	EN	November–March	Hilltops, slopes and breakaways with gravelly brown, grey or yellow sand or clay loam over laterite or occasionally sandstone	-	Y	11.5 km to east	Unlikely – habitat not considered to be present
<i>Allocasuarina grevilleoides</i>	P3		September–November	Slopes, outcrops and plains with rocky or gravelly brown sand or clay loam over laterite or granite	1a~, 7^	Y	15.6 km to south	Unlikely – habitat not considered to be present
<i>Allocasuarina ramosissima</i>	P3		May–September	Breakaways, slopes and plains with gravelly grey, brown or white sand or loam over laterite	7^, 14	Y	6.9 km to southeast	Unlikely – while Survey Area occurs within known range, habitat is unlikely to be present. Taxon not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Andersonia gracilis</i>	T	EN	August–November	Winter-wet areas, near swamps. White-grey sand, sandy clay and gravelly loam	-	Y	75.2 km to southeast	Unlikely – habitat not considered to be present, nearest known location represents most northerly extent of known range
<i>Banksia elegans</i>	P4		October–November	Sandplains, low consolidated dunes with yellow sand	1a~, 1b~, 2a~, 2b~, 3~, 4^, 5a^, 5b, 6a, 10a, 10b, 16a, 16b, 23, 24, CL	Y	2.9 km to north	Unlikely – habitat not considered to be present
<i>Banksia fraseri</i> var. <i>crebra</i>	P3		July–August	Lateritic hilltops, slopes, plains and valleys with yellow, grey or brown gravelly sand over laterite	-	Y	9.1 km to east	Unlikely – habitat not considered to be present

Taxon	Status (WA)	Status (EPBC)	Flowering Period*	Habitat		Identifiable During Survey?	Nearest Location to Survey Area (DBCA Databases) [§]	Likelihood of Occurrence
				WA Herbarium (1998-)*	FCTs#			
<i>Banksia kippistiana</i> var. <i>paenepeccata</i>	P3		October–November	Hills and slopes with white-yellow or grey sand over laterite	-	Y	2.9 km to north	Unlikely – while Survey Area occurs on boundary of known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Banksia nana</i>	P3		October	Hills with white/grey sand and/or gravel over laterite	7^	Y	27.9 km to southeast	Unlikely – habitat possibly present, but nearest known location represents most northerly extent of known range
<i>Beyeria gardneri</i>	P3		August–September	Sandplains and hillsides with yellow sand	2a^~, 6a^	Y	1.3 km to south	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Beyeria similis</i>	P2		August–September	Sandplains, slopes or sandstone ridges with white, yellow or red clayey sand	1b^~	Y	1.4 km to south	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey

Taxon	Status (WA)	Status (EPBC)	Flowering Period*	Habitat		Identifiable During Survey?	Nearest Location to Survey Area (DBCA Databases) [§]	Likelihood of Occurrence
				WA Herbarium (1998-)*	FCTs [#]			
<i>Calytrix purpurea</i>	P2		September–December	Sandplains and sand dunes with white, grey or yellow sand, often over laterite	-	Y	3.8 km to southwest	Unlikely – habitat possibly present, but Survey Area occurs outside known, verified distribution. The validity of the record 3.8 km from Survey Area is questionable. Closest known, verified location to Survey Area located approximately 76 km to northeast
<i>Caustis gigas</i>	P2		May	Flats and depressions with white or grey sand	-	Y	24.5 km to southeast	Unlikely – habitat possibly present, but nearest known location represents most northerly extent of known range
<i>Centrolepis milleri</i>	P3		September–October	Sandplains with grey-white sand or sandy clay	6c [^]	Y	6.3 km to northwest	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Chordifex reseminans</i>	P2		March–May	Flats and winter-wet depressions with white-grey sand over laterite	2b [~] , 6b ^{^~}	Y	2.0 km to northwest	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey

Taxon	Status (WA)	Status (EPBC)	Flowering Period*	Habitat		Identifiable During Survey?	Nearest Location to Survey Area (DBCA Databases) [§]	Likelihood of Occurrence
				WA Herbarium (1998-)*	FCTs [#]			
<i>Comesperma griffinii</i>	P2		August–January	Slopes, plains, open depressions and flats with grey or brown sand or light clay, sometimes with laterite	2b [^] ~, 6c [^] , 10b [^]	Y	5.9 km to south	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Comesperma rhadinocarpum</i>	P3		October–November	Undulating plains, valley slopes and flats with grey, brown or yellow sandy loam or sand	1b [^] ~, 1c [^] , 2b [^] ~, 17b [^]	Y	1.4 km to south	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Conospermum scaposum</i>	P3		September–February	Winter-wet flats and depressions with white, brown or grey sand	1a [^] ~, 1b [^] ~	Y	16.8 km to southwest	Unlikely – nearest known location to Survey Area is erroneous; locality description states it occurs on Munbinea Road, 4.5 km north of Wongonderrah Road. This places it approximately 73.3 km south of the Survey Area. Closest known, verified location to Survey Area located approximately 58.9 km to southeast
<i>Cristonia biloba</i> subsp. <i>pubescens</i>	P2		June–July	Hillslopes and ridges with white sand or brown loam and gravel	1b [^] ~	Y	1.4 km to south	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey

Taxon	Status (WA)	Status (EPBC)	Flowering Period*	Habitat		Identifiable During Survey?	Nearest Location to Survey Area (DBCA Databases) [§]	Likelihood of Occurrence
				WA Herbarium (1998-)*	FCTs [#]			
<i>Daviesia debilior</i> subsp. <i>debilior</i>	P2		May–July	Plains with white-grey sand over laterite	1a~, 2a~, 2b~, 7^, R	Y	1.2 km to south	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Daviesia pteroclada</i>	P3		July–August	Hills and slopes with sandy or clay gravelly soils over laterite	-	Y	6.4 km to west	Unlikely – habitat not considered to be present. The validity of the record 6.4 km from Survey Area is questionable. Closest known, verified location to Survey Area located approximately 17.8 km to southwest
<i>Daviesia speciosa</i>	T	EN	April–December	Breakaways, hilltops, and slopes with gravelly grey, brown or white sand or clay loam over laterite	-	Y	21.6 km to east	Unlikely – ha habitat not considered to be present, nearest known location represents most south-westerly extent of known range
<i>Desmocladius biformis</i>	P3		September–October	Hills, slopes and undulating plains with white or brown sand or sandy clay over laterite	9^	Y	3.1 km to south	Unlikely – while Survey Area occurs within known range, habitat is unlikely to be present. Taxon not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Drosera prophylla</i>	P3		June–July	Hilltops, lateritic breakaways and ridges and slopes with gravelly sand over laterite	-	Y – September trip only	9.1 km to southeast	Unlikely – habitat unlikely to be present and Survey Area is out of known range

Taxon	Status (WA)	Status (EPBC)	Flowering Period*	Habitat		Identifiable During Survey?	Nearest Location to Survey Area (DBCA Databases) [§]	Likelihood of Occurrence
				WA Herbarium (1998-)*	FCTs#			
<i>Eleocharis keigheryi</i>	T	VU	August–November	Emergent in freshwater: creeks and claypans with clay or sandy loam	-	Y	22.9 km to southwest	Unlikely – habitat not considered to be present
<i>Eremophila glabra</i> subsp. <i>chlorella</i>	T	EN	July–November	Winter-wet depressions, lake edges and flats with grey-white sandy clay or sand	8c, 9, 12a, 12b^	Y	2.8 km to south	Unlikely – habitat not considered to be present
<i>Eremophila subangustifolia</i>	T	CR	August–September	Lake/creek edges, claypans and winter wet flats with brown, white or grey sand, sandy clay or sandy loam	-	Y	8.0 km to west	Unlikely – habitat not considered to be present
<i>Eucalyptus crispata</i>	T	VU	March–June	Lateritic breakaways and slopes with brown-grey sand or loam with lateritic gravel	2a^~, 2b^~	Y	1.5 km to north	Unlikely – habitat not considered to be present
<i>Eucalyptus exilis</i>	P4		August–October	Hills, breakaways and slopes with grey or yellow gravelly sand or clay loam	R	Y	19.1 km to south	Unlikely – Survey Area out of known range
<i>Eucalyptus ximpensa</i>	T	EN	August–November	Hilltops, slopes and plains with grey, brown or white gravelly clay loam over laterite	7^	Y	3.4 km to southeast	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey

Taxon	Status (WA)	Status (EPBC)	Flowering Period*	Habitat		Identifiable During Survey?	Nearest Location to Survey Area (DBCA Databases) [§]	Likelihood of Occurrence
				WA Herbarium (1998-)*	FCTS#			
<i>Eucalyptus johnsoniana</i>	T	VU	July–May	Sandplains and lateritic breakaways with white-grey sand with lateritic gravel	1a~, 2a~, 2b^~, 7^, R	Y	0.5 km to north	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Eucalyptus leprophloia</i>	T	EN	July, November	Breakaways and slopes with grey or white sand or sandy clay over laterite	-	Y	26.5 km to south-southeast	Unlikely – habitat not considered to be present
<i>Eucalyptus rhodantha</i> var. <i>rhodantha</i>	T	VU	July–January	Hillslopes, breakaways and gentle slopes with grey, yellow or brown sand, sometimes over laterite	-	Y	6.7 km to northwest	Unlikely – similar habitat possibly present, but Survey Area occurs outside known, verified distribution. The validity of the record 6.7 km from Survey Area is questionable. Closest known, verified location to Survey Area located approximately 41 km to northeast
<i>Eucalyptus suberea</i>	T	VU	November–March	Breakaways and slopes with white gravelly sand over laterite	2b^~, 7^	Y	7.9 km to south-southeast	Unlikely – habitat not considered to be present, nearest known location represents most northerly extent of known range. This record is relatively disjunct from all other records and may be erroneous

Taxon	Status (WA)	Status (EPBC)	Flowering Period*	Habitat		Identifiable During Survey?	Nearest Location to Survey Area (DBCA Databases) [§]	Likelihood of Occurrence
				WA Herbarium (1998-)*	FCTs [#]			
<i>Eucalyptus zopherophloia</i>	P4		October–January	Slopes and dunes with brown, grey or white sand with and over limestone. Often in coastal areas	17a [^]	Y	2.8 km to north	Unlikely – habitat not considered to be present, and Survey Area is located outside of known, verified range. Closest known location to Survey Area is erroneous; locality description places it 22.4 km from Eneabba (direction not provided). Next closest record is located 11.5 km northeast of Survey Area
<i>Frankenia glomerata</i>	P4		November	Salt lake edges, watercourses and flats with white sand or grey-brown sandy loam	-	Y	8.0 km to west	Unlikely – habitat not considered to be present
<i>Grevillea althoferorum</i> subsp. <i>althoferorum</i>	T	EN	September–November	Low rises and slopes with yellow-brown or grey sand	2a [~] , 2b [^] ~, 6a, 7 [^] , 9, CL	Y	1.9 km to south	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Grevillea amplexans</i> subsp. <i>adpressa</i>	P1		September	Slopes with yellow or white sand, sometimes over laterite	CL, R	Y	11.0 km to southeast	Unlikely – habitat possibly present, but Survey Area occurs northwest of known range
<i>Grevillea humifusa</i>	T	EN	May, September–November	Slopes with brown gravelly loam over laterite	-	Y	30.0 km to southwest	Unlikely – habitat possibly present, but nearest known location represents most northerly extent of known range, taxon has a relatively restricted distribution

Taxon	Status (WA)	Status (EPBC)	Flowering Period*	Habitat		Identifiable During Survey?	Nearest Location to Survey Area (DBCA Databases) [§]	Likelihood of Occurrence
				WA Herbarium (1998-)*	FCTS#			
<i>Grevillea leptopoda</i>	P3		June–October	Hills and slopes with brown, red or yellow sand or clay loam, sometimes over laterite or occasionally granite	1b [^] ~, CL, R	Y	15.3 km to northeast	Unlikely – habitat possibly present, but nearest known location represents most westerly extent of known range
<i>Grevillea olivacea</i>	P4		June–September	Coastal dunes and limestone rocks with white or grey sand	-	Y	17.4 km to south	Unlikely – habitat not considered to be present, nearest known location to Survey Area is likely erroneous; known distribution is coastal and near-coastal areas
<i>Grevillea thyrsoides</i> subsp. <i>thyrsoides</i>	P3		February, August–September	Hills and plains with grey, white or brown sand or clay loam, often with laterite	7 [^]	Y	1.2 km to east	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Grevillea uniformis</i>	P3		July–November	Hills, slopes and breakaways with grey or brown sand or sandy loam with sandstone or laterite	1a [~] , 2b [~] , 7 [^] , 14, CL, R	Y	0.2 km to west	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Guichenotia alba</i>	P3		July–August	Low-lying flats and depressions with brown sandy and gravelly soils	2a [~] , 5a [^] , 6c	Y	6.0 km to west	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey

Taxon	Status (WA)	Status (EPBC)	Flowering Period*	Habitat		Identifiable During Survey?	Nearest Location to Survey Area (DBCA Databases) [§]	Likelihood of Occurrence
				WA Herbarium (1998-)*	FCTs [#]			
<i>Hakea longiflora</i>	P3		June–July	High in landscape; hills, breakaways and plains with white, grey or yellow gravelly sand or sandy loam over laterite or occasionally sandstone	14 [^]	Y	9.6 km to southeast	Unlikely – habitat not considered to be present
<i>Hakea megalosperma</i>	T	VU	April–June	High in landscape; hills, breakaways, slopes and flats with white, grey or brown sand or sandy loam over laterite	-	Y	5.7 km to southeast	Unlikely – habitat not considered to be present
<i>Hemiandra gardneri</i>	T	EN	August–November	Plains with yellow or grey sand or clayey sand	-	Y	34.2 km to southwest	Unlikely – habitat possibly present, but nearest known location represents most northerly extent of known range
<i>Hensmania stoniella</i>	P3		September–November	Sandplains, flats and slopes with white, grey or lateritic sand	1a [^] ~, 2a [~] , 2b [^] ~, 3 [~] , CL	Y	0.2 km to north	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Hibbertia propinqua</i>	P4		August–September	Slopes and breakaways with grey-brown sand with laterite or sandstone	2b [^] ~, 9 [^] , 14 [^]	Y	2.1 km to south	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey

Taxon	Status (WA)	Status (EPBC)	Flowering Period*	Habitat		Identifiable During Survey?	Nearest Location to Survey Area (DBCA Databases) [§]	Likelihood of Occurrence
				WA Herbarium (1998-)*	FCTs [#]			
<i>Hibbertia subglabra</i>	P3		September–October	Slopes of hills with grey or white sand and lateritic gravel	1b [^] ~, CL	Y	1.4 km to south	Unlikely – while Survey Area occurs on boundary of known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Jacksonia anthoclada</i>	P3		November	Slopes with brown, yellow or white sand over laterite	2b [^] ~, 7	Y	4.2 km to southeast	Unlikely – while Survey Area occurs on boundary of known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Lepidobolus densus</i>	P4		August	Sandplains, lake edges and slopes with brown or yellow sand	1c [^] , 3 [^] ~, 12a [^]	Y	3.5 km to south	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Lepidobolus quadratus</i>	P3		August–September	Dry kwongan, hillslopes and rises with grey-white sand and lateritic gravel	1a [~] , 2a [~] , 2b [~] , 7 [^] , 14, CL	Y	1.4 km to south	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Liparophyllum congestiflorum</i>	P4		September–November	Flats, swamps and drainage lines with grey sandy clay or sand	24 [^] , CL	Y	3.2 km to south	Unlikely – habitat not considered to be present

Taxon	Status (WA)	Status (EPBC)	Flowering Period*	Habitat		Identifiable During Survey?	Nearest Location to Survey Area (DBCA Databases) [§]	Likelihood of Occurrence
				WA Herbarium (1998-)*	FCTs#			
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	P3		March–October	Sandplains and slopes with white-grey lateritic sand or clay	1a~^, 1b~, 2a~, 2b~, 3~, 6a, 7^, 9, 14, R	Y	0.2 km to north	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Micromyrtus uniovulum</i>	P2		November	Ridges, hilltops and slopes with grey or brown sand or clay loam over laterite	CL	Y	9.9 km to north	Unlikely – habitat unlikely to be present, and nearest known location represents most southerly extent of known range
<i>Patersonia argyrea</i>	P3		September–November	Hills, slopes and plains with grey sand and lateritic gravel	6b^~	Y	8.9 km to south	Unlikely – habitat possibly present, but Survey Area is out of known range
<i>Persoonia rudis</i>	P3		September–January	Sandplains and flats with white, grey or yellow sand, often over laterite	1a^~, 1b~, 2a~, 2b~, 3~, 4, 5a^, 5b, 6c, 7, CL	Y	0.02 km to south	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Petrophile septemfida</i>	P3		July–September	Hillsides, uplands and plains with grey-white sand, often over laterite	-	Y	2.8 km to north	Unlikely – habitat possibly present, but Survey Area occurs outside known, verified distribution. Closest known location to Survey Area is likely erroneous; locality description is ‘Eneabba’ and has therefore been plotted at Eneabba town site. Next closest record is approximately 15.9 km southeast of Survey Area

Taxon	Status (WA)	Status (EPBC)	Flowering Period*	Habitat		Identifiable During Survey?	Nearest Location to Survey Area (DBCA Databases) ⁵	Likelihood of Occurrence
				WA Herbarium (1998-)*	FCTs [#]			
<i>Phlebocarya pilosissima</i> subsp. <i>pilosissima</i>	P3		August–October	Slopes with sand over laterite	-	Y	8.3 km to east	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Pityrodia viscida</i>	P4		September–February	Hillslopes, uplands and sandplains with grey, white or yellow sand, sometimes with lateritic gravel	1a [^] ~, 2a [^] ~, 2b [^] ~, 3 [^] ~, 6a, CL	Y	2.0 km to south	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Platysace ramosissima</i>	P3		October–November	Undulating plains and flats with yellow, brown or grey sand	3 [^] ~	Y	1.0 km to south	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Ptilotus clivicola</i>	P2		November	Hills and slopes with grey or white gravelly sand over laterite	7 [^]	Y	4.3 km to south	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey

Taxon	Status (WA)	Status (EPBC)	Flowering Period*	Habitat		Identifiable During Survey?	Nearest Location to Survey Area (DBCA Databases) [§]	Likelihood of Occurrence
				WA Herbarium (1998-)*	FCTs#			
<i>Scaevola eneabba</i>	P2		February, November	Swales and flats with grey-white sand	6a, 6b [~]	Y	1.8 km to northwest	Unlikely – while Survey Area occurs on boundary of known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Schoenus</i> sp. Eneabba (F. Obbens & C. Godden 1154)	P2		November–December	Undulating sandplains, mid slopes and tops of rises with grey, yellow or white sand	1a [~] , 1b [~] , 2a [~] , 2b [~] , 3 [~] , 4 [^] , 5a [^] , 5b, CL, D, R	Y	1.5 km to north	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Spirogardnera rubescens</i>	T	EN	August–January	Slopes and plains, gravelly sandy loam	-	Y	32.0 km to southeast	Unlikely – habitat possibly present, but nearest known location represents the most northerly extent of known range
<i>Stawellia dimorphantha</i>	P4		June–November	Undulating plains and slopes with yellow sand	3 [~] , 4 [^] , 5a [^] , 5b [^] , 16a [^] , 16b, 17a, 17b, CL	Y	2.8 km to north	Unlikely – habitat not considered to be present
<i>Stylidium drummondianum</i>	P3		August–October	Upper hillslopes and breakaways, low heath or mallee shrubland on sand or clayey sand over laterite	7 [^] , 9 [^]	Y	3.1 km to south	Unlikely – while Survey Area occurs within known range, habitat is unlikely to be present. Taxon not recorded in Survey Area despite intensive survey conducted by the 2022 survey

Taxon	Status (WA)	Status (EPBC)	Flowering Period*	Habitat		Identifiable During Survey?	Nearest Location to Survey Area (DBCA Databases) [§]	Likelihood of Occurrence
				WA Herbarium (1998-)*	FCTS#			
<i>Stylidium inversiflorum</i>	P4		September–November	Sandplains, hillslopes and gullies, heath, open woodland on white or grey sand over laterite	1a [~] , 2b [~]	Y	6.7 km to southwest	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Stylidium torticarpum</i>	P3		September–November	Adjacent to drainage lines, depressions, and beneath breakaways, heath or mallee shrubland on sandy clay or clay loam over laterite	9 [^] , 12a [^] , 14 [^] , 15a [^] , CL	Y	2.1 km to south	Unlikely – while Survey Area occurs within known range, habitat is unlikely to be present. Taxon not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Styphelia longissima</i>	T	CR	June–September	Hillsides with gentle slopes and yellow sand	1b [~] , CL	Y	6.5 km to north-northeast	Unlikely – habitat not considered to be present
<i>Styphelia obtecta</i>	T	EN	October–November	Plains with white, grey or yellow sand	1a [~] , 1c [^] , 2a [~] [^] , 2b [~] , 4, 6b [^] , CL, R	Y	1.0 km to south	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Synaphea endothrix</i>	P3		July–October	Ridges and hills with brown, yellow or white gravelly sand over laterite	2b [~]	Y	4.5 km to south	Unlikely – habitat possibly present, but nearest known location likely erroneous. Next closest record is located 27.7 km southeast of Survey Area

Taxon	Status (WA)	Status (EPBC)	Flowering Period*	Habitat		Identifiable During Survey?	Nearest Location to Survey Area (DBCA Databases) [§]	Likelihood of Occurrence
				WA Herbarium (1998-)*	FCTS#			
<i>Synaphea oulopha</i>	P3		July–October	Lateritic breakaways, slopes and rises with grey sand, gravelly loam or clay	9 [^]	Y	3.9 km to south	Unlikely – habitat possibly present, but Survey Area is out of known range; closest location to Survey Area has erroneous coordinates and should be located further north. Next closest record is approximately 16.7 km northeast of Survey Area
<i>Tetratheca nephelioides</i>	T	CR	July–January	Slopes and ridges with white or grey gravelly sand over laterite	1a [~] , 2b [^] ~, 7 [^] , CL	Y	6.1 km to south	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Thelymitra stellata</i>	T	EN	October–November	Ridges and tops of lateritic hills with grey or brown sand or loam and lateritic gravel	7 [^]	Y	2.1 km to east	Unlikely – habitat not considered to be present
<i>Thysanotus vernalis</i>	P3		September – October	Slopes, flats and winter wet depressions with grey, brown or white sand with lateritic gravel over laterite	-	Y	15.9 km to northeast	Unlikely – while Survey Area occurs within known range, habitat is unlikely to be present. Taxon not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Thysanotus</i> sp. Badgingarra (E.A. Griffin 2511)	P2		December–January	Slopes, uplands and flats with grey or white sand, sometimes with lateritic gravel	-	Y	4.8 km to west	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey

Taxon	Status (WA)	Status (EPBC)	Flowering Period*	Habitat		Identifiable During Survey?	Nearest Location to Survey Area (DBCA Databases) [§]	Likelihood of Occurrence
				WA Herbarium (1998-)*	FCTs [#]			
<i>Verticordia albida</i>	T	EN	November–January	Undulating sandplains with grey, white or yellow sand, sometimes over laterite	-	Y	2.9 km to east	Unlikely – habitat possibly present, but Survey Area is out of known range. Records near Eneabba have erroneous coordinates; this species is accepted as only occurring near Three Springs; closest known, verified record is approximately 42.9 km to northeast
<i>Verticordia densiflora</i> var. <i>roseostella</i>	P3		September–December	Sandplains and breakaways with yellow, grey or white sand or sandy loam, often with laterite	-	Y	2.6 km to north	Unlikely – habitat possibly present, but Survey Area is out of known range. Records near Eneabba are erroneous; closest known, verified record is approximately 33.1 km to northeast
<i>Verticordia luteola</i> var. <i>rosea</i>	P1		December–January	Flats with white-grey sand	-	Y	2.8 km to north	Unlikely – while Survey Area occurs within known range and habitat is possibly present, taxon was not recorded in Survey Area despite intensive survey conducted by the 2022 survey
<i>Verticordia muelleriana</i> subsp. <i>muelleriana</i>	P3		September–January	Sandplains and slopes with white-grey or yellow sand	3 [^] ~	Y	2.1 km to south	Unlikely – habitat possibly present, but Survey Area is out of known range. Records on Northern Sandplains are unverified and/or erroneous; closest known, verified record is approximately 22.5 km to east

Taxon	Status (WA)	Status (EPBC)	Flowering Period*	Habitat		Identifiable During Survey?	Nearest Location to Survey Area (DBCA Databases) [§]	Likelihood of Occurrence
				WA Herbarium (1998-)*	FCTs [#]			
<i>Verticordia penicillaris</i>	P4		September–October	Hills, rocky creeks and outcrops with shallow grey or brown sandy loam or clay loam, often with granite or sometimes laterite or sandstone	-	Y	2.8 km to north	Unlikely – habitat not considered to be present. Closest known location to Survey Area is erroneous; locality description says ‘NE of Eneabba’ but does not provide a distance and is therefore plotted at Eneabba townsite. All other records are at least 32 km north-northeast of Survey Area
<i>Verticordia rutilastra</i>	P3		September–November	Lateritic breakaways and slopes with white or brown gravelly sand or sandy loam	14 [^]	Y	19.2 km to south	Unlikely – habitat not considered to be present, Survey Area north of known range
<i>Walteranthus erectus</i>	P2		February	Coastal limestone ridges with sand over limestone	-	Y	2.9 km to north	Unlikely – habitat not considered to be present. Closest known location to Survey Area is likely erroneous; record is from 1963 with a locality description ‘Eneabba Flora Reserve’, but record has been plotted at Eneabba town site. All other records are at least 15 km to west of Survey Area and are associated with coastal limestone
<i>Xanthosia tomentosa</i>	P4		September–December	Undulating sandplains, tops of hills and ridges with white-grey sand, lateritic gravelly soils over laterite	1a [~] , 2b [~] , 7 [^] , CL	Y	2.8 km to north	Unlikely – habitat not considered to be present

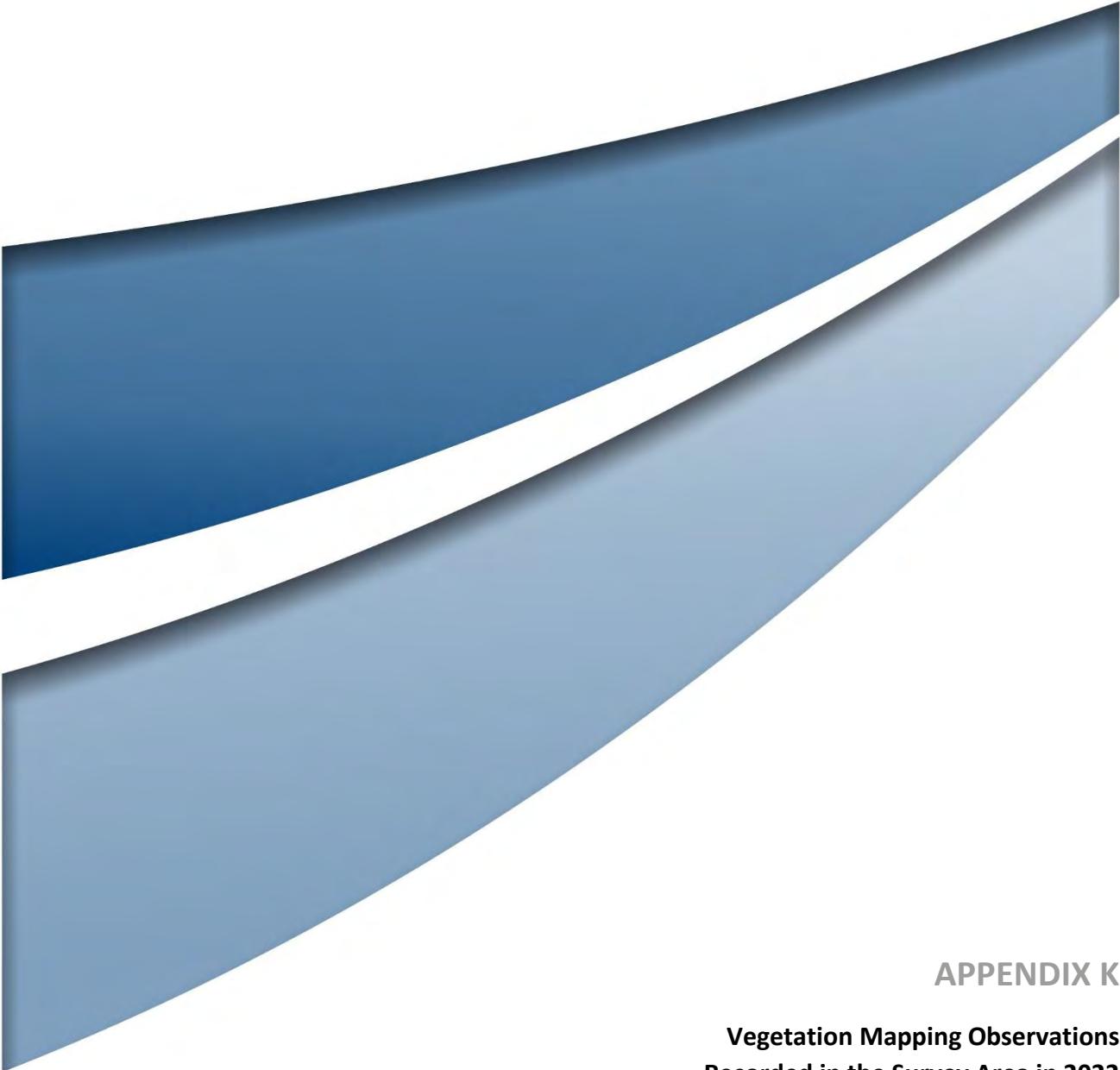
* Source: WA Herbarium (1998-).

Source: *FCT mapping for the ERMP Study Area; Woodman Environmental (2011):*

^ Represents preferred habitat for taxon.

~ Indicates FCT mapped within the Survey Area.

§ Source: *DBCA TPFL and WA Herbarium Specimen Database interrogation results (DBCA, 2022c). If the taxon was not returned by this search, then the nearest distance has been approximated using Florabase (WA Herbarium, 1998-); these values are presented in italics.*



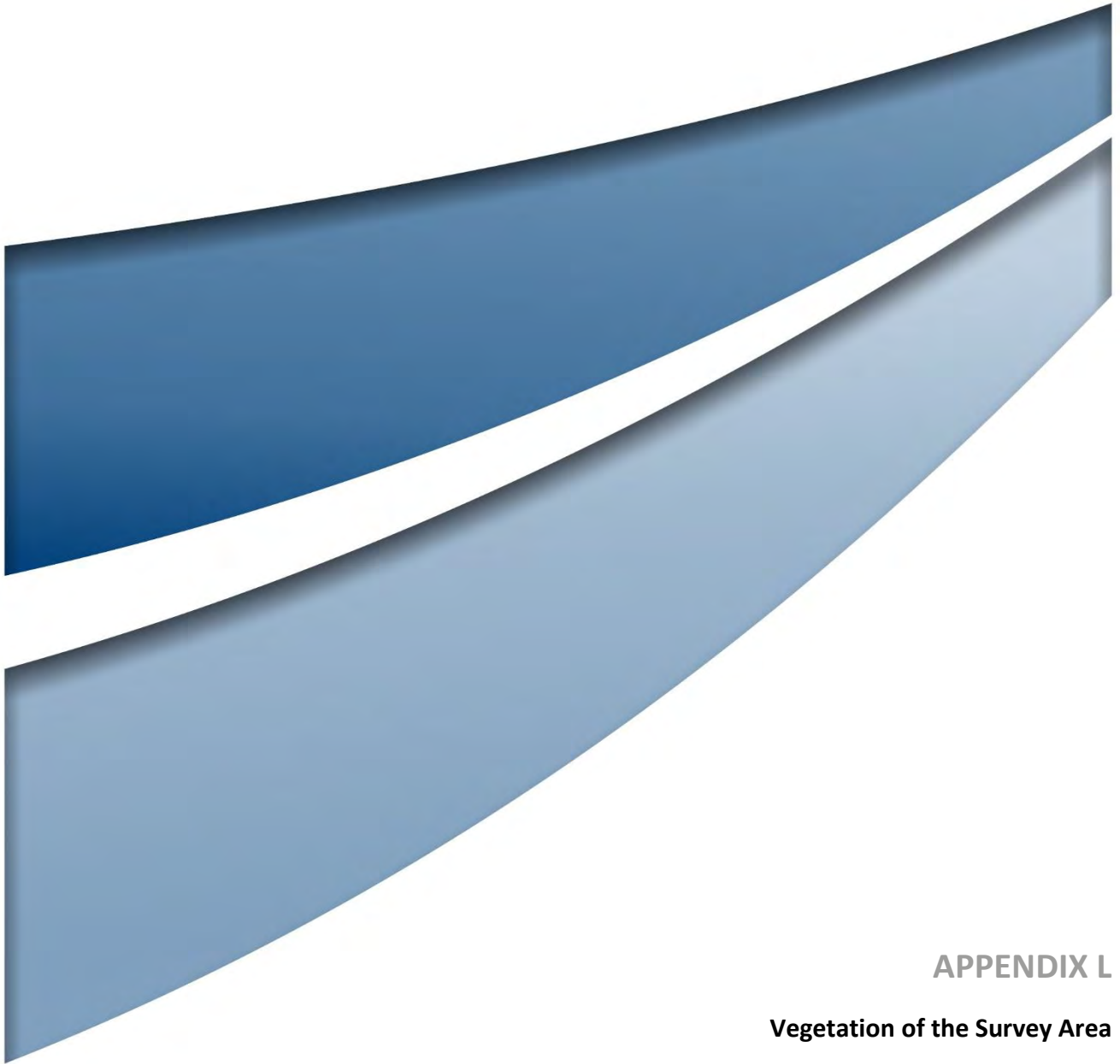
APPENDIX K

**Vegetation Mapping Observations
Recorded in the Survey Area in 2022**

**GOVERNMENT AGENCY REFERENCE ONLY
NOT FOR PUBLIC DISSEMINATION
CONTAINS LOCATIONS OF SIGNIFICANT FLORA TAXA**

All locations are in GDA2020 Zone 50.

Mapping Note	Date	Comment	Easting	Northing
MN01	13/09/2022	<i>Eucalyptus pleurocarpa</i> over <i>Jacksonia floribunda</i> , <i>Eremaea beaufortoides</i> , <i>Ecdeiocolea monostachya</i> and <i>Daviesia nudiflora</i> subsp. <i>nudiflora</i>	334945	6694061
MN02	13/09/2022	<i>Acacia blakelyi</i> and <i>Eucalyptus pleurocarpa</i> over <i>Allocasuarina humilis</i> over <i>Hibbertia</i> spp. and <i>Xanthorrhoea</i> sp. Lesueur (G.J. Keighery 16404)	335103	6694060
MN03	13/09/2022	Disturbed vegetation. <i>Acacia blakelyi</i> over weedy herbs, <i>Trachymene pilosa</i> , <i>Crassula</i> sp.	335266	6694063
MN04	13/09/2022	Mixed veg - <i>Acacia blakelyi</i> over <i>Allocasuarina humilis</i> , <i>Eremaea beaufortoides</i> and <i>Gompholobium tomentosum</i>	335311	6694060
MN05	13/09/2022	<i>Melaleuca leuropoma</i> thicket (1.5 m high)	335282	6694011
MN06	14/09/2022	No <i>Banksia attenuata/menziesii</i> but there is a vegetation change to E and W - sands less deep, more like sand over laterite. Species including <i>Melaleuca trichophylla</i> , <i>Isopogon tridens</i> , <i>Banksia carlinoides</i> , <i>Calothamnus sanguineus</i> , <i>Beaufortia elegans</i> , <i>Calothamnus torulosus</i> and <i>Calytrix superba</i> (P4)	332848	6694388

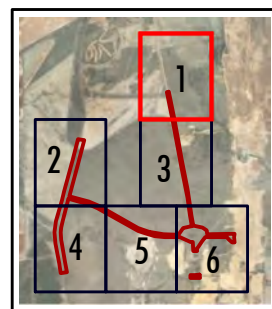


APPENDIX L

Vegetation of the Survey Area



- Legend**
- Survey Area
 - Railways
 - Roads
 - Drainage Lines
 - Relevé
- Floristic Community Type**
- 1a
 - CL



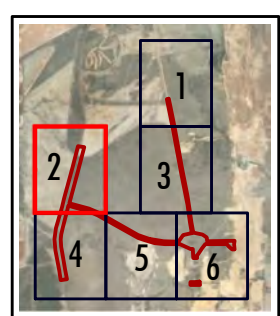
APPENDIX L
Vegetation of the Survey Area
SHEET 1



Scale 1:10000 of A4

GDA2020 MGA Zone 50

- Legend**
- Survey Area
 - Railways
 - Roads
 - Relevé
- Floristic Community Type**
- 1a
 - 2a
 - 6b
 - CL



APPENDIX L
Vegetation of the Survey Area
SHEET 2

333500

334000

334500

6697000

6696500

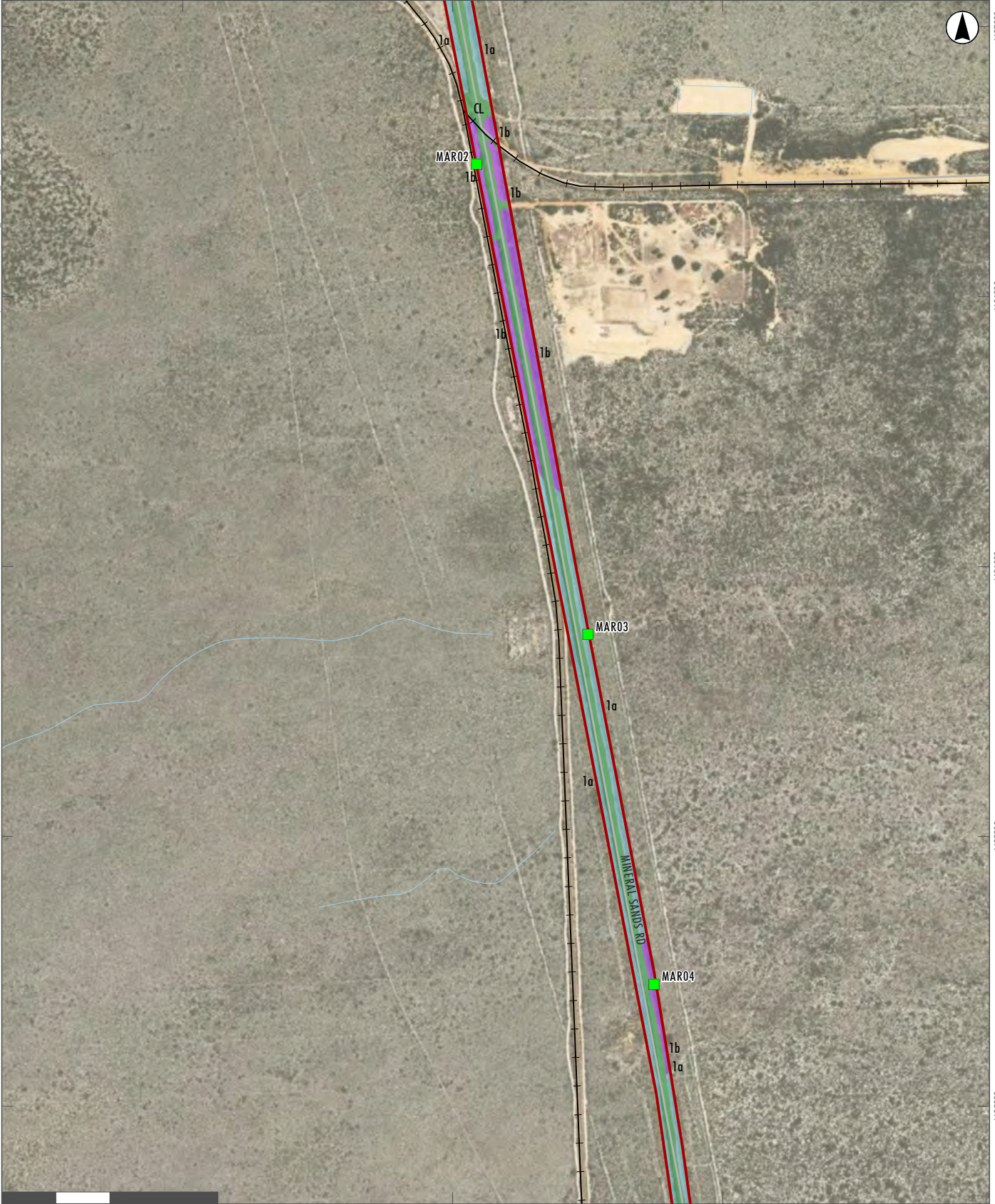
6696000

6695500

6695000

D:\UMWELT (AUSTRALIA) PTY LTD\2446 - 033\WVF - R0202446_019_APPL_SIEVEVEGETATION.MXD 4/05/2023 11:16:55 AM

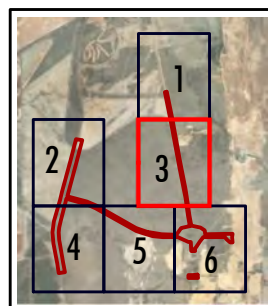
Scale 1:10000 of A4



GDA2020 MGA Zone 50

Legend

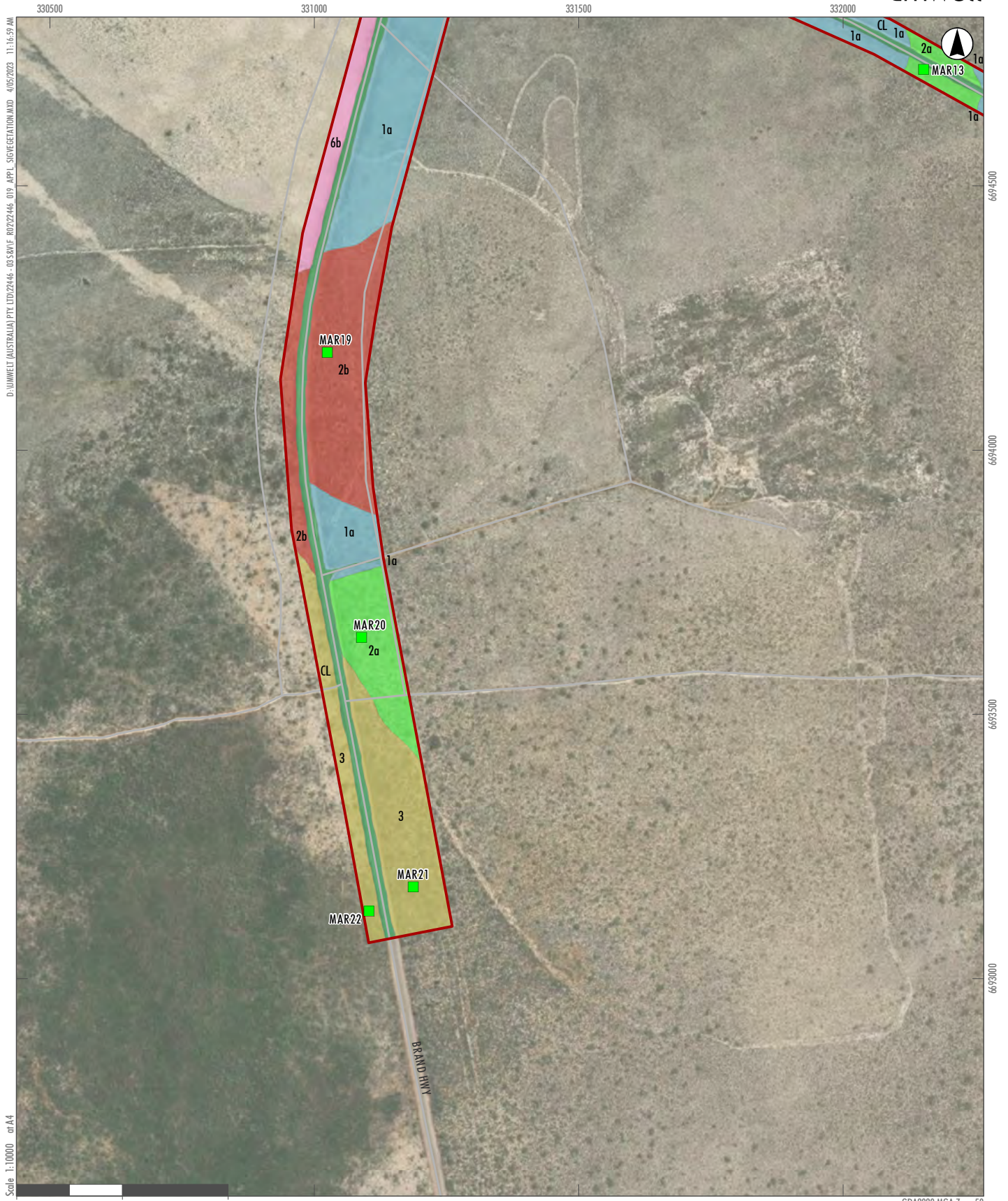
- | | |
|----------------|---------------------------------|
| Survey Area | Floristic Community Type |
| Railways | 1a |
| Roads | 1b |
| Drainage Lines | CL |
| Waterbodies | |
| Relevé | |



APPENDIX L

Vegetation of the Survey Area

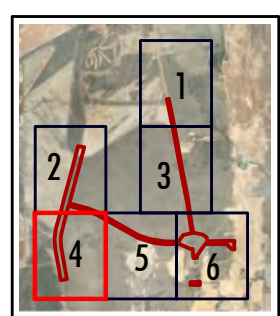
SHEET 3



Scale 1:10000 of A4

GDA2020 MGA Zone 50

- Legend**
- Survey Area
 - Roads
 - Relevé
- Floristic Community Type**
- 1a
 - 2a
 - 2b
 - 3
 - 6b
 - CL



APPENDIX L
Vegetation of the Survey Area
SHEET 4



D:\UMWELT (AUSTRALIA) PTY LTD\2446 - 03 S\WVF - R0202446 - 019 APPL SIGVEGETATION.MXD 4/05/2023 11:17:04 AM

Scale 1:10000 at A4

0 200 400 Meters

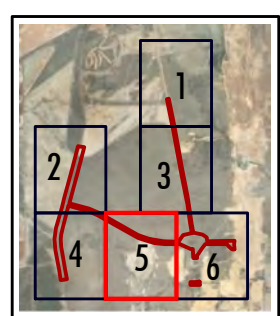
6694500

6693500

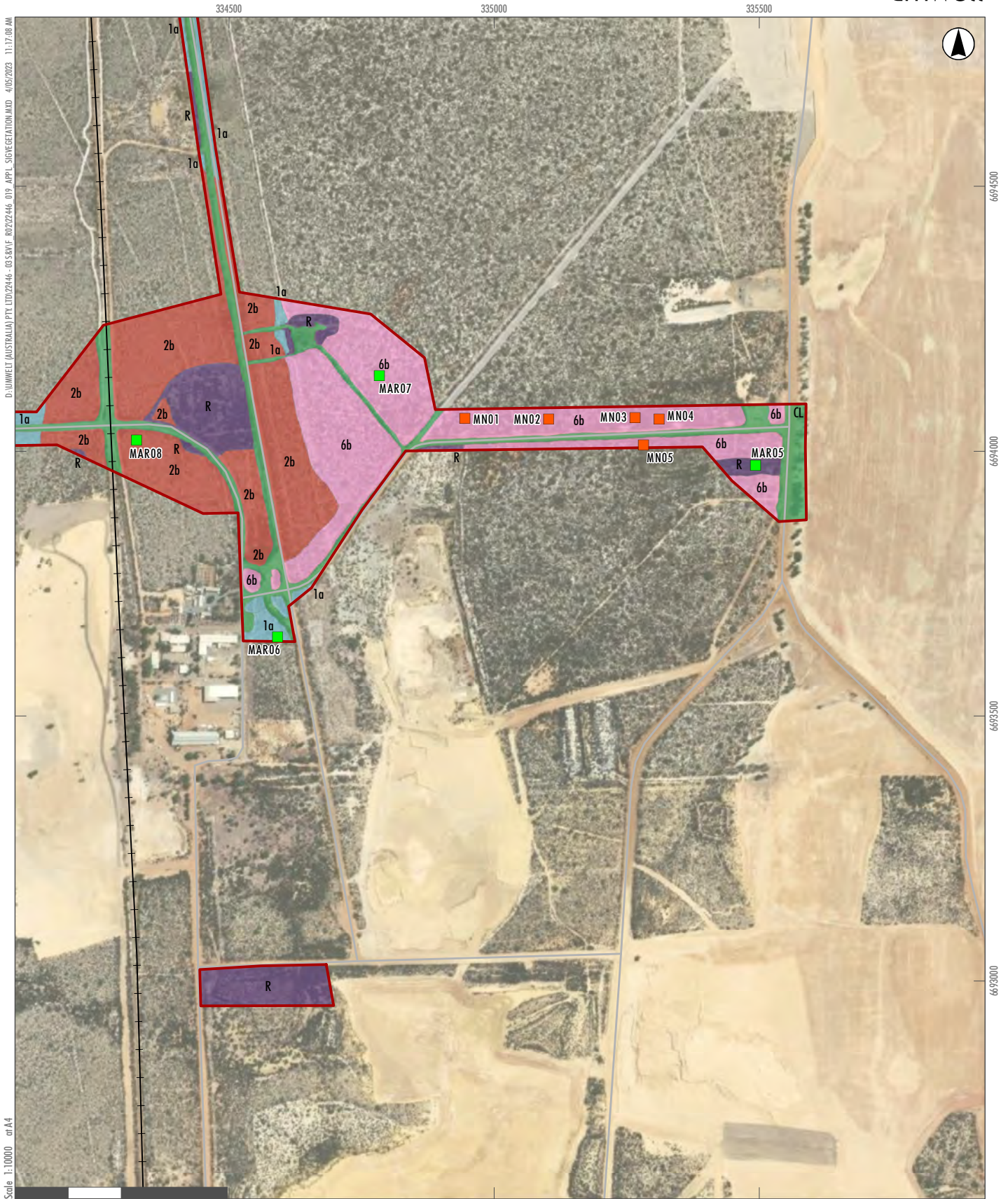
6693000

GDA2020 MGA Zone 50

- Legend**
- Survey Area
 - Roads
 - Relevé
 - Vegetation Mapping Notes
- Floristic Community Type**
- 1a
 - 1b
 - 2a
 - CL
 - R



APPENDIX L
Vegetation of the Survey Area
SHEET 5



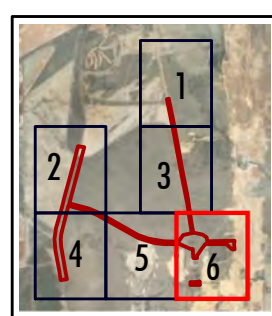
D:\UMWELT (AUSTRALIA) PTY LTD\2446 - 03 S\WVF - R0202446 - 019 APPL SIGVEGETATION.MXD 4/05/2023 11:17:08 AM

Scale 1:10000 at A4

GDA2020 MGA Zone 50

Legend

- | | |
|--------------------------|-----------------------------|
| Survey Area | Floristic Community Type 1a |
| Railways | Floristic Community Type 2b |
| Roads | Floristic Community Type 6b |
| Relevé | Floristic Community Type CL |
| Vegetation Mapping Notes | Floristic Community Type R |



APPENDIX L
Vegetation of the Survey Area
SHEET 6

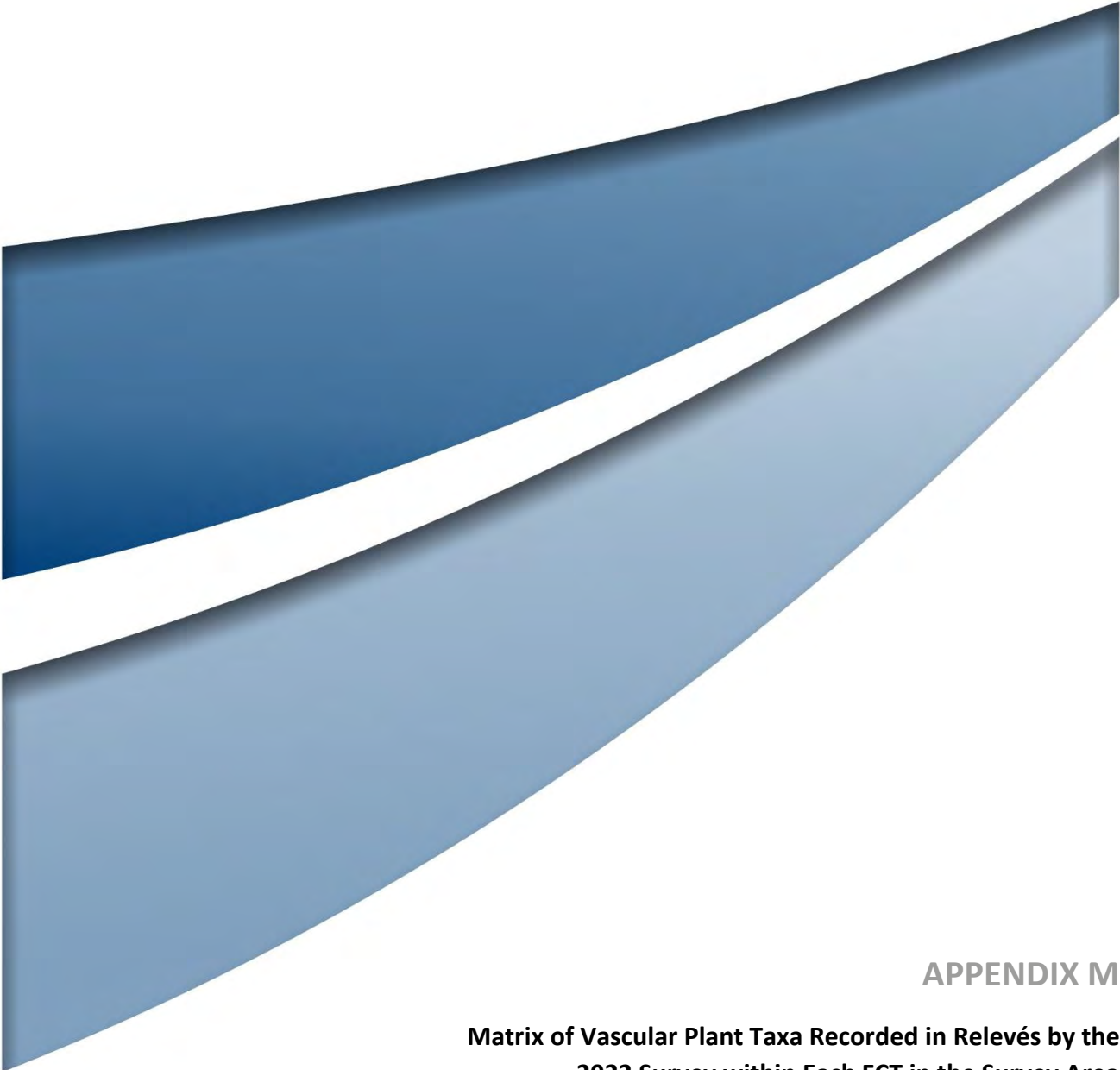
Legend

Floristic Community Type

- 1a Open Low Woodland to Open Low Scrub of *Eucalyptus pleurocarpa* and/or *Eucalyptus tottiana* over mixed shrubs dominated by *Banksia* spp. and *Hakea* spp. over sedges on grey to brown sands with very occasional laterite influence on lower to mid slopes
- 1b Open Woodland to Scrub of *Eucalyptus* spp. and/or *Banksia* spp., with occasional *Xylomelum angustifolium*, over mixed shrubs dominated by myrtaceous spp., *Banksia* spp., and *Jacksonia* spp. on grey sand on mid to upper slopes
- 2a Low Woodland of *Banksia attenuata* and occasional *Banksia menziesii* and *Xylomelum angustifolium* over Low Scrub of mixed species including *Banksia leptophylla* var. *leptophylla*, *Banksia candolleana*, *Melaleuca leuropoma* and *Hibbertia hypericoides* on brown or grey sand on upper slopes
- 2b Scrub of *Banksia attenuata*, with emergent *Eucalyptus tottiana* or *Eucalyptus pleurocarpa*, over Low Scrub dominated by *Banksia* spp. on predominantly yellow sands on mid and upper slopes
- 3 Open Low Woodland to Heath of *Banksia* spp. over mixed shrubs commonly including *Melaleuca leuropoma*, *Eremaea beaufortioides* and *Scholtzia laxiflora* on grey or yellow sand on lower to mid slopes
- 6b Shrublands and Heaths, with occasional Low Woodland of *Eucalyptus pleurocarpa*. Common species include *Allocasuarina microstachya*, *Melaleuca leuropoma*, *Melaleuca trichophylla*, and *Verticordia* spp. over sedges on grey-brown sands, sandy clays and or gravel on flats, swales and lower-slopes
- CL Cleared Land
- R Rehabilitated Land

APPENDIX L

LEGEND: Vegetation of the Survey Area



APPENDIX M

**Matrix of Vascular Plant Taxa Recorded in Relevés by the
2022 Survey within Each FCT in the Survey Area**

Taxon	FCT					
	1a	1b	2a	2b	3	6b
<i>Acacia blakelyi</i>						x
<i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i>			x	x	x	
<i>Alexgeorgea nitens</i>	x				x	
<i>Allocasuarina humilis</i>	x	x	x	x		x
<i>Allocasuarina microstachya</i>	x					x
<i>Babingtonia grandiflora</i>						x
<i>Banksia attenuata</i>	x		x	x		
<i>Banksia candolleana</i>			x	x		
<i>Banksia carlinoides</i>	x					
<i>Banksia grossa</i>	x	x	x	x		
<i>Banksia menziesii</i>			x			
<i>Banksia prionotes</i>	x			x		
<i>Banksia sessilis</i> var. <i>flabellifolia</i>					x	
<i>Banksia shuttleworthiana</i>	x	x	x	x		x
<i>Banksia stenoprion</i>	x	x	x			
<i>Banksia tridentata</i>	x	x	x	x		x
<i>Beaufortia elegans</i>	x	x	x			
<i>Calectasia narragara</i>	x					x
<i>Callitris acuminata</i>	x	x	x	x		
<i>Calothamnus glaber</i>		x				
<i>Calothamnus sanguineus</i>		x	x	x	x	x
<i>Calothamnus torulosus</i>	x	x				x
<i>Calytrix chrysantha</i> (P4)					x	
<i>Calytrix depressa</i>	x					
<i>Calytrix superba</i> (P4)	x					x
<i>Caustis dioica</i>						x
<i>Chordifex sinuosus</i>	x	x	x			x
<i>Conospermum unilaterale</i>		x	x			x
<i>Conospermum wycherleyi</i> subsp. <i>wycherleyi</i>	x	x	x	x		
<i>Conostylis aurea</i>	x	x	x			x
<i>Conostylis neocymosa</i>	x	x	x			
<i>Conostylis teretifolia</i> subsp. <i>teretifolia</i>			x			
<i>Dampiera spicigera</i>			x			x
<i>Darwinia neildiana</i>	x	x		x		
<i>Darwinia speciosa</i>		x				
<i>Daviesia divaricata</i> subsp. <i>divaricata</i>	x		x			x
<i>Daviesia nudiflora</i> subsp. <i>nudiflora</i>	x	x				x
<i>Daviesia pedunculata</i>	x	x				x
<i>Daviesia podophylla</i>						x

Taxon	FCT					
	1a	1b	2a	2b	3	6b
<i>Ecdeiocolea monostachya</i>	x	x	x	x		x
<i>Eremaea beaufortioides</i> var. <i>beaufortioides</i>	x		x		x	x
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	x	x	x	x		x
<i>Eremaea ectadioclada</i>			x			
<i>Eremaea violacea</i> subsp. <i>violacea</i>	x	x				x
<i>Eucalyptus pleurocarpa</i>	x	x	x	x		x
<i>Eucalyptus todtiana</i>	x	x	x		x	x
<i>Gompholobium tomentosum</i>			x	x		x
<i>Grevillea eriostachya</i>	x	x	x			
<i>Grevillea shuttleworthiana</i> subsp. <i>canarina</i>						x
<i>Hakea costata</i>					x	
<i>Hakea psilorrhyncha</i>		x	x	x		x
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687) (P3)			x			
<i>Hemiphora bartlingii</i>	x					
<i>Hibbertia crassifolia</i>	x					x
<i>Hibbertia hypericoides</i> subsp. <i>septentrionalis</i>	x	x	x	x	x	x
<i>Hibbertia striata</i>	x					
<i>Hibbertia subvaginata</i>					x	
<i>Isopogon linearis</i>	x					
<i>Isopogon tridens</i>				x		
<i>Jacksonia floribunda</i>	x	x	x	x		x
<i>Lachnostachys eriobotrya</i>	x					
<i>Lambertia multiflora</i> var. <i>multiflora</i>		x		x		
<i>Lasiopetalum drummondii</i>				x		
<i>Lechenaultia hirsuta</i>			x			
<i>Leptospermum oligandrum</i>		x				
<i>Leptospermum spinescens</i>	x					
<i>Lyginia imberbis</i>	x	x	x	x		x
<i>Macarthuria australis</i>					x	
<i>Melaleuca leuropoma</i>	x	x	x	x	x	x
<i>Melaleuca trichophylla</i>	x	x		x		x
<i>Mesomelaena pseudostygia</i>	x	x	x	x	x	x
<i>Nuytsia floribunda</i>			x	x		
<i>Opercularia vaginata</i>					x	
<i>Persoonia acicularis</i>	x					
<i>Petrophile brevifolia</i> subsp. <i>brevifolia</i>	x		x			
<i>Petrophile drummondii</i>	x	x	x		x	
<i>Petrophile macrostachya</i>			x	x		
<i>Petrophile shuttleworthiana</i>		x				

Taxon	FCT					
	1a	1b	2a	2b	3	6b
<i>Phymatocarpus porphyrocephalus</i>			x	x		x
<i>Pileanthus filifolius</i>	x					
<i>Schoenus caespitius</i>	x					
<i>Scholtzia laxiflora</i>	x	x	x	x		x
<i>Stachystemon axillaris</i>					x	
<i>Stirlingia latifolia</i>	x	x	x		x	
<i>Stylidium crossocephalum</i>	x					
<i>Styphelia hispida</i>					x	
<i>Styphelia xerophylla</i>	x	x				x
<i>Synaphea spinulosa</i>	x					
<i>Thryptomene spicata</i> (P2)					x	
<i>Verticordia argentea</i> (P2)					x	
<i>Verticordia aurea</i> (P4)	x					
<i>Verticordia densiflora</i>	x					
<i>Verticordia grandis</i>	x	x	x	x		
<i>Xanthorrhoea acanthostachya</i>	x					
<i>Xanthorrhoea</i> sp. Lesueur (G.J. Keighery 16404)					x	x
<i>Xylomelum angustifolium</i>	x	x	x		x	



Appendix 3: Basic Vertebrate Fauna Survey and Cockatoo Habitat Survey – Western Wildlife 2023

Eneabba Mine Access Road:

Basic Vertebrate Fauna Survey and Cockatoo Habitat Survey 2022



Prepared for: Iluka Resources Limited

Prepared by: Western Wildlife
570 Clare Rd
Hovea WA 6071
Ph: 0427 510 934



April 2023

Executive Summary

Introduction

Iluka Resources Limited (Iluka) have operated mineral sands mines within the Eneabba area of Western Australia since the 1970s. Iluka is currently constructing a Rare Earth refinery, located within the former mining area. Iluka propose to upgrade the access road between the Brand Highway and the refinery area to improve site access and safety when turning from the highway. To provide baseline data on the fauna and fauna habitats in the access road study area, Iluka commissioned Western Wildlife to undertake a basic vertebrate fauna survey. A targeted survey for Carnaby's Cockatoo (*Calyptorhynchus latirostris*) was also commissioned, as this species is listed as Threatened and known to occur in the region.

The key objectives of the fauna survey were to:

- Identify and describe the fauna habitats present.
- Identify any potential foraging, roosting and/or breeding habitat for Carnaby's Cockatoo.
- List the vertebrate fauna that were recorded and/or have the potential to occur.
- Identify species of conservation significance, or habitats of particular importance for fauna, that may occur.

This report details the findings of the fauna survey conducted in September 2022.

Methods

The fauna survey was undertaken in accordance with *Technical guidance: terrestrial vertebrate fauna surveys for environmental impact assessment* (EPA 2020) and relevant State and Federal Guidelines on surveying conservation significant fauna.

The field survey was carried out on the 5th and 6th September 2022, and included:

- Fauna habitat identification and assessment.
- Targeted survey for Carnaby's Cockatoo habitat.
- Keeping opportunistic records of all vertebrate fauna observed.

Species of conservation significance were classified as: **Threatened** if listed as Extinct in the Wild, Critically Endangered, Endangered or Vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and/or *Biodiversity Conservation Act 2016* (BC Act); **Migratory** if listed as Migratory under the EPBC Act and/or BC Act, excluding those species also listed as threatened; **Specially Protected** if listed as Other Specially Protected Species or Conservation Dependent Fauna under the BC Act; **Priority** if listed as Priority by DBCA and **Locally Significant** if considered by the author to potentially be of local significance.

Results and Discussion

Five habitats were identified in the study area: Kwongan heath – uplands, Kwongan heath – lowlands, Rehabilitation – shrublands and heaths, Rehabilitation - planted eucalypts and farmland. The faunal assemblage is likely to be typical of Kwongan heaths of the region, although the assemblage in the study area may be somewhat depauperate as the native habitats are fragmented and likely to be subject to the impacts of weed invasion and the presence of feral predators.

The predicted faunal assemblage includes up to 10 frogs, 60 reptiles, 118 birds and 26 mammals (19 native and seven introduced). The observed faunal assemblage included one reptile, 24 birds and two mammals (one native and one introduced), and this is unlikely to be complete. The faunal assemblage is likely to be relatively intact and typical of kwongan heaths in the region. A total of seven vertebrate and eight invertebrate fauna species of conservation significance have the potential to occur in the study area:

Threatened species

Three threatened species potentially occur in the study area (two vertebrate and one invertebrate), of which one was recorded:

- Carnaby's Cockatoo (*Calyptorhynchus latirostris*) - EPBC Act (Endangered), BC Act (Endangered)
- Malleefowl (*Leipoa ocellata*) - EPBC Act (Vulnerable), BC Act (Vulnerable)
- Shield-backed Trapdoor Spider (*Idiosoma nigrum*) - EPBC Act (Vulnerable), BC Act (Vulnerable)

Carnaby's Cockatoo (*Calyptorhynchus latirostris*) was recorded, with foraging signs present in the study area. No breeding habitat is present, and no breeding habitat is known to occur within 12km of the study area. The birds present are likely to be a flock of over-wintering foraging birds that breed elsewhere in the wheatbelt. The study area provides 105.0ha of foraging habitat in native kwongan heath, and rehabilitation – shrublands and heaths, of which 13.3ha is low value, 4.1ha is moderate value and 87.6ha is high value. This non-breeding foraging resource can be considered habitat critical to the survival of the species.

The study area is unlikely to provide important habitat for the Malleefowl and the Shield-backed Trapdoor Spider is unlikely to occur due to changes in its taxonomic status.

Migratory Species

One vertebrate Migratory species potentially occurs in the study area:

- Fork-tailed Swift (*Apus pacificus*) - EPBC Act (Migratory), BC Act (Migratory)

The Fork-tailed Swift is thought to be almost entirely aerial when visiting Australia, so the study area is not likely to provide important habitat for this species.

Specially Protected species

One vertebrate Specially Protected species potentially occurs in the study area:

- Peregrine Falcon (*Falco peregrinus*) – BC Act (other specially protected fauna)

The Peregrine Falcon is likely to occur as a foraging visitor, but the study area is unlikely to be important for this species as its population is large and secure, and its favoured breeding habitat is absent.

Priority species

Nine Priority species potentially occur in the study area (three vertebrate and six invertebrate):

- Woma (*Aspidites ramsayi*) – Priority 1
- Black-striped Snake (*Neelaps calonotos*) - Priority 3
- Western Brush Wallaby (*Notamacropus irma*) - Priority 4
- Kwongan Heath Shield-backed Trapdoor Spider (*Idiosoma kwongan*) – Priority 1
- Thorny Bush Katydid (*Hemisaga vepreculae*) - Priority 2
- Springtime Corroboree Stick Katydid (*Phasmodes jeeba*) - Priority 2
- Graceful Sun-moth (*Synemon gratiosa*) - Priority 4
- Woolybush Bee (*Hylaeus globuliferus*) - Priority 3
- An earwig fly (*Austromerope poultoni*) - Priority 2

The Black-striped Snake is likely to occur in the Kwongan heaths, but the study area is unlikely to support the Woma (locally extinct) or provide important habitat for the Western Brush Wallaby. Many of the Priority invertebrates are poorly known, hampering an accurate assessment of their likely status in the study area, however, some potentially occur in the study area.

Locally significant species

One locally significant species is likely to occur:

- a millipede (*Antichiropus sulcatus*) – probable short-range endemic

This millipede potentially occurs in the study area and is a probable short-range endemic (SRE) species. It is likely that other SRE invertebrates are present, however, the small size of the study area is unlikely to overlap the entire range of any SRE species.

Table of Contents

Executive Summary	i
1. Introduction	1
1.1 Study Area.....	1
1.2 Regional Context	1
1.2.1 IBRA Bioregion	1
1.2.2 Botanical Province	3
1.2.3 Parks and Reserves	3
1.2.4 Land Systems	3
1.2.5 Vegetation	4
1.3 Climate and Weather.....	6
2. Methods	6
2.1 Overview.....	6
2.2 Guidance and Licencing	7
2.3 Personnel	7
2.4 Taxonomy and Nomenclature.....	7
2.5 Literature Review	7
2.6 Field Survey.....	12
2.6.1 Basic Fauna Survey	12
2.6.2 Targeted Carnaby’s Cockatoo Habitat Survey	12
2.7 Habitat Assessment and Mapping	14
2.8 Assessment of Conservation Significance.....	14
2.8.1 Legislative Protection for Fauna	14
2.8.2 Levels of Conservation Significance in this report	16
2.9 Likelihood of Occurrence	17
3. Survey Limitations.....	18
4. Fauna Habitat	19
4.1 Habitats of the Study Area.....	19
4.1.1 Kwongan Heath - uplands.....	21
4.1.2 Kwongan Heath - Lowlands	22
4.1.3 Rehabilitation – Shrublands and Heaths.....	23
4.1.4 Planted Eucalypts and Farmland	24
4.2 Important Habitats	25
5. Vertebrate Fauna	25
5.1 Vertebrate Fauna Assemblage	25
5.1.1 Amphibians	26
5.1.2 Reptiles	26
5.1.3 Birds.....	26
5.1.4 Mammals	27
5.2 Vertebrate Fauna of Conservation Significance.....	28
5.2.1 Threatened Fauna	29
5.2.2 Migratory Fauna	35
5.2.3 Specially Protected Fauna.....	35
5.2.4 Priority Fauna	36
6. Invertebrate Fauna	37
6.1 Invertebrates of Conservation Significance	37

7. Conclusions	42
8. References	43
Appendix 1. Amphibians potentially occurring in the study area.	46
Appendix 2. Reptiles potentially occurring in the study area.	47
Appendix 3. Birds potentially occurring in the study area.	50
Appendix 4. Mammals potentially occurring in the study area.	55
Appendix 5. Habitat assessment.....	57
Appendix 6. EPBC Protected Matters Search Tool results.	66
Appendix 7. Foraging Quality Scoring Tool	67

Tables, Figures and Plates

Table 1. Databases used in the preparation of Appendices 1 - 4.	8
Table 2. Criteria for assessing likelihood of occurrence.....	17
Table 3. Fauna survey limitations.	18
Table 4. Fauna habitats in the study area.	19
Table 5. Summary of vertebrate fauna potentially occurring in the study area.	25
Table 6. Summary of conservation significant vertebrate fauna in the study area.	29
Table 7. Summary of conservation significant invertebrate fauna in the study area.	38

Figure 1. Eneabba Mine Access Road: locality.	2
Figure 2. Eneabba Mine Access Road: vegetation.	5
Figure 3. Monthly Climate Statistics for Eneabba (Bureau of Meteorology 2022).	6
Figure 4. Eneabba Mine Access Road: survey effort.	13
Figure 5. Eneabba Mine Access Road: fauna habitat.....	20
Figure 6. Eneabba Mine Access Road: DBCA Threatened and Priority vertebrate fauna records.	30
Figure 7. Eneabba Mine Access Road: Known Carnaby's Cockatoo breeding and roosting sites in the region.	33
Figure 8. Eneabba Mine Access Road: Carnaby's Cockatoo – survey records.	34
Figure 9. Eneabba Mine Access Road: DBCA Threatened and Priority invertebrate fauna records.	41

Plate 1. Kwongan heath - uplands.	21
Plate 2. Kwongan heath - uplands.	22
Plate 3. Kwongan heath - uplands.	22
Plate 4. Kwongan heath - lowlands.....	23
Plate 5. Kwongan heath - lowlands.....	23
Plate 6. Planted eucalypts and farmland.	24
Plate 7. Planted eucalypts and farmland.	24
Plate 8. Evidence of cockatoo foraging in the Kwongan heath - uplands.	32
Plate 9. Evidence of cockatoo foraging on <i>Banksia attenuata</i>	32

1. Introduction

Iluka Resources Limited (Iluka) have operated mineral sands mines within the Eneabba area of Western Australia since the 1970s. Iluka is currently constructing a Rare Earth refinery, located within the former mining area. Iluka propose to upgrade the access road between the Brand Highway and the refinery area to improve site access and safety when turning from the highway. To provide baseline data on the fauna and fauna habitats in the access road study area, Iluka commissioned Western Wildlife to undertake a basic vertebrate fauna survey. A targeted survey for Carnaby's Cockatoo (*Calyptorhynchus latirostris*) was also commissioned, as this species is listed as Threatened and known to occur in the region.

The key objectives of the fauna survey were to:

- Identify and describe the fauna habitats present.
- Identify any potential foraging, roosting and/or breeding habitat for Carnaby's Cockatoo.
- List the vertebrate fauna that were recorded and/or have the potential to occur.
- Identify species of conservation significance, or habitats of particular importance for fauna, that may occur.

This report details the findings of the fauna survey conducted in September 2022.

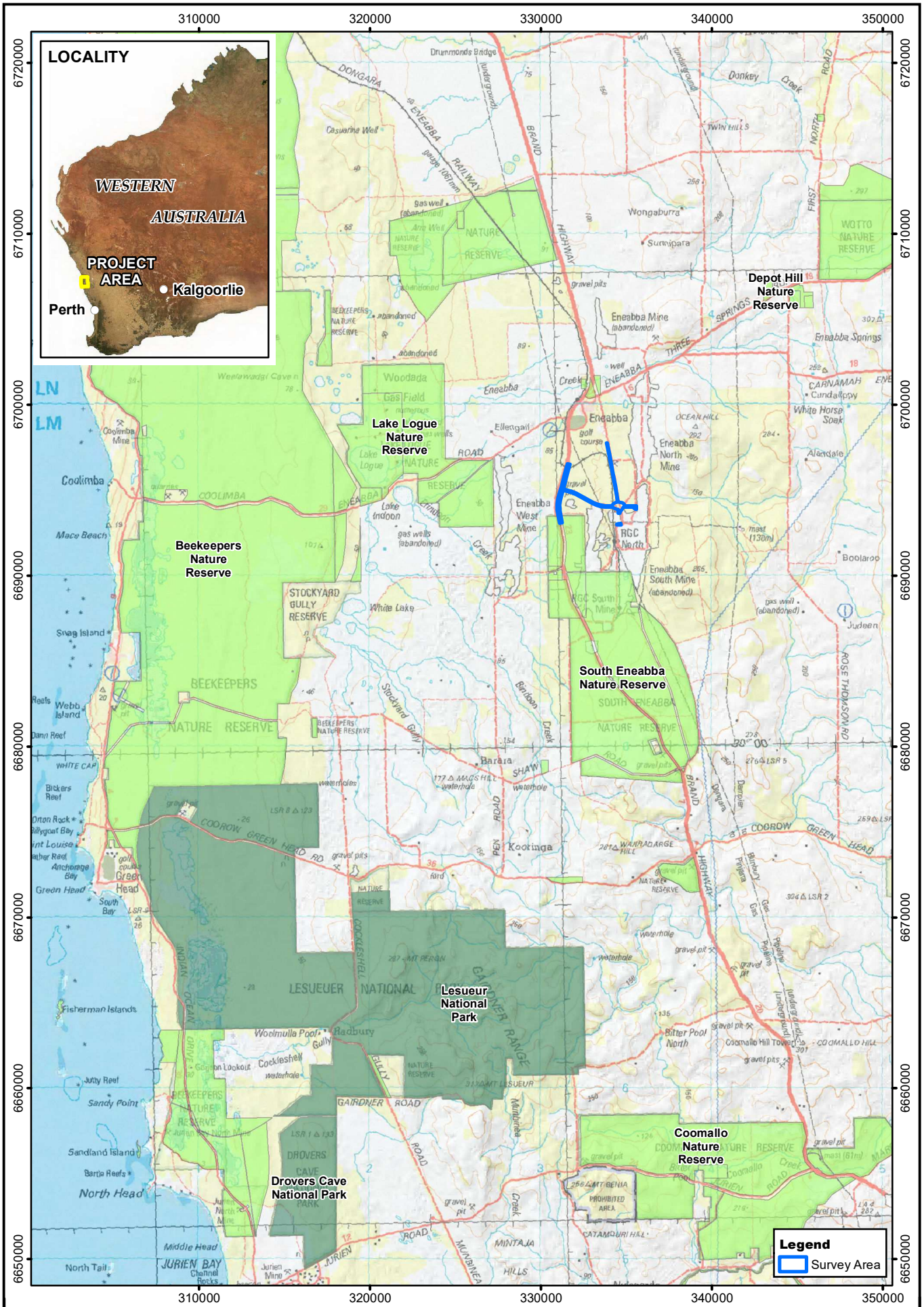
1.1 Study Area

The access road study area is located in the Shire of Carnamah, about 5km south of Eneabba. The study area totals 129.5ha. The study area includes the existing access roads, native vegetation and a small area of rehabilitation.

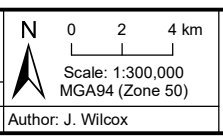
1.2 Regional Context

1.2.1 IBRA Bioregion

The Interim Biogeographic Regionalisation for Australia (IBRA) classifies the land surface of Australia into 89 Bioregions and 419 subregions, each defined by a set of environmental influences that impact the occurrence of flora and fauna and their interaction with the physical environment (DoEE 2018).



Drawn: CAD Resources
 www.cadresources.com.au
 Tel: (08) 9246 3242
 CAD Ref: a2937Fa001 | A4
 Date: April 2023 | Rev: A | Author: J. Wilcox



**Eneabba Mine Access Road
 Locality**

Figure: **1**

The study area falls within the Lesueur Sandplain Subregion of the Geraldton Sandplains Bioregion. The subregion has a Mediterranean climate, and the primary land-use is dryland agriculture (69.34%), with smaller areas of conservation (17.6%) and Unallocated Crown Land (UCL) and Crown reserves (12.5%) (Desmond and Chant 2001). The vegetation in the subregion is dominated by endemic-rich shrub-heaths on a mosaic of sandplains, lateritic mesas, coastal sands and limestones, with heath on laterised sandplains on the north-eastern edges of the subregion (Desmond and Chant 2001).

1.2.2 Botanical Province

The Botanical Provinces are determined by vegetation mapping (Beard 1980) and broadly correspond to climactic regions; the Southwest (Bassian) Province experiencing warm dry summers and cool wet winters, the Northern Province experiencing warm wet summers and cool dry winters and the Eremaean Province experiencing low, irregular rainfall. The study area is in Southwest Province.

1.2.3 Parks and Reserves

There are no reserves in the study area. The closest are South Eneabba Nature Reserve, adjacent to the southern part of the study area and Lake Logue Nature Reserve 4.5km west of the study area. There are several large nature reserves on the west coast, 12km or more west of the study area. These include Beekeepers Nature Reserve, Stockyard Gully Reserve and several unnamed Nature Reserves (Figure 1). To the east are Wotto Nature Reserve, Tathra National Park and Alexander Morrison National Park.

1.2.4 Land Systems

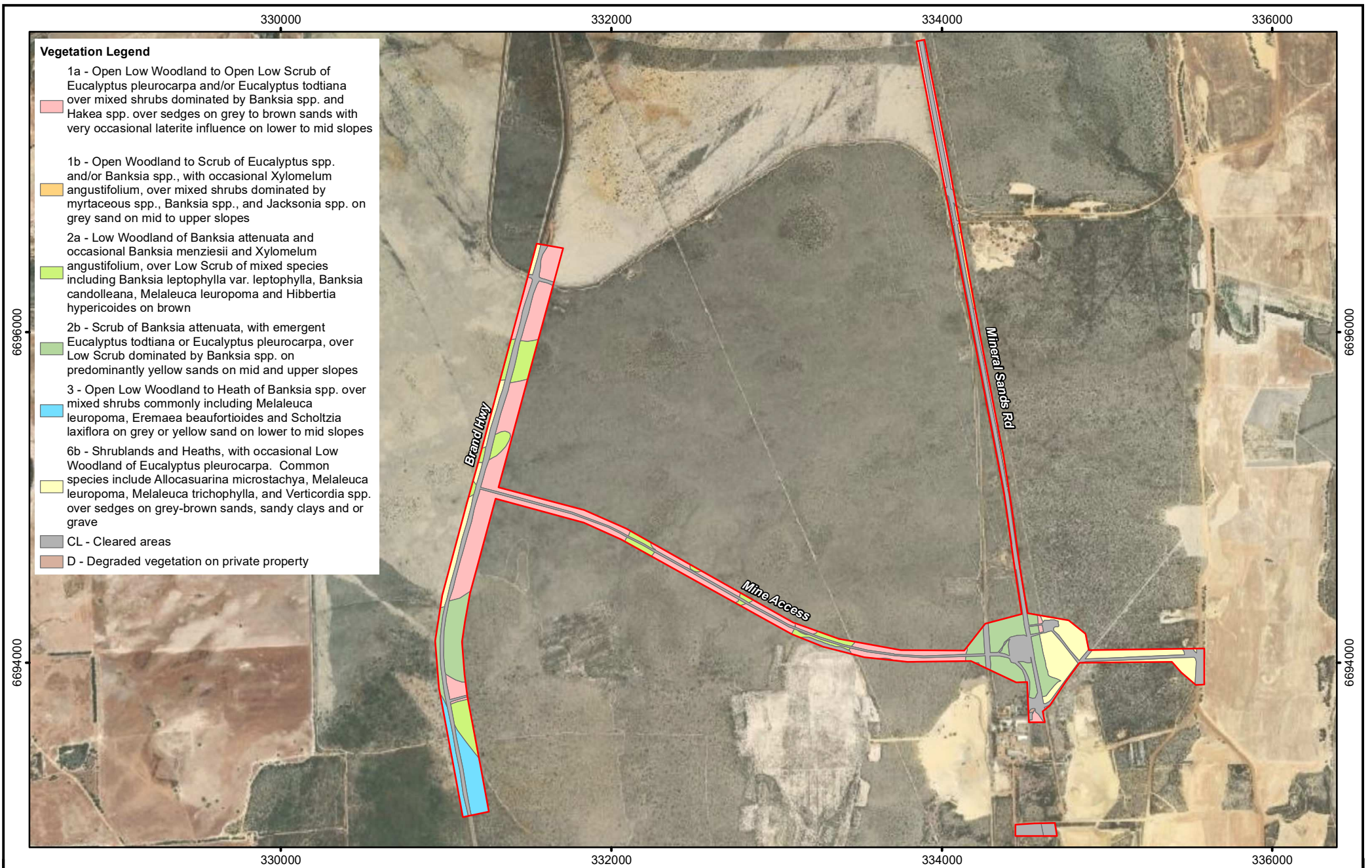
Land systems are broad descriptions of landform, geology and soils. The study area intersects a three land systems, characterised as follows:

- **Eneabba Plain System** – level to gently undulating sandplain to the north-west and south-west of Eneabba. Pale deep sands, grey shallow to deep sandy duplexes, moderately deep sandy gravels, and yellow deep sands common. Banksia woodlands and heathlands.
- **Correy System** – Broad sandy alluvial fan of the lower Arrowsmith River. Pale deep sands predominate, with grey shallow sandy duplexes, moderately deep sandy gravels and yellow deep sands less common. Banksia woodlands and heathlands.
- **Yerramullah System** – Subdued dissected lateritic plateau, undulating low hills and rises on lateritised weathered sandstone. Pale deep sand, sandy gravels and yellow deep sand. Banksia woodlands on lower slopes/depressions, heathlands elsewhere.

1.2.5 Vegetation

The vegetation in the study area was recently described by Umwelt Australia (2022) and includes the following vegetation types (Figure 2):

- Open Low Woodland to Open Low Scrub of *Eucalyptus pleurocarpa* and/or *Eucalyptus todtiana* over mixed shrubs dominated by *Banksia spp.* and *Hakea spp.* over sedges on grey to brown sands with very occasional laterite influence on lower to mid slopes (FCT 1a)
- Open Woodland to Scrub of *Eucalyptus spp.* and/or *Banksia spp.*, with occasional *Xylomelum angustifolium*, over mixed shrubs dominated by myrtaceous spp., *Banksia spp.*, and *Jacksonia spp.* on grey sand on mid to upper slopes (FCT 1b).
- Low Woodland of *Banksia attenuata* and occasional *Banksia menziesii* and *Xylomelum angustifolium*, over Low Scrub of mixed species including *Banksia leptophylla* var. *leptophylla*, *Banksia candolleana*, *Melaleuca leuropoma* and *Hibbertia hypericoides* on brown or grey sand on upper slopes (FCT 2a).
- Scrub of *Banksia attenuata*, with emergent *Eucalyptus todtiana* or *Eucalyptus pleurocarpa*, over Low Scrub dominated by *Banksia spp.* on predominantly yellow sands on mid and upper slopes (FCT 2b).
- Open Low Woodland to Heath of *Banksia spp.* over mixed shrubs commonly including *Melaleuca leuropoma*, *Eremaea beaufortoides* and *Scholtzia laxiflora* on grey or yellow sand on lower to mid slopes (FCT 3).
- Shrublands and Heaths, with occasional Low Woodland of *Eucalyptus pleurocarpa*. Common species include *Allocasuarina microstachya*, *Melaleuca leuropoma*, *Melaleuca trichophylla*, and *Verticordia spp.* over sedges on grey-brown sands, sandy clays and or gravel on flats, swales and lower-slopes (FCT 6b).



1.3 Climate and Weather

The long-term climate statistics were drawn from the Eneabba weather station (site number 008225), about 5km north of the Study Area. The mean monthly maximum and minimum temperatures and rainfall for this weather station is presented in Figure 3. The data indicate that the highest rainfall falls in winter and the highest temperatures occur in the summer months.

The average annual rainfall for Eneabba is 489.6mm, averaged over the period 1964 - 2017 (Bureau of Meteorology 2022). As this weather station closed in 2017, the annual rainfall for recent years was drawn from the DPIRD automatic weather station located 4.5km east of Eneabba and was below average in both 2020 (364.8mm) and 2019 (287.4mm), but above average in 2021 (683.6) and 2022 (617.6) (DPIRD 2022). Weather during survey was cool and wet with daily maximums of 17-18°C and 5.8 – 14.8mm rainfall (DPIRD 2022).

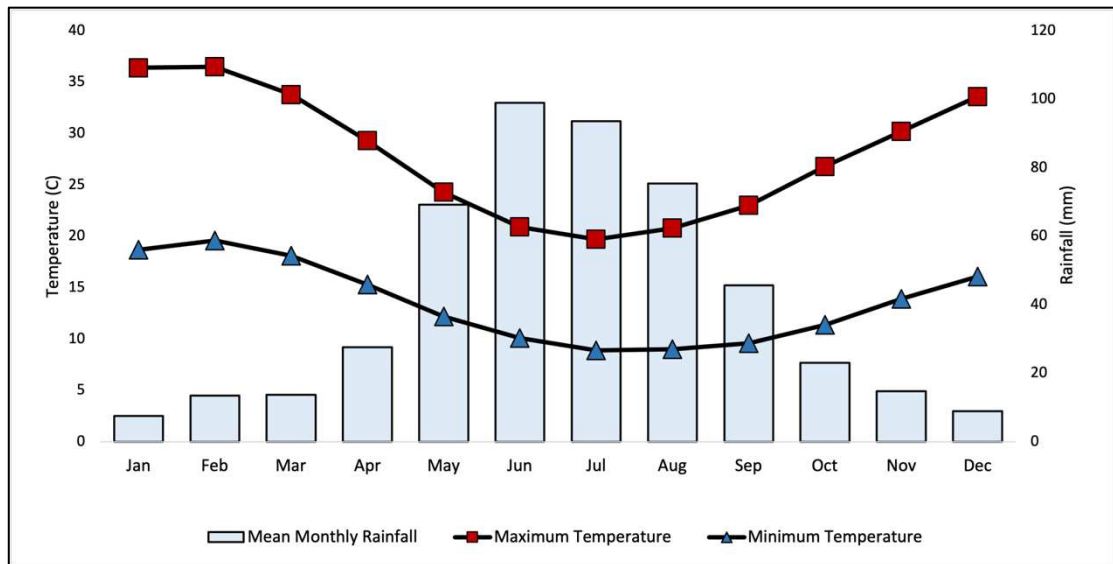


Figure 3. Monthly Climate Statistics for Eneabba (Bureau of Meteorology 2022).

2. Methods

2.1 Overview

A basic vertebrate fauna survey with a targeted Carnaby's Cockatoo habitat survey was undertaken. The fauna survey included a search of publicly available literature and databases (a desktop study), and a brief site visit. The data collected in the field serve to put the desktop study into context, as well as allowing for the identification of fauna habitats and likely fauna assemblages of the site. A basic fauna survey was sufficient to characterise the fauna habitats, vertebrate faunal assemblage and the likely conservation significant fauna using the study area.

2.2 Guidance and Licencing

The survey was conducted with reference to the following documents:

- Technical guidance: terrestrial vertebrate fauna surveys for environmental impact assessment (EPA 2020)
- Referral guideline for 3 WA threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and Forest Red-tailed Black-Cockatoo (DAWE 2022).

As the survey was observational only, no DBCA license was required.

2.3 Personnel

Ms Jenny Wilcox (*BSc. Hons.*) and Mr Jamie Wadey (*BSc. Hons.*) undertook the fieldwork and Jenny Wilcox prepared this report. Jenny has over 22 years' experience with fauna surveys in Western Australia and has previously conducted cockatoo habitat surveys throughout the south-west.

2.4 Taxonomy and Nomenclature

Taxonomy and nomenclature for fauna species used in this report follow the Western Australian Museum checklists. In the text, common names are used where appropriate, and all scientific names are given in species lists. Where a species lacks a common name, they are referred to by their scientific name.

2.5 Literature Review

Lists of fauna expected to occur in the study area were produced using information from several sources. These included publications that provide information on general patterns of distribution of frogs (Tyler *et al.* 2000), reptiles (Wilson and Swan 2017, Storr *et al.* 1983, 1990, 1999 and 2002), birds (Barrett *et al.* 2003; Johnstone and Storr 1998 and 2004) and mammals (Churchill 2008, Menkhorst and Knight 2011; Van Dyck and Strahan 2008).

The databases in Table 1 were searched for fauna records in and around the study area. Some species may occur on database results that are not likely to be present in the study area, usually due either to lack of suitable habitat or the study area being outside the known range of the species (i.e., erroneous records or records of vagrants). Some records may be historical, with the species known to be locally or regionally extinct. These species are generally not included in lists of expected fauna unless some discussion is thought to be necessary. In all cases the extent of the database search was larger than the extent of the study area to pick up records of species in the wider area that may also occur in the study area.

Table 1. Databases used in the preparation of Appendices 1 - 4.

Database	Type of records held	Area searched
WA Museum Specimen Databases for reptiles frogs, birds and mammals (NatureMap: DBCA 2007-)	Records of specimens held in the Western Australian Museum. Includes historical records.	20km radius around a point in the center of the Survey Area
Fauna Survey Returns Database (NatureMap: DBCA 2007-)	Records collected from fauna surveys carried out in Western Australia. Includes observational and trapping data.	20km radius around a point in the center of the Survey Area
DBCA's Threatened and Priority Fauna Database (DBCA 2022)	Information and records on Threatened and Priority species in Western Australia, including records of Carnaby's Cockatoo breeding and roosting.	30km radius around - 29.8878° S, 115.2954° E.
Birds Australia Atlas Database (NatureMap: DBCA 2007-)	Records of bird observations in Australia, 1998-2009.	20km radius around a point in the center of the Survey Area
Birdata (NatureMap: DBCA 2007-)	Records of bird observations in Australia, 2010-2018.	20km radius around a point in the center of the Survey Area
Atlas of Living Australia (ALA) Database	Records of fauna from several sources including museum specimen records and observations from members of the public.	20km radius around a point in the center of the Survey Area
Index of Biodiversity Surveys for Assessments (IBSA) Database	Fauna survey reports and data in Western Australia.	Geraldton Sandplains IBRA Bioregion.
EPBC Act Protected Matters Search Tool	Information and modelled distributions for matters protected under the EPBC Act, including threatened species and ecological communities, migratory species and marine species.	The survey area with a 5km buffer
Black-cockatoo roosting sites (buffered to 1km) (Birdlife Australia 2020)	Data from The Great Cocky Count which takes place annually in early to mid-April. This event records birds as they fly in to night roosts on a single day and has taken place since 2010. Three species are recorded: Carnaby's and Baudin's (white-tailed) and Forest Red-tailed Black-Cockatoos. In the Perth-Peel Coastal Plain all white-tailed are assumed to be Carnaby's. In other areas the roosts could include either species or both, so a generic 'white-tailed' term is used.	at least 12km surrounding the study area.
Carnaby's Cockatoo confirmed roosting areas within the Swan Coastal Plain and Jarrah Forest IBRA Regions. (Glossop et al. 2011)	Describes the currently known and confirmed night roost areas for Carnaby's Black Cockatoo in the South - West of Western Australia.	at least 12km surrounding the study area.

Table 1. (cont.)

Database	Type of records held	Area searched
Black-cockatoo breeding sites (buffered to 2km) (Birdlife Australia 2019)	Sites where Black-Cockatoos (generally Carnaby's) are confirmed to be breeding. Breeding is inferred based on surveys which have recorded either birds entering/leaving the nest or the inside of the nest has been viewed with eggs or chicks. These records are of breeding attempts, but not necessarily of successful fledging. The first surveys were in 2003, with some nests surveyed a single time and others revisited once a year. Most records are in the peak breeding season of Carnaby's (September to January).	at least 12km surrounding the study area.
Carnaby's Cockatoo confirmed breeding areas within the Swan Coastal Plain and Jarrah Forest IBRA Regions. (Glossop <i>et al.</i> 2011)	Confirmed breeding areas of the Carnaby's Black Cockatoo (CBC) within the Swan Coastal Plain and the Jarrah Forest IBRA regions. Confirmed sites are identified where chicks or eggs of CBC have been observed.	at least 12km surrounding the study area.

The following surveys have been completed in the vicinity of the study area, and have been used to inform the literature review:

- **Vertebrate Survey of Reserve 31030, Eneabba, Western Australia (Dunlop 1981).** This survey was undertaken in the South Eneabba Nature Reserve in October and December 1981. Survey methods included pitfall trapping, hand searching, bird surveys and mist-netting for birds and bats. A total of 39 birds, 20 reptiles and nine mammals were recorded. Carnaby's Cockatoo (*Calyptorhynchus latirostris*) was the only conservation significant species recorded.
- **An Ecological Study of Heathlands of the Leeman Area, Western Australia (Foulds and McMillan 1982).** A survey of invertebrate and vertebrate fauna on an east-west transect through Reserve 22521 and Reserve 24496 (Beekeeper's Nature Reserve), south of the town of Leeman, about 26km southwest of the survey area.
- **Fauna Review; Eneabba (Bancroft and Bamford 2006).** A basic fauna survey was undertaken on one day in October 2005. The literature review included database searches and reviews of invertebrate and vertebrate fauna reports from 1980 – 2000. The literature review identified 288 potentially occurring vertebrate species, 12 frogs, 59 reptiles, 190 birds and 27 mammals. Thirty species of conservation significance were identified, although the status of some of these have been downgraded since the date of this report.

- **Assessment of Significant Habitat for Carnaby's Cockatoo *Calyptorhynchus latirostris* in the Eneabba region (Johnstone and Kirkby 2007).** This survey aimed to identify any foraging, breeding or roosting habitat within the future mining area at the Eneabba Operations, with data collected September 2006, April 2007, July 2007, and August 2007. No breeding habitat was found in the vicinity of Eneabba. Important roost sites were identified at the Eneabba townsite with a satellite roost on Woodada Road. Important foraging areas were identified in reserves to the north and west of the operations area, in remnant bushland, road verges and in farmland where birds foraged on wild melons (*Citrullus lanatus*). Vegetation at the Eneabba operations (IPL South, South Tails and IPL North) were also identified as providing foraging habitat. It was considered that staged clearing in these areas would not have a significant impact on Carnaby's Cockatoo.
- **Fauna Values of Proposed Future Mining Areas in the Eneabba Region (Bamford 2007a).** This basic fauna survey was undertaken across three days in September 2007. The survey involved fauna habitat assessment, opportunistic observations, active searching for reptiles and short-range endemic invertebrates at 23 sites, spot-lighting and bat call detection. The list of potentially occurring species was the same as presented in Bancroft and Bamford (2006), with one frog, 16 reptile, 49 bird and seven mammals recorded on the survey.
- **Survey for the Shield-backed Trapdoor Spider *Idiosoma nigrum* in Iluka lease areas at Eneabba (Bamford 2007b).** This targeted survey was undertaken on two days in December 2006, at nine sites across the Eneabba Operations. No *Idiosoma nigrum* were detected and it was concluded that this species is unlikely to occur.
- **Fauna Investigations of Iluka's Proposed Eneabba Future Mining Operations with a focus on IPL North and IPL South Deposits (Bamford 2009).** A basic fauna survey was undertaken on two days in November 2008, also including searching for foraging signs of Carnaby's Cockatoo, searching for the katydid *Phasmodes jeeba*, searching for burrows of Shield-backed Trapdoor Spider (*Idiosoma nigrum*) and searching for short range endemic invertebrates. A total of 264 potentially occurring vertebrate species were identified: three freshwater fish, 12 frogs, 60 reptiles, 160 birds and 29 mammals, of which 10 frogs, 35 reptiles, 101 birds and 18 mammals were recorded on this or previous surveys. Twenty-eight species of conservation significance were identified, although the status of some of these have been downgraded since the date of this report. Of the conservation significant species, Carnaby's Cockatoo (*Calyptorhynchus latirostris*) was reported to occur as a non-breeding species. No other conservation significant species were recorded, but four invertebrates were considered potentially occurring: a scorpionfly (*Austromerope poultoni*) a katydid (*Phasmodes jeeba*), a millipede (*Antichiropus* Eneabba 1) and the Shield-backed Trapdoor Spider (*Idiosoma nigrum*).
- **Impact of Mulch Harvesting on Fauna at Iluka's Eneabba Operation (Everard et al. 2010).** Fauna recorded in this survey, as reported in Everard and Bamford (2013).

- **Carnaby's Cockatoo Habitat Assessment IPL North Eneabba Region (Johnstone and Kirkby 2013).** This survey includes a review of known Carnaby's Cockatoo records in the region, site visits to search for evidence of cockatoo foraging and mapping of potential foraging habitat. It was determined that a flock of about 300 birds winter in the Eneabba area, and foraging signs were recorded throughout the region between Eneabba townsite and south of the current survey area. Foraging was recorded on *Banksia sessilis*, *Banksia kippistiana*, *Banksia attenuata*, *Banksia menziesii*, *Banksia prionotes*, *Banksia leptophylla*, *Banksia hookeriana*, *Banksia sphaerocarpa*, *Lambertia multiflora*, *Hakea spp.*, *Eucalyptus caesia*, *Corymbia calophylla*, *Xanthorrhoea sp.* and *Pinus sp.* Breeding habitat was not present around Eneabba, but occurs regionally at Moora, between Moora and Watheroo, at Watheroo, near Marchagee, Marchagee Track, Coorow, Dookanooka Reserve, Dandaragan, the Dandaragan – Gingin road, Cataby, Green Head Road, Coomallo Creek and Minyulo.
- **Iluka Resources Limited IPL North Project Area Fauna Assessment (Everard and Bamford 2013).** This survey was undertaken across two days in September 2012 and was supported with an extensive desktop assessment. The survey included habitat assessment, targeted searches for conservation significant fauna and opportunistic observations of fauna. The literature review identified 211 potentially occurring fauna: nine frog, 56 reptile, 120 bird and 26 mammal species. Recorded on the survey were one frog, four reptile, 34 bird and five mammal species. No species currently listed as observation significant were recorded on the survey.
- **Eneabba Phase 3 Project: Basic Vertebrate Fauna Survey and Cockatoo Habitat Assessment (Western Wildlife 2021).** This survey was undertaken across two days in July 2021. The survey included habitat assessment and a targeted survey for cockatoo habitat. Recorded on the survey were two frog, one reptile, 32 bird and five mammal (three native and two introduced) species. One conservation significant species was recorded, Carnaby's Cockatoo (*Calyptorhynchus latirostris*), with foraging habitat present in the kwongan heaths and roosting habitat present at the administration offices.
- **Eneabba Banksia Camp: Basic Vertebrate Fauna Survey and Cockatoo Habitat Assessment (Western Wildlife 2022).** This survey was undertaken on one day in November 2021. The survey included habitat assessment and a targeted survey for cockatoo habitat. Recorded on the survey were 12 bird and two mammal (one native and one introduced) species. One conservation significant species was recorded, Carnaby's Cockatoo (*Calyptorhynchus latirostris*), with foraging habitat present in the kwongan heaths.

2.6 Field Survey

2.6.1 Basic Fauna Survey

The field survey was undertaken on the 5th and 6th September 2022. The study area was surveyed on foot. The areas traversed are shown in Figure 4.

The field study component of a basic fauna survey is primarily to identify the fauna habitats present in the study area. Habitats were assessed as the site was traversed and all vertebrate fauna encountered during the field survey were recorded. The fauna species recorded are usually conspicuous species such as birds, large mammals and diurnal reptiles. The presence of other species may be inferred from evidence such as tracks, burrows, scats or evidence of foraging. Particular attention was paid to searching for evidence of conservation significant species, or habitats likely to support conservation significant species.

2.6.2 Targeted Carnaby's Cockatoo Habitat Survey

A survey for Carnaby's Cockatoo habitat was undertaken across the study area, focussing on the identification of potential foraging, roosting or breeding habitat.

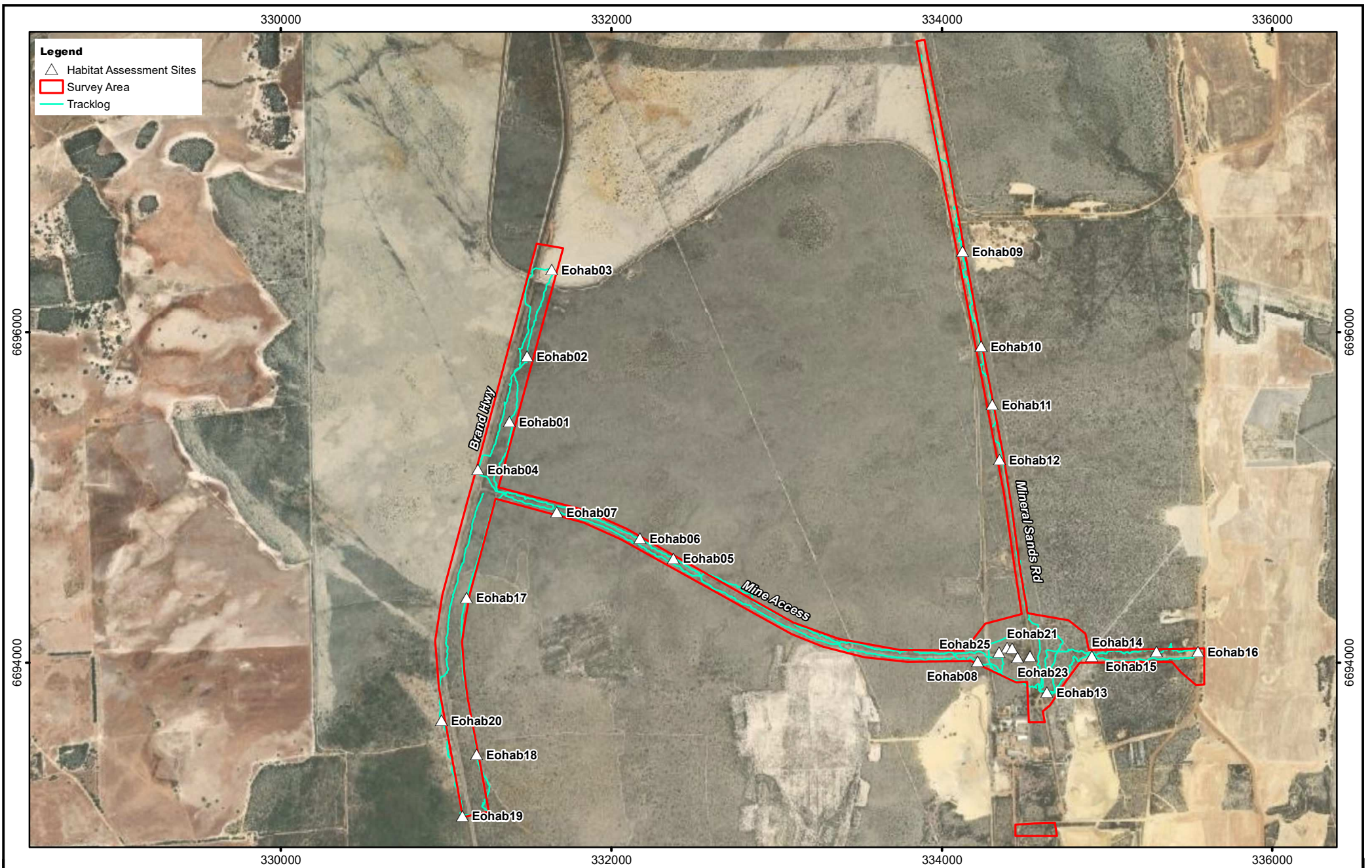
Foraging habitat was defined as vegetation including known food plants for Carnaby's Cockatoo, such as *Banksia spp.*, *Hakea spp.*, *Eucalyptus spp.*, or introduced *Pinus spp.* Only native vegetation was assessed. Habitats were classified into the following values:

- **Nil** – vegetation contains no food plants likely to sustain Carnaby's Cockatoo, e.g., cleared areas.
- **Low** – vegetation contains occasional food plants, e.g., scattered trees, farmland with weeds known to support foraging.
- **Moderate** – vegetation contains a moderate proportion of important food plants, e.g., vegetation types are known to be important for supporting Carnaby's Cockatoo (such as Banksia shrublands and woodlands) that are in degraded condition, or vegetation types with a moderate proportion of food plant species.
- **High** – vegetation contains a large proportion of important food plants, e.g., vegetation types are known to be important for supporting Carnaby's Cockatoo (such as Banksia shrublands and woodlands) that are in good condition.

The study area as a whole was also assessed against the Foraging Quality Scoring Tool presented in DAWE (2022).

Breeding habitat was defined as tree species known to support breeding by Carnaby's Cockatoo, with a diameter at breast height (DBH) of at least 30cm (DAWE 2022), however no breeding habitat was considered likely to occur in the study area.

Roosting habitat is usually in tall trees, often near water. Vegetation types that may support roosting were identified during the basic survey, and evidence of roosting (aggregations of feathers or scats) were searched for during the site visit.



Legend

- △ Habitat Assessment Sites
- ▭ Survey Area
- Tracklog

Drawn: CAD Resources
 www.cadresources.com.au
 Tel: (08) 9246 3242
 CAD Ref: a2937Fa003 | A4
 Date: April 2023 | Rev: A

N
 0 200 400 m
 Scale: 1:30,000
 MGA94 (Zone 50)
 Author: J. Wilcox



**Eneabba Mine Access Road
 Survey Effort**

2.7 Habitat Assessment and Mapping

Habitat mapping was undertaken using land system mapping, landform descriptions and vegetation mapping (created by Woodman Environmental Consulting in 2010 and provided by Iluka Resources Limited), observations made by fauna personnel in the field, additional photo-points provided by Iluka staff and interpretation of aerial photography. Important elements of each habitat likely to be important for fauna were identified. Habitat elements may include, but are not limited to, rocky crevices, caves, tree hollows, tree crevices, leaf litter or sands suitable for burrowing.

2.8 Assessment of Conservation Significance

2.8.1 Legislative Protection for Fauna

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Commonwealth Government's primary piece of environmental legislation. Listed under Part 3 of the EPBC Act are 'Matters of National Environmental Significance' (MNES); these include threatened species, threatened ecological communities and migratory species. Threatened fauna species are assessed against categories based on International Union for Conservation of Nature (IUCN) criteria.

The migratory species listed under the EPBC Act are those recognised under international agreements. These agreements are the China-Australia Migratory Bird Agreement (CAMBA), the Japan-Australia Migratory Bird Agreement (JAMBA), the Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA), or species listed under the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) for which Australia is a range state.

Matters of National Environmental Significance (MNES) include the following categories:

- **Extinct in the wild (EW):** Taxa known to survive only in captivity.
- **Critically Endangered (Cr):** Taxa facing an extremely high risk of extinction in the wild in the immediate future.
- **Endangered (En):** Taxa facing a very high risk of extinction in the wild in the near future.
- **Vulnerable (Vu):** Taxa facing a very high risk of extinction in the wild in the medium-term future.
- **Migratory (Mi):** Taxa listed under international agreements to which Australia is a party.

Reports on the conservation status of most vertebrate fauna species have been produced by the federal Department of Climate Change, Energy, the Environment and Water (DCCEEW) in the form of Action Plans. An Action Plan is a review of the conservation status of a taxonomic group against IUCN categories. Action Plans have been prepared for amphibians (Tyler 1998), reptiles (Cogger *et al.* 1993), birds (Garnett *et al.* 2011) and mammals (Woinarski *et al.* 2014). These publications also use categories similar to those used by the EPBC Act. The information presented in some of the earlier Action Plans may be out of date due to changes since publication.

The *Biodiversity Conservation Act 2016* (BC Act) is State legislation that aims to conserve and protect biodiversity and biodiversity components in Western Australia, including threatened fauna. It is administered by the Department of Biodiversity, Conservation and Attractions (DBCA). In addition to threatened fauna, the BC Act has scope to protect threatened ecological communities and important habitats.

Fauna species are listed under the BC Act as threatened species using IUCN categories, or as specially protected species, as described below.

Threatened Species:

- **Extinct in the wild (EW):** Taxa known to survive only in captivity.
- **Critically Endangered (Cr):** Taxa facing an extremely high risk of extinction in the wild in the immediate future.
- **Endangered (En):** Taxa facing a very high risk of extinction in the wild in the near future.
- **Vulnerable (Vu):** Taxa facing a very high risk of extinction in the wild in the medium-term future.

Specially Protected Species:

- **Migratory (Mi):** A subset of the migratory fauna that are known to visit Western Australia that are protected under the international agreements or treaties, excluding species that are listed as Threatened species.
- **Conservation dependent fauna (CD):** Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened
- **Other specially protected species (OS):** fauna in need of special protection to ensure their conservation.

The BC Act supersedes the *Western Australian Wildlife Conservation Act 1950* (WC Act).

Priority species are not listed under State or Commonwealth Acts. In Western Australia, DBCA maintains a list of Priority Fauna made up of species that are possibly Threatened but do not meet adequacy of survey requirements or are otherwise data deficient. There are four levels of Priority as defined by DBCA, as listed below.

- **Priority 1:** Poorly known species (on threatened lands)
- **Priority 2:** Poorly known species in few locations (some on conservation lands)
- **Priority 3:** Poorly known species in several locations (some on conservation lands)
- **Priority 4:** Rare, near threatened and other species in need of monitoring

2.8.2 Levels of Conservation Significance in this report

Five levels of conservation significance are used within this report to indicate the level of significance of fauna species, according to the following criteria:

- **Threatened (T):** Taxa listed as Extinct in the Wild, Critically Endangered, Endangered or Vulnerable under the EPBC Act and/or BC Act. These species are grouped as they are all species considered to be at risk of extinction, are often rare and are likely to be subject to on-going threatening processes.
- **Migratory (Mi):** Taxa listed as Migratory under the EPBC Act and/or BC Act, excluding those species also listed as threatened. These species are grouped as they are not necessarily rare but may be dependent on specific habitats for a portion of their life-cycle. For these species, loss of important foraging, breeding or stop-over sites may have a disproportionately large impact on populations.
- **Specially Protected (SP):** Taxa listed as Other Specially Protected Species or Conservation Dependent Fauna under the BC Act. These species are not necessarily rare but may be dependent on on-going conservation to ensure their protection.
- **Priority (P):** Taxa listed as Priority by DBCA. These species are grouped as they are either conservation dependent or data deficient and in need of further survey.
- **Locally Significant (LS):** Locally significant taxa are not listed under State or Commonwealth Acts or in publications on threatened fauna or as Priority species by DBCA but are considered by the author to potentially be of local significance because they are at the limit of their distribution in the area, they have a very restricted range or they occur in breeding colonies (e.g., some waterbirds). This level of significance has no legislative recognition and is based on interpretation of information on the species patterns of distribution. For example, the Government of Western Australia (2000) used this sort of interpretation to identify significant bird species in the Perth metropolitan area as part of Bush Forever. Recognition of such species is consistent with the aim of preserving regional biodiversity.

2.9 Likelihood of Occurrence

Fauna of conservation significance were assessed and ranked for their likelihood of occurrence in the study area, according to the criteria in Table 2.

Table 2. Criteria for assessing likelihood of occurrence.

Likelihood	Criteria
Unlikely	<ul style="list-style-type: none"> • The study area is outside the current known distribution of the species as presented in the literature. • No suitable habitat was identified as being present during the field survey. • For some species, individuals may occur occasionally as vagrants, especially if suitable habitat is located nearby, but the study area itself would not support the species. • May include species generally accepted as being locally extinct.
Possible	<ul style="list-style-type: none"> • The study area is within or just outside the current known distribution of the species, as presented in the literature. • Any habitat present is either limited in extent or of marginal quality at best. • No recent or nearby records of the species on databases. • The species is generally known to be less common in the vicinity of the study area (e.g., for inland sites, where the species usually occurs on the coast).
Potential	<ul style="list-style-type: none"> • The study area is within the current known distribution of the species, as presented in the literature. • Habitat of reasonable quality was identified as being present during the field survey. • There are some recent and/or nearby records of the species of databases.
Likely	<ul style="list-style-type: none"> • The study area is well within the current known distribution of the species, as presented in the literature. • Habitat of good quality was identified as being present during the field survey. • Many recent and nearby records of the species on databases.
Known to occur	<ul style="list-style-type: none"> • The species was positively identified in the study area during this field survey or recorded as occurring in the study area on previous recent field surveys. • Note that for a species 'known to occur', the habitat may still be marginal and therefore the population may be small, or the species may visit the site irregularly.

3. Survey Limitations

Various factors can limit the effectiveness of a fauna survey. Pursuant to EPA Technical Guidance (EPA 2020), these factors have been identified and their potential to impact on the effectiveness of the surveys has been assessed in Table 3 below. All fauna surveys have limitations, and not all fauna species present on the site are likely to be sampled during a survey. Fauna may not be recorded because they are rare, they are difficult to trap or observe, or because they are only present on the site for part of the year.

Table 3. Fauna survey limitations.

Potential Limitation	Extent of limitation for the fauna survey	
Availability of data and information	Not limiting	Several fauna studies have been undertaken in the vicinity of the study area, including trapping surveys, so there is a relatively large amount of local data available.
Competency /experience of the team carrying out the survey	Not limiting	Zoologist has 22 years' experience with fauna surveys in Western Australia and has previously undertaken surveys in the bioregion. Zoologist has also undertaken targeted surveys for Carnaby's Cockatoo habitat throughout the south-west.
Scope of survey (e.g., faunal groups excluded from the survey)	Not limiting	As a basic survey, fauna observations were restricted mainly to diurnal species such as birds and secondary signs. This limited the number of species that could be recorded as part of this survey, but this is ameliorated by the fauna data available for the region.
Timing, weather and season	Not limiting	A basic fauna survey can be undertaken at any time of the year, as the primary purpose is habitat assessment. The survey was undertaken in November.
Disturbance that may have affected the results	Not limiting	No disturbance noted.
Proportion of fauna identified, recorded and/or collected.	Not limiting	Only a small proportion of the fauna were recorded during this survey, however, a complete sample was not the purpose of the survey. There is a relatively large amount of contextual information available from the local area.
The adequacy of the survey intensity and proportion of survey achieved (e.g., extent to which the area was surveyed)	Not limiting	Sufficient time was allowed to survey all habitats. A representative proportion of all habitats was able to be accessed and surveyed.
Remoteness and/or access problems	Not limiting	Entire study area accessible on foot.
Problems with data and analysis, including sampling biases	Not limiting	No complex analyses were undertaken, and no problems were noted.

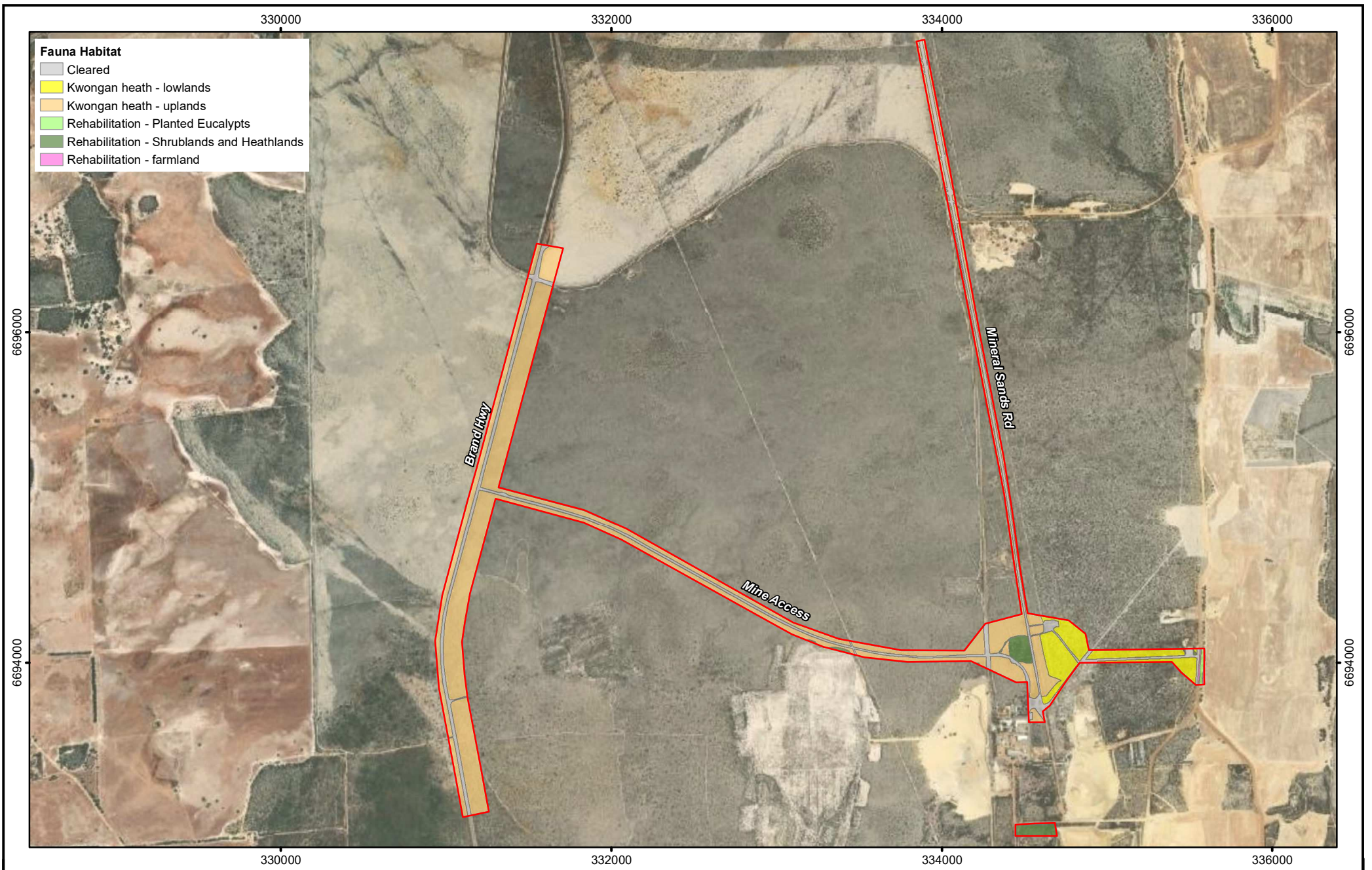
4. Fauna Habitat

4.1 Habitats of the Study Area

Five fauna habitats, plus cleared areas, were identified in the study area (Table 4, Figure 5). Habitat assessment photo points are shown in Figure 5 and Appendix 5. The native habitats of the study area (Kwongan heaths) are widespread in the IBRA subregion.

Table 4. Fauna habitats in the study area.

Habitat	Key Habitat Elements	Total Area (ha)
Kwongan heath - uplands	<ul style="list-style-type: none"> • Likely to support a substantially intact faunal assemblage. • Foraging habitat for Carnaby's Cockatoo (<i>Banksia spp.</i> and <i>Hakea spp.</i>) • Nectar resource for honeyeaters and Honey Possum • Emergent eucalypts provide crevices for arboreal reptiles. • Nesting habitat for small birds. 	87.6
Kwongan heath - lowlands	<ul style="list-style-type: none"> • Likely to support a substantially intact faunal assemblage. • Nectar resource for honeyeaters and Honey Possum • Emergent eucalypts provide crevices for arboreal reptiles. • Nesting habitat for small birds. 	12.9
Rehabilitation - planted eucalypts	<ul style="list-style-type: none"> • Eucalypts provide crevices for arboreal reptiles. • Roosting and nesting sites for some birds. 	0.4
Rehabilitation – shrublands and heaths	<ul style="list-style-type: none"> • Some foraging habitat for Carnaby's Cockatoo (<i>Banksia spp.</i> and <i>Hakea spp.</i>) • Nectar resource for honeyeaters and Honey Possum • Nesting habitat for small birds. 	4.1
Rehabilitation – farmland	<ul style="list-style-type: none"> • Foraging habitat for Emu, kangaroos and aerially foraging birds. 	0.4
Cleared	<ul style="list-style-type: none"> • None noted 	24.1
Total:		129.5



Legend
 Survey Area

Drawn: CAD Resources
 www.cadresources.com.au
 Tel: (08) 9246 3242
 CAD Ref: a2937Fa004 | A4
 Date: April 2023 | Rev: A

N
 0 190 380 m
 Scale: 1:30,000
 MGA94 (Zone 50)
 Author: J. Wilcox



**Eneabba Mine Access Road
 Fauna Habitat**

4.1.1 Kwongan Heath - uplands

Kwongan heath uplands is a floristically diverse low heath or shrubland dominated by sclerophyllous plants, particularly from the families Myrtaceae and Proteaceae (Plates 1 – 3). It occurs on the sandplain and flats comprise the majority of the survey area. The habitat contains a mix of shrub species, sometimes with emergent low eucalypts, Woody Pear (*Xylomelum angustifolium*) or *Banksia attenuata*. The Kwongan heath is likely to support a relatively diverse faunal assemblage as it is contiguous with other areas of similar habitat. This habitat contains variable amounts of important Carnaby's Cockatoo food-plants, such as *Banksia spp.*, *Hakea spp.* and *Lambertia spp.*



Plate 1. Kwongan heath - uplands.



Plate 2. Kwongan heath - uplands.



Plate 3. Kwongan heath - uplands.

4.1.2 Kwongan Heath - Lowlands

This habitat is structurally similar to the upland Kwongan Heath, but is dominated by *Allocasuarina microstachya*, *Melaleuca spp.* and *Verticordia spp.*, lacking the *Banksia spp.* found in other areas (Plates 4 and 5). It occurs on sandy and sandy-clay flats and low-lying areas. It is also likely to support an intact faunal assemblage, but it lacks important food-plants for Carnaby's Cockatoo.



Plate 4. Kwongan heath - lowlands.



Plate 5. Kwongan heath - lowlands.

4.1.3 Rehabilitation – Shrublands and Heaths

The rehabilitation varied in age, structure and plant species composition, but overall tends to be a shrubland or heathland with emergent Eucalypts (Plates 9 - 12). This habitat includes important food plants for Carnaby's Cockatoo, including *Banksia spp.*, but some areas were entirely myrtaceous and lacked food plants for cockatoos. Rehabilitation areas are likely to support some native fauna, particularly birds and larger native mammals such as kangaroos and the Echidna. Reptiles are likely to be slower to colonise these areas.

4.1.4 Planted Eucalypts and Farmland

Stands of planted eucalypts occur in the cleared farmland and along the edges of the existing road. These areas have no understory vegetation (Plates 6 and 7). Planted eucalypts are likely to support a small group of native fauna, including birds that feed in eucalypt foliage and flowers, and a small suite of arboreal reptiles. Farmland is unlikely to support more than a few generalist fauna species, and both habitats comprise a tiny proportion of the study area.



Plate 6. Planted eucalypts and farmland.



Plate 7. Planted eucalypts and farmland.

4.2 Important Habitats

All habitats have some importance in that they support native fauna, however, habitats may be of particular importance if they:

- support very diverse or unique faunal assemblages
- are restricted or rare in the region (and thus the associated faunal assemblages are restricted or rare)
- are refugia (e.g., from drought or fire)
- provide ecological linkage
- support conservation significant fauna

The habitats in the study area are common and widespread in the IBRA subregion and the faunal assemblages present are likely to be relatively diverse, but typical of the region. Although all vegetation has some value as ecological linkage, the habitats in the study area are unlikely to be part of a significant ecological linkage. A proportion of the study area (18.6%) is already cleared for the existing roads and tracks (Figure 5).

The key value noted for the Kwongan heath is in providing foraging habitat for Carnaby's Cockatoo (*Calyptorhynchus latirostris*).

5. Vertebrate Fauna

5.1 Vertebrate Fauna Assemblage

The results of the literature review and the field survey were combined to form lists of the vertebrate fauna potentially occurring in the study area. The lists of frogs, reptiles, birds and mammals that potentially occur in the study area are presented in Appendices 1 – 4 and are summarised below in Table 5.

Table 5. Summary of vertebrate fauna potentially occurring in the study area.

Taxon	Total species	Introduced species	Recorded on this survey	Conservation significant species				
				Threatened	Migratory	Specially Protected	Priority	Locally Significant
Amphibians	10	0	0	-	-	-	-	-
Reptiles	60	0	0	-	-	-	2	-
Birds	118	3	12	2	1	1	-	-
Mammals	26	7	2	-	-	-	1	-
Totals:	214	10	14	2	1	1	3	0

The faunal assemblage of the study area is likely to be somewhat depauperate, as the native habitats are fragmented and likely to be subject to the impacts of weed invasion and the presence of feral predators. Cleared areas and planted trees are likely to support relatively few species, many of which would still be reliant on nearby native habitats for the majority of their needs. The assemblage is dominated by species with a southwestern distribution, but also includes Eremaean species on the western edge of their range.

The predicted faunal assemblages and fauna of conservation significance are discussed in the sections below.

5.1.1 Amphibians

There are ten species of frog that have the potential to occur in the study area (Appendix 1). In general, the frog species that potentially occur are common and widely distributed in either the southwest or arid regions. As the study area lacks wetland habitats and is not adjacent to wetlands, important frog breeding habitat is unlikely to be present. The Turtle Frog (*Myobatrachus gouldii*) does not need water to breed and may be present as a breeding resident in Kwongan heath.

5.1.2 Reptiles

There are 60 species of reptile that have the potential to occur in the study area (Appendix 2). A total of 36 species have been recorded in previous studies in the vicinity of Eneabba, and one was recorded on this survey (Appendix 2). The reptile assemblage of the Kwongan heaths is likely to be largely intact.

Many of the reptiles present have broad habitat preferences and therefore potentially occur throughout the study area. Species that favour more wooded habitats are likely to favour the areas of emergent *Eucalyptus* spp. including the Black-tailed Monitor (*Varanus tristis*) and Fence Skink (*Cryptoblepharus buchananii*). The rehabilitation areas are likely to support a similar, but much smaller, subset of the species present in the Kwongan heath.

5.1.3 Birds

There are 118 species of bird that have the potential to occur in the study area, of which 24 were recorded opportunistically during the 2022 site visit (Appendix 3). A total of 88 species have been recorded on previous surveys in the vicinity of Eneabba (Appendix 3).

The bird assemblage is relatively diverse, with the floristically rich Kwongan heaths supporting a variety of nectar-feeding honeyeaters and small insectivores. When seeding, the scattered *Eucalyptus tottiana* and shrubs such as *Banksia*, *Hakea*, *Acacia* and *Allocasuarina* spp. provide food for granivorous species such as parrots, pigeons and cockatoos. Birds of prey forage over the low vegetation, roosting or nesting in the taller trees, including planted eucalypts. Species that rely on eucalypts, such as the Weebill (*Smicrornis brevirostris*) are also likely to favour the planted eucalypts.

Many species are likely to breed in the study area, constructing nests in shrubs in densely vegetated areas in most habitats. No nest hollows were observed, but there may be a few small hollows present in the planted eucalypts.

Waterbirds, such as ducks, herons, egrets and ibis occur in the region and may occur nearby on farm dams, wetlands or rivers. No waterbirds have been listed in Appendix 3, as there is no significant waterbird habitat present in the study area, however, these species may occur as vagrants from time to time.

5.1.4 Mammals

There are 26 species of mammal that have the potential to occur in the study area, of which 19 are native and seven introduced (Appendix 4). Two species of mammal were recorded opportunistically during the site visit, one native species (Western Grey Kangaroo - *Macropus fuliginosus* and one introduced (Rabbit – *Oryctolagus cuniculus*) (Appendix 4). A total of 15 species have been recorded in previous studies in the vicinity of Eneabba (Appendix 4). Many species of critical weight range mammal are locally extinct in the region, including the Boodie (*Bettongia lesueur ogilbyi*), Tammar Wallaby (*Notamacropus eugenii*) and Quenda (*Isodon fusciventer*).

The Honey Possum (*Tarsipes rostratus*), White-tailed Dunnart (*Sminthopsis granulipes*) and Ash-Grey Mouse (*Pseudomys albocinereus*) are likely to be common across the floristically diverse Kwongan heathlands of the region, with connectivity of habitat is important for these small mammals. The Honey Possum relies on a diverse array of shrubs to cater for its nectivorous habits and dense heathland provides shelter from predators.

Several of the mammals listed in Appendix 4 are insectivorous bats. These species are likely to forage over the study area at night. Most species roost in tree hollows, tree crevices or in other sheltered locations such as grasstree skirts.

5.2 Vertebrate Fauna of Conservation Significance

There are seven vertebrate fauna of conservation significance that potentially occur in the study area: two Threatened, one Migratory, one Specially Protected and three Priority species (Table 6). No locally significant species were identified, as it is considered that most species are widespread in the shrublands and heathlands of the region. Each species is summarised in Table 6 and discussed in the sections below. The results of the DBCA Threatened and Priority Fauna Database extract are shown on Figure 6 and the EPBC Protected Matters Search Tool extract is shown in Appendix 6.

Several conservation significant species listed on database searches in the area have been omitted from the listed of potential fauna in Appendices 1 – 4 and the discussion below. This includes the following species:

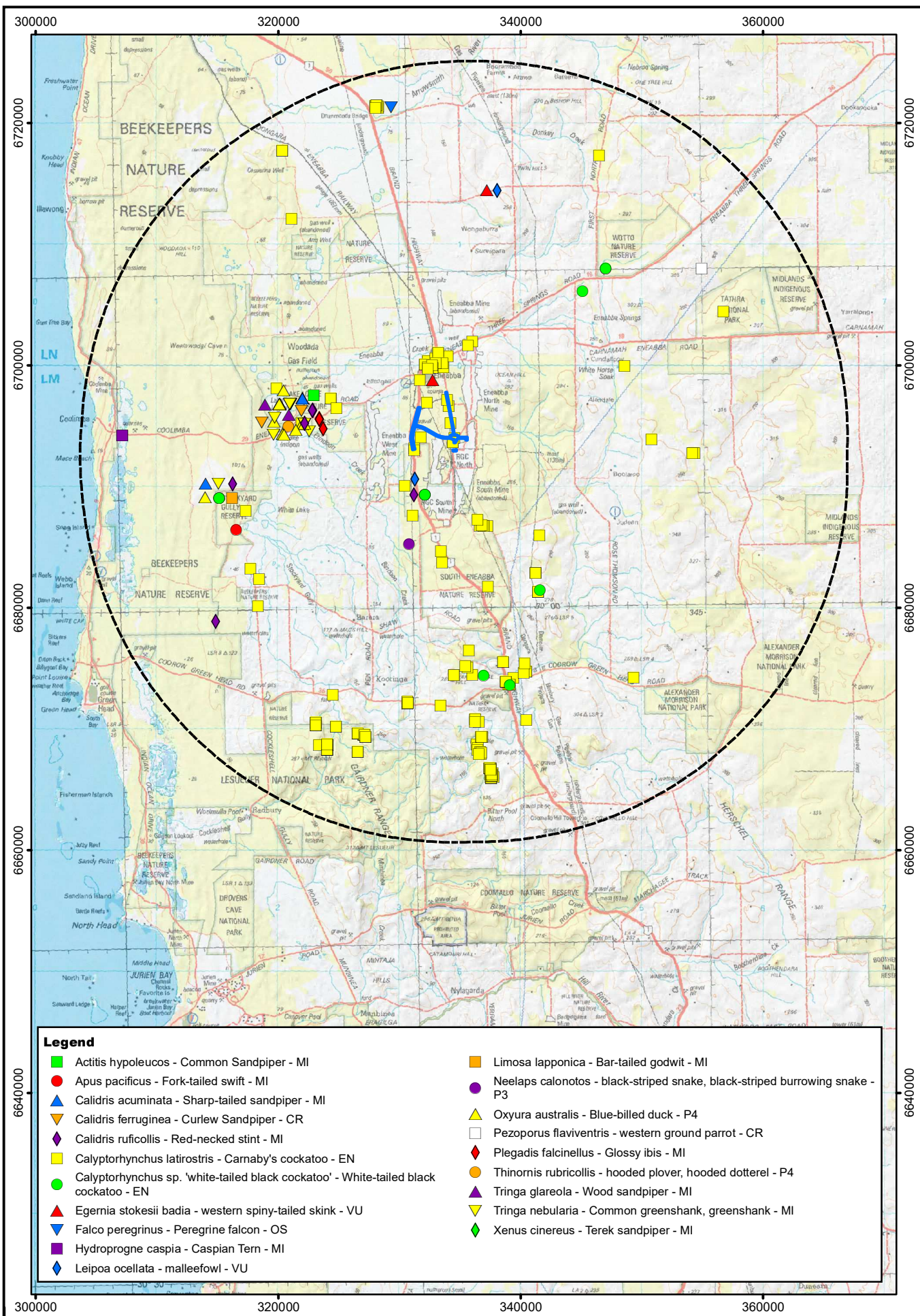
- The Dibbler (*Parantechinus apicalis* - En); is not known from the mainland in this region, occurring only on islands off Jurien Bay.
- The Western Spiny-tailed Skink (*Egernia stokesii badia* - En); although recorded in the wider region, it occurs in York Gum woodlands that are absent from the study area.
- The Chuditch (*Dasyurus geoffroii* - Vu) is locally extinct in the region.
- The Ghost Bat (*Macroderma gigas* – Vu) is locally extinct in the region, known only from subfossil records.
- The following bird species require wetland or coastal habitats that are absent from the study area:
 - Common Sandpiper (*Actitis hypoleucos*) - Mi
 - Sharp-tailed Sandpiper (*Calidris acuminata*) - Mi
 - Curlew Sandpiper (*Calidris ferruginea*) – Mi/Cr
 - Red-necked Stint (*Calidris ruficollis*) - Mi
 - Caspian Tern (*Hydroprogne caspia*) - Mi
 - Bar-tailed Godwit (*Limosa lapponica*) - Mi
 - Blue-billed Duck (*Oxyura australis*) – P4
 - Glossy Ibis (*Plegadis falcinellus*) - Mi
 - Crested Tern (*Thalasseus bergii*) - Mi
 - Hooded Plover (*Thinornis rubricollis*) – P4
 - Wood Sandpiper (*Tringa glareola*) - Mi
 - Common Greenshank (*Tringa nebularia*) - Mi
 - Terek Sandpiper (*Xenus cinereus*) - Mi

Table 6. Summary of conservation significant vertebrate fauna in the study area.

Species	Conservation Status				Likelihood of occurrence	Explanation of likelihood of occurrence
	EPBC Act	BC Act	DBCA Priority	Locally Significant		
<i>Calyptorhynchus latirostris</i> Carnaby's Cockatoo	En	En			Known to occur	Foraging signs recorded in the study area.
<i>Leipoa ocellata</i> Malleefowl	Vu	Vu			Possible	Records within 30km, but shrubland habitat in study area generally too low and most of the study area is immediately adjacent to cleared areas (roads).
<i>Apus pacificus</i> Fork-tailed Swift	Mi	Mi			Potential	May occur but only as an aerial species overflying the study area.
<i>Falco peregrinus</i> Peregrine Falcon		OS			Potential	May forage in the study area but no breeding habitat present.
<i>Aspidites ramsayi</i> Woma (southwest pop ⁿ)			P1		Unlikely	Likely to be locally extinct.
<i>Neelaps calonotos</i> Black-striped Snake			P3		Likely	Nearby records and suitable habitat present in study area.
<i>Macropus irma</i> Western Brush Wallaby			P4		Possible	No nearby records, but within the known range of the species.

5.2.1 Threatened Fauna

There are two Threatened vertebrate species that may occur in the study area (Table 6). Threatened species are those that are considered in danger of extinction as their populations have declined and/or are still declining, and their total population size is small and/or fragmented or geographically restricted. Sites that support these species may be important for their long-term conservation, particularly if the site supports a resident or breeding population.



- Legend**
- Actitis hypoleucos - Common Sandpiper - MI
 - Apus pacificus - Fork-tailed swift - MI
 - ▲ Calidris acuminata - Sharp-tailed sandpiper - MI
 - ▼ Calidris ferruginea - Curlew Sandpiper - CR
 - ◆ Calidris ruficollis - Red-necked stint - MI
 - Calyptorhynchus latirostris - Carnaby's cockatoo - EN
 - Calyptorhynchus sp. 'white-tailed black cockatoo' - White-tailed black cockatoo - EN
 - ▲ Egernia stokesii badia - western spiny-tailed skink - VU
 - ▼ Falco peregrinus - Peregrine falcon - OS
 - Hydroprogne caspia - Caspian Tern - MI
 - ◆ Leipoa ocellata - malleefowl - VU
 - Limosa lapponica - Bar-tailed godwit - MI
 - Neelaps calonotos - black-striped snake, black-striped burrowing snake - P3
 - ▲ Oxyura australis - Blue-billed duck - P4
 - Pezoporus flaviventris - western ground parrot - CR
 - ◆ Plegadis falcinellus - Glossy ibis - MI
 - Thinornis rubricollis - hooded plover, hooded dotterel - P4
 - ▲ Tringa glareola - Wood sandpiper - MI
 - ▼ Tringa nebularia - Common greenshank, greenshank - MI
 - ◆ Xenus cinereus - Terek sandpiper - MI

Drawn: CAD Resources
 www.cadresources.com.au
 Tel: (08) 9246 3242
 CAD Ref: a2937Fa005 A4
 Date: April 2023 Rev: A Author: J. Wilcox

N 0 3 6 km
 Scale: 1:425,000
 MGA94 (Zone 50)



**Eneabba Mine Access Road
 DBCA Threatened and Priority
 vertebrate fauna records**

Figure: **6**

Carnaby's Cockatoo – *Calyptorhynchus latirostris*

Carnaby's Cockatoo is listed as Endangered under the BC Act and EPBC Act.

Carnaby's Cockatoo is endemic to the southwest of Western Australia, occurring mostly in the wheatbelt but also on the Swan Coastal Plain and wetter southwest (Johnstone and Storr 1998). The population size is estimated to be 40,000 birds (or possibly between 10,000 – 60,000) (Garnett *et al.* 2011). There are many records of this species in the region on DBCA's Threatened and Priority Fauna Database (Figure 6).

Carnaby's Cockatoo nests in large eucalypt hollows, usually in smooth-barked species such as Salmon Gum or Wandoo, though they may nest in any suitably sized hollow (DSEWPaC 2012, DPAW 2013). The breeding season is July to December, and for breeding to be successful, birds rely on the presence of foraging habitat within 12km of the breeding site (DPAW 2013). During the non-breeding season, birds generally move west or south towards the coast, foraging in proteaceous shrublands and woodlands. Key threats for this species include loss of breeding habitat, loss of feeding habitat in close proximity to breeding habitat, loss of non-breeding season foraging habitat and night-roost sites, clearing for mining and extraction activities and illegal shooting (DPAW 2013).

- **Breeding habitat.** Carnaby's Black-Cockatoo is known to breed in the region, with the nearest breeding records about 30km south of the study area (Figure 7). No potential breeding habitat is present in the study area, and Johnstone and Kirkby (2007, 2013) found no evidence of potential breeding habitat in the vicinity of Eneabba.
- **Roosting habitat.** Carnaby's Cockatoo usually roost in tall trees, often in riparian habitats (DSEWPaC 2012). The nearest known roost sites are 5km north at Eneabba (Johnstone and Kirby 2013) and directly south at the Iluka administration building (Western Wildlife 2021). Although stands of planted eucalypts may be suitable roosting habitat, no evidence of roosting (feathers, scats) were found during the site visit.
- **Foraging habitat.** Evidence of foraging activity was recorded across the study area (Figure 8, Plates 8 and 9). When assessed using the foraging quality scoring tool presented in DAWE (2022), the study area as a whole was considered to provide high quality foraging habitat (Appendix 7). When the habitats were considered individually as part of the assessment for this report, the foraging value was considered to be high for 87.6ha (Kwongan heath – uplands), moderate for 4.1ha (Rehabilitation – shrublands and heathlands) and low for 13.3ha (12.9ha of Kwongan heath – lowlands and 0.4ha of Rehabilitation – planted eucalypts). High value foraging habitat included important food plants such as *Banksia* spp., *Hakea* spp. and *Lambertia* sp. with many records of foraging activity (Figure 8). Moderate value foraging habitat still included important food plants, but these were more sparsely distributed and possibly were impacted by dieback. Low foraging value areas had few food-plants and lacked the favoured proteaceous species. Cleared areas (24.1ha) and farmland (0.4ha) were considered to have nil value as foraging habitat.

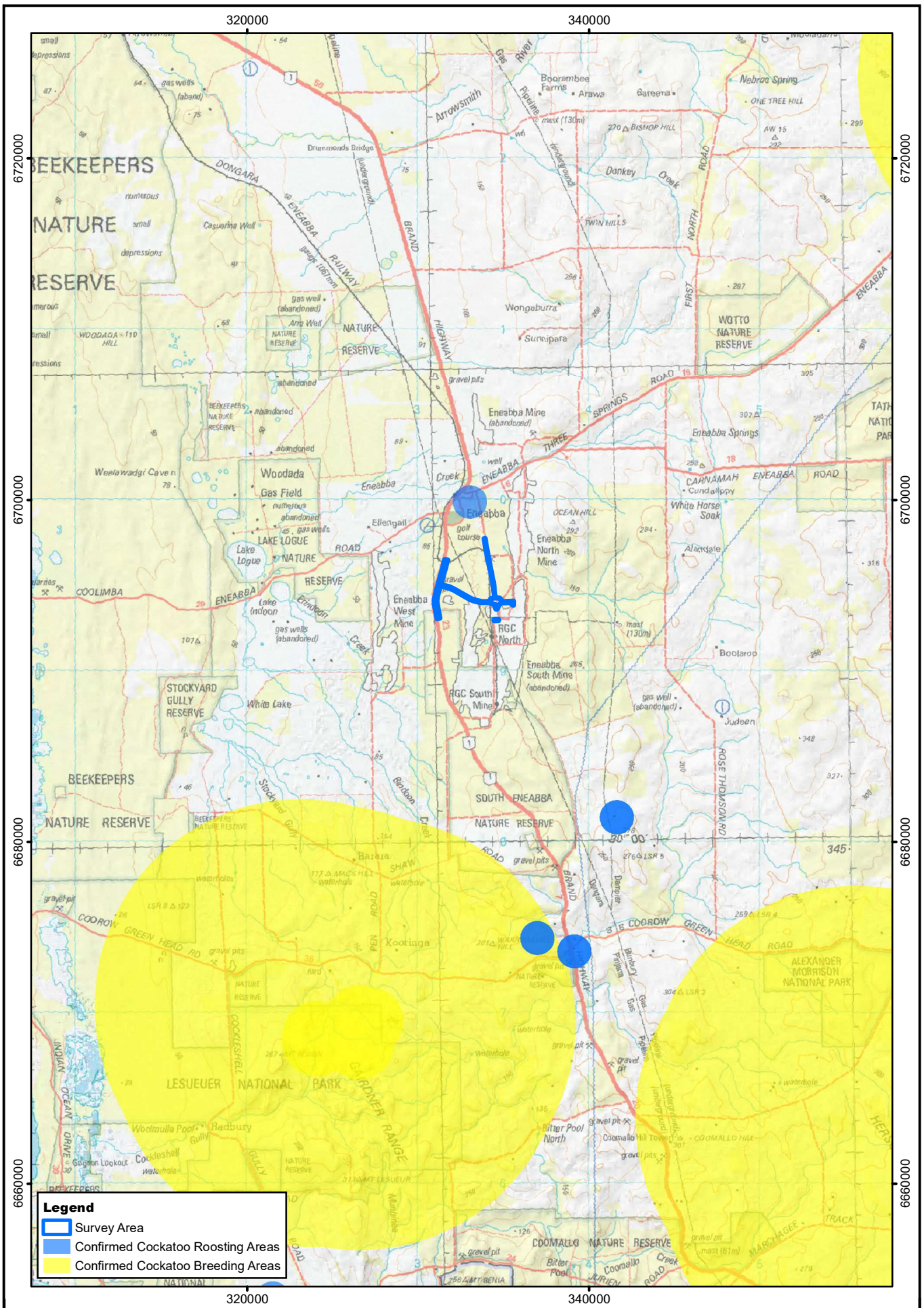
Vegetation that provides food resources in the non-breeding season can be considered habitat critical to the survival of Carnaby's Cockatoo (DPAW 2013).



Plate 8. Evidence of cockatoo foraging in the Kwongan heath - uplands.



Plate 9. Evidence of cockatoo foraging on *Banksia attenuata*.



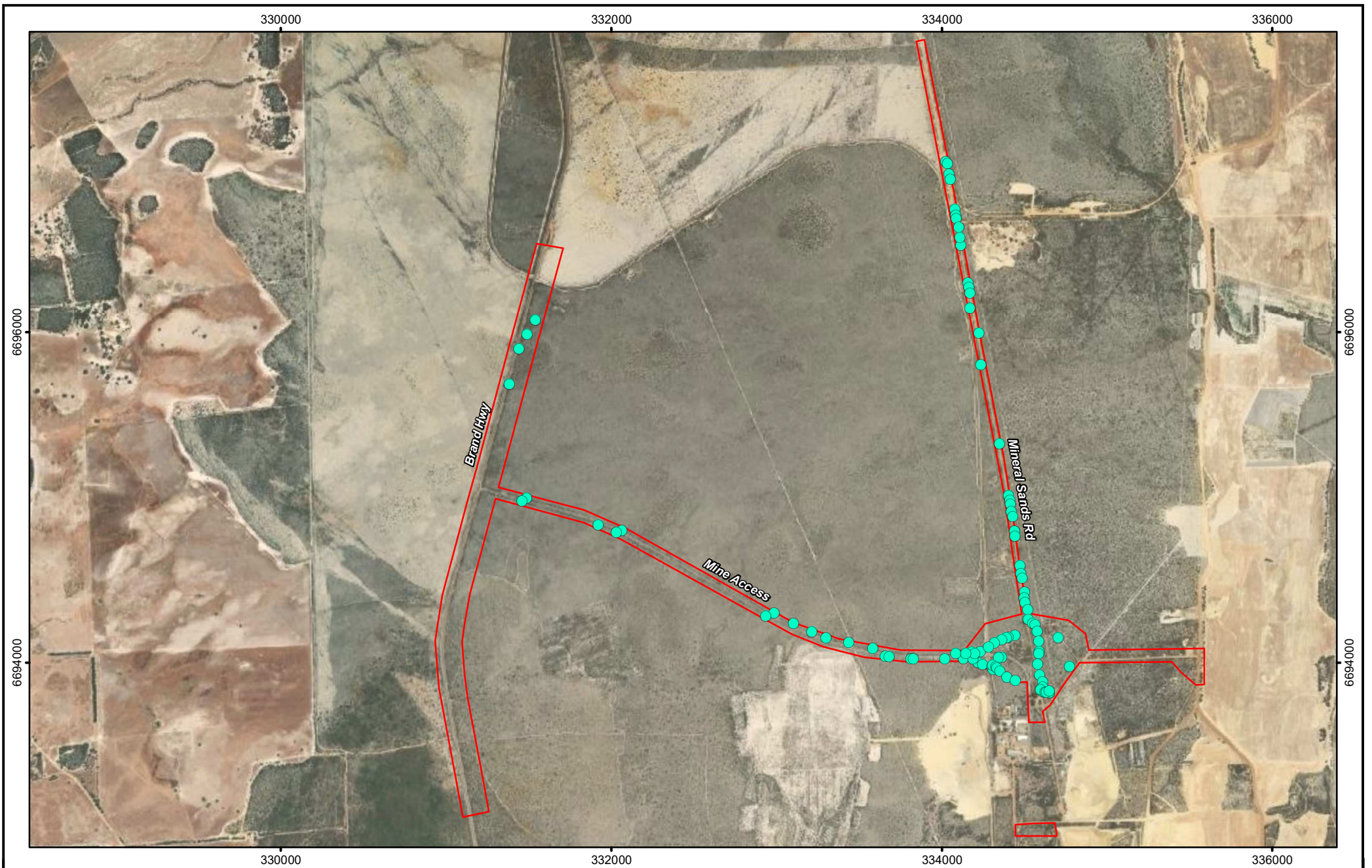
Drawn: CAD Resources
 www.cadresources.com.au
 Tel: (08) 9246 3242
 CAD Ref: a2937Fa006 | A4
 Date: April 2023 | Rev: A | Author: J. Wilcox

N 0 2 4 km
 Scale: 1:300,000
 MGA94 (Zone 50)



Eneabba Mine Access Road Carnaby's Cockatoo - Known breeding and roosting sites


Figure: **7**



- Legend**
- Survey Area
 - Foraging Signs

Drawn: CAD Resources
 www.cadresources.com.au
 Tel: (08) 9246 3242
 CAD Ref: a2937Fa007 | A4
 Date: April 2023 | Rev: A

N



0 190 380 m

Scale: 1:30,000
 MGA94 (Zone 50)

Author: J. Wilcox



**Eneabba Mine Access Road
 Carnaby's Cockatoo
 survey records**

Malleefowl – *Leipoa ocellata*

The Malleefowl is listed as Vulnerable under the BC Act and EPBC Act.

The Malleefowl is a large ground-dwelling bird inhabits mallee woodlands and *Acacia* shrublands that have a dense layer of leaf litter (Johnstone and Storr 1998). It is thought never to have been common in the vicinity of the study area, with higher density populations occurring to the east of a line between Kalbarri and Wongan Hills (Abbott, 2008). Since European settlement, this range has contracted further (Abbott 2008, Benshemesh 2007).

There are two records of this species within 30km of the study area on the DBCA Threatened and Priority Fauna Database (Figure 6). Both records are relatively recent (2010 and 2014). Although the Kwongan heath in the study area may be suitable habitat for foraging Malleefowl, the vegetation present is likely to be too low and close to cleared areas to be attractive to this species. No nesting mounds were recorded during the field survey. The Malleefowl is unlikely to regularly occur in the study area but may occur on occasion.

5.2.2 Migratory Fauna

There is one Migratory vertebrate species that potentially occurs in the study area (Table 6). Migratory species are not always present at a site, but a particular site may have significance as a seasonal or ephemeral foraging, breeding or shelter area. Impacts to these sites may then impact the population both within the site and further afield.

Fork-tailed Swift – *Apus pacificus*

The Fork-tailed Swift is listed as Migratory under the BC Act and EPBC Act.

The Fork-tailed Swift is a non-breeding visitor to Australia between September and April (Boehm 1962, Johnstone and Storr 1998). While it can be common in the north, it is generally scarce in southwest Australia (Johnstone and Storr 1998). The bird is primarily observed foraging for insects in proximity to cyclonic weather (Boehm 1962). Although a migratory species, the Fork-tailed Swift has a large range and a large population that appears to be stable (BirdLife International 2022). There is a single record of this species within 30km on DBCA's Threatened and Priority Fauna Database, from Stockyard Gully Cave in 2009 (Figure 6). Although it is likely to occur periodically, in Western Australia the Fork-tailed Swift is a largely an aerial species and study area is not likely to be of particular importance to the species.

5.2.3 Specially Protected Fauna

There is one specially protected vertebrate species that potentially occurs in the study area (Table 6). The populations of Specially Protected species are large enough that they are not considered to be Threatened. However, they require on-going conservation intervention (i.e., Conservation Dependent) or be specially protected in order to prevent them from becoming Threatened.

Peregrine Falcon – *Falco peregrinus*

The Peregrine Falcon is listed as Other Specially Protected Fauna under the BC Act.

The Peregrine Falcon is a widespread bird of prey that globally has a very large range and a very large population that appears to be secure (BirdLife International 2022). In Western Australia the population is secure, though this species may experience reductions at a local level due to human disturbance at nesting sites (Debus 1998). The Peregrine Falcon nests mainly on ledges on cliffs or rocky outcrops, and it may also use tall trees (Johnstone and Storr 1998). This species often takes advantage of man-made structures such as abandoned open pits or quarries. There is a single record of this species within 30km of the study area on the DBCA Threatened and Priority Fauna Database (Figure 6), from the Western Flora Caravan Park in 2002. The Peregrine Falcon may forage in the study area, but its favoured breeding habitat is absent.

5.2.4 Priority Fauna

There are three Priority vertebrate fauna species that potentially occur in the study area (Table 6). Priority 1, 2 or 3 species need further survey effort, as insufficient data exist to adequately determine their status. Many Priority 1, 2 and 3 species are known from only a few records in a limited number of locations, thus determining their status in the study area may be problematic. Priority 4 species are considered to require regular monitoring, as although they are adequately known, they are either rare, near threatened or recently removed from the threatened list.

Woma – *Aspidites ramsayi*

The Woma is listed as Priority 1 by DBCA.

The Woma has severely declined in the wheatbelt, with the last confirmed record in 1989 at Watheroo (Bush *et al.* 2007). There are no records of this species within 30km of the study area on DBCA's Threatened and Priority Fauna Database (Figure 6). The Woma favours sandplain habitats. Although habitats in the study area appear suitable and the Woma may once have occurred in the region, it is considered likely to be locally extinct in the vicinity of the study area.

Black-striped Snake – *Neelaps calonotos*

The Black-striped Snake is listed as Priority 3 by DBCA.

This small fossorial snake has a coastal distribution from Dongara south to Mandurah. It inhabits coastal dunes and sandplains that support heath or *Banksia* woodland (Bush *et al.* 2007). The Black-striped Snake is active at night, spending most of its time in the leaf litter or soil. There is a single record of this species within 30km of the study area on DBCA's Threatened and Priority Fauna Database (Figure 6). The record is relatively recent, from Warradarge (about 7km south of the survey area). This species is likely to occur in the sandy soils in the Kwongan heaths of the study area.

Western Brush Wallaby – *Notamacropus irma*

The Western Brush Wallaby is listed as Priority 4 by DBCA.

The Western Brush Wallaby is endemic to the southwest of Western Australia and occurs in open forests or woodlands (Van Dyck and Strahan 2008). There are no records of this species within 30km of the study area on DBCA's Threatened and Priority Fauna Database (Figure 6), however, the study area is within its known range. The Western Brush Wallaby possibly occurs in the more wooded parts of the study area, from where it may shelter under trees or larger shrubs during the day, ranging out onto shorter vegetation to forage at night. The lack of records suggest that this distinctive species is uncommon in the region.

6. Invertebrate Fauna

This report is primarily concerned with vertebrate fauna and no comprehensive literature review was undertaken for this group. The invertebrate fauna of the study area are more species rich and abundant than the vertebrate fauna, but cataloguing their occurrence was outside the scope of this survey. However, a few invertebrates of conservation significance were recorded within 30km of the study area on DBCA's Threatened and Priority Fauna Database (Figure 9, DBCA 2021) or are known to occur in the region.

6.1 Invertebrates of Conservation Significance

There are eight invertebrates of conservation significance recorded within 30km of the study area on DBCA's Threatened and Priority Fauna Database (Figure 9) or otherwise known to occur in the region. Note that this may not represent all the conservation significant invertebrates in the region, as invertebrates are typically understudied and not often subject to opportunistic reporting by the general public. Determining the likelihood of occurrence for most species is hampered by lack of contextual data, with most species represented by very few records in the region and their habitat preferences poorly understood.

Shield-backed Trapdoor Spider – *Idiosoma nigrum*

The Shield-backed Trapdoor Spider is listed as Endangered under the BC Act and Vulnerable under the EPBC Act.

A recent review of the *Idiosoma* genus has resulted in *Idiosoma nigrum* being split into several newly recognized species (Rix *et al.* 2018). The species that retains the name *Idiosoma nigrum* occurs in the central and central-western wheatbelt, west to about Bolgart, New Norcia, Walebing and Bindi Bindi. Therefore, it is unlikely that this species occurs in the vicinity of the study area, and any records of this species in the local area are likely attributable to newly described species *Idiosoma kwongan*.

Table 7. Summary of conservation significant invertebrate fauna in the study area.

Species	Conservation Status				Likelihood of occurrence	Explanation of likelihood of occurrence
	EPBC Act	BC Act	DBCA Priority	Locally Significant		
<i>Idiosoma nigrum</i> Shield-backed Trapdoor Spider	Vu	En			Unlikely	Recent taxonomic changes mean that this species is no longer considered to occur in the area.
<i>Idiosoma kwongan</i> Kwongan Heath Shield-backed Trapdoor Spider			P1		Possible	Although not found in previous targeted surveys for this species, it's not possible to exclude this species as it's so poorly known.
<i>Hemisaga vepreculae</i> A katydid			P2		Potential	Recorded within 30km, suitable habitat probably present in the study area. Poorly known species.
<i>Phasmodes jeeba</i> A katydid			P2		Potential	Recorded within 30km, suitable habitat probably present in the study area. Poorly known species.
<i>Synemon gratiosa</i> Graceful Sun-moth			P4		Unlikely	Not recorded in the vicinity of the study area, this species is likely to prefer near-coastal habitats.
<i>Hylaeus globuliferus</i> Woolybush Bee			P3		Potential	Recorded nearby. Although the habitats of the study area generally lack woolybush, this species also forages on other plants.
<i>Austromerope poultoni</i> An earwig fly			P2		Possible	Poorly known from a single nearby record, its habitat requirements are not well understood.
<i>Antichiropus sulcatus</i> a millipede				LS	Potential	This species has been recorded from the South Eneabba Nature Reserve and may occur in moist situations.

Kwongan Heath Shield-backed Trapdoor Spider – *Idiosoma kwongan*

The Kwongan Heath Shield-backed Trapdoor Spider is listed as Priority 1 by DBCA.

As stated above, the recent review of the *Idiosoma* genus has resulted in *Idiosoma nigrum* being split into several newly recognized species, of which *Idiosoma kwongan* is one (Rix *et al.* 2018). This species appears to be restricted to a small area between Eneabba, Green Head and Lesueur National Park (Rix *et al.* 2018). Known from few records, the status of this species in the vicinity of the study area is difficult to determine. Searches for shield-back trapdoor spiders in the vicinity of Iluka's Eneabba Operations in 2006 failed to record any sign of this species (Bamford 2007b), however, it possibly occurs in areas of Kwongan heath.

Thorny Bush Katydid - *Hemisaga vepreculae*

The Thorny Bush Katydid is listed as Priority 2 by DBCA.

This species is a green flightless predatory species endemic to Western Australia (Rentz 2010). There is a single record of this species within 30km of the study area on DBCA's Threatened and Priority Fauna Database, northwest of Eneabba in 1980 (Figure 9, DBCA 2021). The Thorny Bush Katydid potentially occurs in the Kwongan heaths of the study area.

Earwig Fly – *Austromerop poultoni*

The earwig fly is listed as Priority 2 by DBCA.

This earwig fly occurs mainly in the Jarrah Forest south of Perth (Abbott *et al.* 2007). There is a single record of this species at Eneabba in 1998. The record at Eneabba represented a 240km range extension when it was made (Abbott *et al.* 2007). This species of earwig fly may possibly occur in the study area, but the lack of records makes it difficult to accurately ascertain its status in the region. If present it is likely to favour moist situations.

Springtime Corroboree Stick Katydid – *Phasmodes jeeba*

The Springtime Corroboree Stick Katydid is listed as Priority 3 by DBCA.

This katydid is a species of 'stick katydid' that occurs in coastal sandplain heaths and is endemic to Western Australia (Rentz 2010). Stick katydids feed on flowers and pollen, with the adults present in flowering vegetation through spring, feeding during the night and sheltering in vegetation during the day (Rentz 2010). There is a single record of this species within 30km of the study area on DBCA's Threatened and Priority Fauna Database, at Mt Adams in 1984 (Figure 9, DBCA 2021). The Springtime Corroboree Stick Katydid potentially occurs in the Kwongan heaths of the study area.

Woolybush Bee – *Hylaeus globuliferus*

The Woolybush Bee is listed as Priority 3 by DBCA.

The Woolybush Bee is known from records on the west coast (from about Bunbury north to Arrowsmith) and scattered records in the southeast wheatbelt (Padil, 2017). It is often recorded in association with Woolybush (*Adenanthos cygnorum*), with additional records on species of *Grevillea* and *Banksia* (Padil, 2017). There are two records of this species within 30km of the study area on DBCA's Threatened and Priority Fauna Database (Figure 9). Both records are from 1996, one from Arrowsmith and one from Tathra National Park, Eneabba (DBCA 2021). The Woolybush Bee possibly occurs in kwongan heath in the study area, but the habitats generally lack Woolybush as a dominant species.

Graceful Sun-moth – *Synemon gratiosa*

The Graceful Sun-moth is listed as Priority 4 by DBCA.

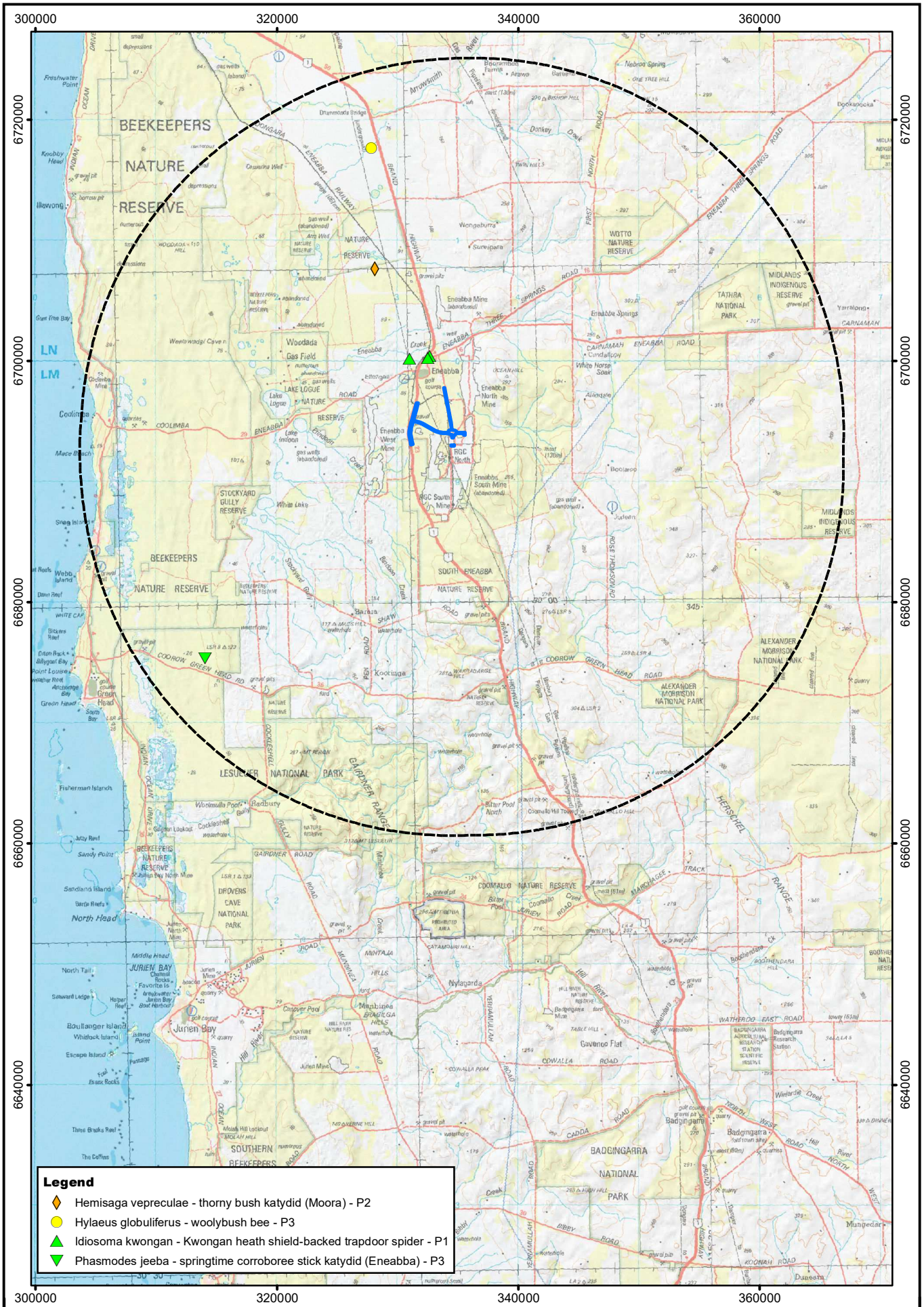
The Graceful Sunmoth occurs in coastal heaths and *Banksia* woodlands in a coastal strip from Kalbarri south to Binningup (TSSC 2013a). The larval stage of this species feeds on native sedges *Lomandra hermaphrodita* and *Lomandra maritima*, and populations of the sun-moth occur where these plants occur. The life-cycle is thought to take two years, with the adult sun-moths flying between mid-February and late March (TSSC 2013a). Although known from the region, there are no records of this species within 30km of the study area on DBCA's Threatened and Priority Fauna Database (DBCA 2021). The Graceful Sun-moth is unlikely to occur in the study area, instead favouring coastal heaths with *Lomandra maritima*.

A Millipede – *Antichiropus sulcatus*

This millipede has no formal conservation listing but is likely to be a short-range endemic (SRE) invertebrate.

Formerly known as *Antichiropus* 'Eneabba 1', this species was described in 2013 (Carr *et al.* 2013). It is known from the vicinity of the Eneabba Operation and has been collected in native vegetation and rehabilitation sites. It has also been collected from Cooljarloo Mine and near Mt Lesueur to the south and Adams Road to the north. Specimens labelled as from Guildford are considered erroneous, and the distribution of this species is only in the vicinity of Eneabba. As with other species in this genus, this millipede is considered an SRE as it has a very small distribution, has limited capability for dispersal and is limited to small periods of above-ground activity, when conditions are sufficiently moist to allow foraging and mating (Carr *et al.* 2013). As this species has previously been recorded nearby at the Eneabba Operations, it potentially occurs in damp situations in the study area.

It is unlikely that *Antichiropus sulcatus* is the only SRE invertebrate, however, the small size of the study area is unlikely to overlap the entire range of any SRE species. Any SRE species that occurs in the study area is also likely to occur in heaths in neighbouring areas.



- Legend**
- ◆ Hemisaga vepreculata - thorny bush katydid (Moora) - P2
 - Hylaeus globuliferus - woolybush bee - P3
 - ▲ Idiosoma kwongan - Kwongan heath shield-backed trapdoor spider - P1
 - ▼ Phasmodes jeeba - springtime corroboree stick katydid (Eneabba) - P3

Drawn: CAD Resources
 www.cadresources.com.au
 Tel: (08) 9246 3242
 CAD Ref: a2937Fa008 A4
 Date: April 2023 Rev: A Author: J. Wilcox

N 0 3 6 km
 Scale: 1:425,000
 MGA94 (Zone 50)



**Eneabba Mine Access Road
 DBCA Threatened and Priority
 invertebrate fauna records**

Figure: **9**

7. Conclusions

The habitats of the study area are widespread in the region. The faunal assemblage is likely to be typical of Kwongan heaths of the region, although the assemblage in the study area may be somewhat depauperate as the native habitats are fragmented and likely to be subject to the impacts of weed invasion and the presence of feral predators.

Of seven conservation significant vertebrates identified as potentially occurring in the region, one is considered unlikely to occur as its thought to be locally extinct in the region (Woma – *Aspidites ramsayi*). Two species may possibly occur, although the study area is unlikely to provide important habitat for them and the lack of records of these distinctive species suggest they are uncommon (Malleefowl – *Leipoa ocellata* and Western Brush Wallaby – *Notamacropus irma*). Two species are known from the region and potentially occur, although the habitats of the study area are unlikely to be important for them and their populations are considered large and secure (Peregrine Falcon – *Falco peregrinus*, Fork-tailed Swift – *Apus pacificus*). One species is likely to occur in the sandy soils of the Kwongan heaths and has been recently recorded nearby (Black-striped Snake – *Neelaps calonotos*).

Carnaby's Cockatoo (*Calyptorhynchus latirostris*) was recorded, with foraging signs present in the study area. No breeding habitat is present and no breeding habitat is known to occur within 12km of the study area, although birds are known to roost nearby at Eneabba and the administration building at the Eneabba Mine. The birds present are likely to be a flock of overwintering foraging birds that breed elsewhere in the wheatbelt. The study area provides 105.0ha of foraging habitat in native kwongan heath, and rehabilitation – shrublands and heaths of which 13.3ha is low value, 4.1ha is moderate value and 87.6ha is high value. This non-breeding foraging resource can be considered habitat critical to the survival of the species. Loss of >1ha of high-quality foraging habitat is considered likely to have a significant impact on this EPBC-listed Threatened species (DAWE 2022).

Of eight conservation significant invertebrates identified as potentially occurring in the region, two are considered unlikely to occur due to taxonomic change (Shield-backed Trapdoor Spider – *Idiosoma nigrum*) or lack of suitable habitat (Graceful Sun-moth – *Synemon gratiosa*). Two species possibly occur, one that has been surveyed for in the past but not found (Kwongan Shield-backed Trapdoor Spider – *Idiosoma kwongan*) and one that favours moist situations (Earwig Fly – *Austromerope poultoni*), however, all are poorly known. Four species potentially occur in Kwongan heath, also all poorly known (Woolybush Bee – *Hylaeus globuliferus*, Springtime Corroboree Stick Katydid – *Phasmodes jeeba*, Thorny Bush Katydid – *Hemisaga vepreculae* and a millipede – *Antichiropus sulcatus*). In general, the lack of records of these species makes their status in the study area and the broader region difficult to ascertain. However, any of these species that occurs in the study area are also likely to occur in neighbouring heaths. The millipede *Antichiropus sulcatus*, is a probable short-range endemic (SRE) species. It is likely to occur in moist situations and only be active during damp conditions. It is unlikely that *Antichiropus sulcatus* is the only SRE invertebrate present, however, the small size of the study area is unlikely to overlap the entire range of any SRE species. Any SRE species that occurs in the study area is also likely to occur in heaths in neighbouring areas.

8. References

- Abbot, I. (2008). Historical perspectives of the ecology of some conspicuous vertebrate species in south-west Western Australia. *Conservation Science Western Australia* 6(3): 1 – 214.
- Abbot, I., Burbidge, T. and Wills, A. (2007). Austromerope poultoni (Insecta, Mecoptera) in south-west Western Australia: occurrence, modelled geographical distribution, and phenology. *Journal of the Royal Society of Western Australia* 90: 97-106.
- Bamford, M.J. (2007a). *Fauna Values of Proposed Future Mining Areas in the Eneabba Region*. Unpubl. report by Bamford Consulting Ecologists to Iluka Resources, Eneabba.
- Bamford, M.J. (2007b). *Survey for the Shield-backed Trapdoor Spider Idiosoma nigrum in Iluka lease areas at Eneabba*. Unpubl. report by Bamford Consulting Ecologists to Iluka Resources, Eneabba.
- Bamford, M.J. (2009). *Fauna Investigations of Iluka's Proposed Eneabba Future Mining Operations with a focus on IPL North and IPL South Deposits* (Bamford 2009).
- Bancroft, W.J. and Bamford, M.J. (2006). *Fauna Review; Eneabba*. Unpubl. report by Bamford Consulting Ecologists to Iluka Resources, Eneabba.
- Barrett, G., Silcocks, A., Barry, S., Cunningham, R. and Poulter, R. (2003). *The New Atlas of Australian Birds*. Royal Australasian Ornithologists Union, Victoria.
- Beard, J.S. (1990). *Plant Life of Western Australia*. Kangaroo Press Pty Ltd, New South Wales.
- Benshemesh, J. (2007). *National Recovery Plan for Malleefowl*. Department for Environment and Heritage, South Australia.
- BirdLife Australia (2019). Black-cockatoo breeding sites – buffered. URL: <https://catalogue.data.wa.gov.au/dataset/black-cockatoo-breeding-sites-buffered>
- BirdLife Australia (2020). Black-cockatoo roosting sites – buffered. URL: <https://catalogue.data.wa.gov.au/dataset/black-cockatoo-roosting-sites-buffered>
- BirdLife International (2022). IUCN Red List for birds. URL: <http://www.birdlife.org>
- Boehm, E.F. (1962). Some habits of the Fork-tailed Swift. *Emu* 61(4) 281-282.
- Bush, B., Maryan, B., Browne-Cooper, R. and Robinson, R. (2007). *Reptiles and Frogs in the Bush: Southwestern Australia*. University of Western Australia Press, Crawley, Western Australia.
- Carr, C.A., Wojcieszek, J.M. and Harvey, M.S. (2013). The millipede genus *Antichiropus* (Diplopoda: Polydesmida: Paradoxosomatidae), part 1: redefinition of the genus and redescription of existing species. *Records of the Western Australian Museum* 28: 83 – 118.
- Churchill, S. (1998). *Australian Bats*. Reed New Holland, Sydney.
- Cogger, H.G., Cameron, E.E., Sadler, R.A. and Egger, P. (1993). *The Action Plan for Australian Reptiles*. Endangered Species Programme Project Number 124, Australian Nature Conservation Agency, Canberra.
- Debus, S. (1998). *The Birds of Prey of Australia: A Field Guide*. Oxford University Press, Australia.
- Desmond, A. and Chant, A. (2001). Geraldton Sandplains 3 (GS3 – Lesueur Sandplains Subregion). In 'A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002'. Ed by J.E. May and N.L. McKenzie. Department of Conservation and Land Management, Western Australia.
- DAWE (Department of Agriculture, Water and Environment) (2022). *Referral guideline for 3 WA threatened black cockatoo species: Carnaby's Cockatoo (Zanda latirostris), Baudin's Cockatoo (Zanda baudinii) and the Forest Red-tailed Black-Cockatoo (Calyptorhynchus banksii naso)*.

- DBCA (2007-). *Naturemap: Mapping Western Australia's Biodiversity*. Department of Environment and Conservation. URL: <http://naturemap.dec.wa.gov.au/>
- DBCA (2021). Threatened and Priority Fauna Database Extract. June 2021.
- DPAW (Department of Parks and Wildlife) (2013). *Carnaby's cockatoo (Calyptorhynchus latirostris) Recovery Plan*. Department of Parks and Wildlife, Perth, Western Australia.
- DEWHA (Department of the Environment, Water, Heritage and the Arts) (2004). Interim Biogeographic Regionalisation for Australia (IBRA), Version 6.1.
- DPIRD (Department of Primary Industries and Regional Development) (2022). Eneabba Weather Station (EN001). URL: <https://weather.agric.wa.gov.au/station/EN001>.
- DSEWPac (Department of Sustainability, Environment, Water, Populations and Communities) (2012). *EBPC Act referral guidelines for three threatened black cockatoo species*. URL: <http://www.environment.gov.au/epbc/publications/wa-black-cockatoos.html>.
- EPA (Environmental Protection Authority) (2020). *Technical Guidance – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment*. EPA, Western Australia.
- Everard, C., Bamford, M. and Bancroft, W. (2010). *Impact of mulch harvesting on fauna at Iluka's Eneabba operations*. Unpubl. Report to Iluka by Bamford Consulting Ecologists, Kingsley.
- Everard, C. and Bamford, M. (2013). *Iluka Resources Limited IPL North Project Area Fauna Assessment*. Unpubl. Report to Iluka by Bamford Consulting Ecologists, Kingsley.
- Foulds, B. and McMillan, P. (1982). *An Ecological Study of Heathlands of the Leeman Area, Western Australia*. Western Australian College of Advanced Education, Claremont, Western Australia.
- Garnett, S.T. Szabo, J.K. and Dutson, G. (2011). *The Action Plan for Australian Birds 2010*. CSIRO Publishing, Collingwood, Victoria.
- Glossop, B. Clarke, K., Mitchell, D. and Barret, G. (2011). *Methods for mapping of Carnaby's Cockatoo Habitat*. Government of Western Australia 2011. URL: <https://catalogue.data.wa.gov.au/dataset/carnabys-cockatoo-confirmed-roost-sites>, <https://catalogue.data.wa.gov.au/dataset/carnabys-cockatoo-confirmed-breeding-areas>
- Government of Western Australia (2000). *Bush Forever Volume 2*. Department of Environmental Protection, Perth.
- HGM. (1998). *Eneabba Invertebrate and Vertebrate Fauna Monitoring*. Unpublished report prepared for RGC Mineral Sands Ltd by Halpern Glick Maunsell Pty Ltd Consulting Engineers and Environmental Scientists, Leederville, Western Australia.
- HGM. (2001). *Baseline Fauna Survey for IPL Central and IBL North*. Unpublished report prepared for Iluka Resources Limited by Halpern Glick Maunsell Pty Ltd Consulting Engineers and Environmental Scientists, Leederville, Western Australia.
- Johnstone, R.E. & Storr, G.M. (1998). *Handbook of Western Australian Birds. Volume 1: Nonpasserines (Emu to Dollarbird)*. Western Australian Museum, Perth.
- Johnstone, R.E. & Storr, G.M. (2004). *Handbook of Western Australian Birds. Volume 2: Passerines (Blue-winged Pitta to Goldfinch)*. Western Australian Museum, Perth.
- McMillan, R. P., Colum, R. J. and Petersen, A. E. (1992). *Faunal Recolonisation of Rehabilitated Land at RGC Mineral Sands Mine Site, Eneabba, Western Australia, Between December 1988 and December 1991*. Unpublished, internal report to RGC Mineral Sands, Eneabba, Western Australia.
- McNee, S. A., Zigon, A. and Collins, B. G. (1995). *Population Ecology of Vertebrates in Undisturbed and Rehabilitated Habitats on the Northern Sandplain of Western Australia*. Bulletin No. 16. School of Environmental Biology, Curtin University of Technology, Bentley, Western Australia.

- Menkhorst, P. and Knight, F. (2011). *A field guide to the mammals of Australia*. 3rd Edition. Oxford University Press, South Melbourne.
- Padil (2017). Native globuliferus hylaeine. URL: <http://www.padil.gov.au/pollinators/pest/specimens/139549#map>. Accessed November 2017.
- Rentz, D. (2010). *A Guide to the Katydid of Australia*. CSIRO Publishing, Collingwood, Victoria.
- Rix, M.G., Huey, J.A., Cooper, S.J.B., Austin, A.D. and Harvey, M.S. (2018). Conservation systematics of the shield-backed trapdoor spiders of the *nigrum*-group (*Mygalomorphae*, *Idiopidae*, *Idiosoma*): integrative taxonomy reveals a diverse and threatened fauna from south-western Australia. *Zookeys* 2018 (756) 1 – 121. Published online 2018 May 9. URL: [10.3897/zookeys.756.24397](https://doi.org/10.3897/zookeys.756.24397)
- Storr, G.M., Smith, L.A. and Johnstone, R.E. (1983). *Lizards of Western Australia. II. Dragons and Monitors*. W.A. Museum, Perth.
- Storr, G.M., Smith, L.A. and Johnstone, R.E. (2002). *Snakes of Western Australia*. W.A. Museum, Perth.
- Storr, G.M., Smith, L.A. and Johnstone, R.E. (1990). *Lizards of Western Australia. III. Geckoes and Pygopods*. W.A. Museum, Perth.
- Storr, G.M., Smith, L.A. and Johnstone, R.E. (1999). *Lizards of Western Australia. I. Skinks*. 2nd edition. W.A. Museum, Perth.
- TSSC (Threatened Species Scientific Committee) (2013a). *Advice to the Minister for Sustainability, Environment, Water, Population and Communities from the Threatened Species Scientific Committee (the Committee) on amendment to the list of Threatened Species under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* DSEWPaC, Canberra. URL: <http://www.environment.gov.au/biodiversity/threatened/species/pubs/66757-listing-advice.pdf>
- TSSC (Threatened Species Scientific Committee) (2013b). *Approved Conservation Advice for Idiosoma nigrum (shield-back spider)*. DSEWPaC, Canberra. URL: <http://www.environment.gov.au/biodiversity/threatened/species/pubs/66798-conservation-advice.pdf>.
- Tyler, M.J. (1998). *The Action Plan for Australian Frogs*. Environment Australia, Canberra.
- Tyler, M.J., Smith, L.A. and Johnstone, R.E. (2000). *Frogs of Western Australia*. W.A. Museum, Perth.
- Van Dyck and Strahan, R. (Ed.) (2008). *The Mammals of Australia*. 3rd Edition. Australian Museum/Reed Books, Sydney.
- Western Wildlife (2021). *Eneabba Phase 3 Project: Basic Vertebrate Fauna Survey and Cockatoo Habitat Survey 2021*. Unpublished report to Iluka Resources Limited.
- Western Wildlife (2022). *Eneabba Banksia Camp: Basic Vertebrate Fauna Survey and Cockatoo Habitat Survey 2021*. Unpublished report to Iluka Resources Limited.
- Woinarski, J.C.Z., Burbidge, A.A. and Harrison, P.L. (2014). *The Action Plan for Australian Mammals 2012*. CSIRO Publishing.
- Woodman Environmental Consulting (2012). *Summary Report of Flora and Vegetation Studies 2001 to 2011*. Unpublished Report for Iluka Resources Limited.

Appendix 1. Amphibians potentially occurring in the study area.

Study area = species recorded in the study area during the 2021 fauna survey.

Previous studies = records from the following studies in the vicinity of the survey area:

- a – Fauna recorded at South Eneabba Nature Reserve in 1981 (Dunlop 1981)
- b – Vertebrate fauna recorded at rehabilitation sites at Eneabba Operations (McMillan *et al.* 1992)
- c – Fauna recorded in rehabilitation and sandplains (McNee *et al.* 1995)
- d – Fauna recorded in rehabilitation areas at Eneabba Operations (HGM 1998)
- e – Baseline fauna survey at IPL Central and IBL North at Eneabba Operations (HGM 2001)
- f – Fauna recorded at Eneabba Operations in 2007 (Bamford 2007a)
- g – Fauna recorded at Eneabba Operations in 2009 (Bamford 2009)
- h – Fauna recorded at Eneabba Operations 2010 (Everard *et al.* 2010)
- i – Fauna recorded at Eneabba Operations 2013 (Everard and Bamford 2013)
- j – Fauna recorded at Eneabba Operations in 2021 (Western Wildlife 2021)
- k – Fauna recorded at Eneabba Banksia Camp in 2021 (Western Wildlife 2022)

ALA = species recorded in the area on the Atlas of Living Australia (see Table 1).

WAM = species recorded in the area on the Western Australian Museum Specimen Database (see Table 1).

FSDB = species recorded in the area on the Fauna Survey Returns Database (see Table 1).

TF = species recorded in the area on the DBCA Threatened and Priority Fauna Database (see Table 1).

EPBC = species or species habitat recorded in the area on the EPBC Protected Matters Search Tool (see Table 1).

Appendix 1 - Frogs								
Species	Conservation Status	Records						
		Study area	Previous studies	ALA	WAM	FSDB	TF	EPBC
Hylidae (tree frogs and water-holding frogs)								
Slender Tree Frog				+				
<i>Litoria adelaidensis</i>								
Motorbike Frog			b e	+	+			
<i>Litoria moorei</i>								
Limnodynastidae (ground frogs)								
Western Spotted Frog			c e h	+	+	+		
<i>Heleioporus albopunctatus</i>								
Moaning Frog			b c d e h	+	+	+		
<i>Heleioporus eyrei</i>								
Sand Frog			e h	+		+		
<i>Heleioporus psammophilus</i>								
Banjo Frog / Pobblebonk			b c d e	+				
<i>Limnodynastes dorsalis</i>								
Humming Frog			b c f					
<i>Neobatrachus pelabatoides</i>								
Myobatrachidae (ground frogs)								
Turtle Frog			b c e i			+		
<i>Myobatrachus gouldii</i>								
Bleating Froglet			d j	+	+			
<i>Crinia pseudinsignifera</i>								
Crawling Toadlet			c e j	+	+			
<i>Pseudophryne guentheri</i>								
Number of frog species:		10 (0 recorded)						

Appendix 2. Reptiles potentially occurring in the study area.

Study area = species recorded in the study area during the 2021 fauna survey.

Previous studies = records from the following studies in the vicinity of the survey area:

- a – Fauna recorded at South Eneabba Nature Reserve in 1981 (Dunlop 1981)
- b – Vertebrate fauna recorded at rehabilitation sites at Eneabba Operations (McMillan *et al.* 1992)
- c – Fauna recorded in rehabilitation and sandplains (McNee *et al.* 1995)
- d – Fauna recorded in rehabilitation areas at Eneabba Operations (HGM 1998)
- e – Baseline fauna survey at IPL Central and IBL North at Eneabba Operations (HGM 2001)
- f – Fauna recorded at Eneabba Operations in 2007 (Bamford 2007a)
- g – Fauna recorded at Eneabba Operations in 2009 (Bamford 2009)
- h – Fauna recorded at Eneabba Operations 2010 (Everard *et al.* 2010)
- i – Fauna recorded at Eneabba Operations 2013 (Everard and Bamford 2013)
- j – Fauna recorded at Eneabba Operations in 2021 (Western Wildlife 2021)
- k – Fauna recorded at Eneabba Banksia Camp in 2021 (Western Wildlife 2022)

ALA = species recorded in the area on the Atlas of Living Australia (see Table 1).

WAM = species recorded in the area on the Western Australian Museum Specimen Database (see Table 1).

FSDB = species recorded in the area on the Fauna Survey Returns Database (see Table 1).

TF = species recorded in the area on the DBCA Threatened and Priority Fauna Database (see Table 1).

EPBC = species or species habitat recorded in the area on the EPBC Protected Matters Search Tool (see Table 1).

Appendix 2 - Reptiles								
Species	Conservation Status	Records						
		Study area	Previous studies	ALA	WAM	FSDB	TF	EPBC
Carpodactylidae (knob-tailed geckoes)								
Barking Gecko <i>Underwoodisaurus milii</i>					+			
Diplodactylidae (geckoes)								
Clawless Gecko <i>Crenadactylus ocellatus</i>			g f	+				
Wheatbelt Stone Gecko <i>Diplodactylus granariensis</i>			d					
Ornate Gecko <i>Diplodactylus ornatus</i>				+	+			
Spotted Sandplian Gecko <i>Diplodactylus polyophthalmus</i>			a	+	+			
White-spotted Ground-gecko <i>Lucasium alboguttatum</i>				+	+			
Soft Spiny-tailed Gecko <i>Strophurus spinigerus</i>			a b c d e h	+	+	+		
Gekkonidae (geckoes)								
Marbled Gecko <i>Christinus marmoratus</i>				+				
Varieagted Dtella <i>Gehyra variegata</i>			b f	+	+			
Pygopodidae (legless lizards)								
Sand-plain Worm-lizard <i>Aprasia repens</i>			a f	+	+			
Javelin Legless Lizard <i>Delma concinna</i>			a					
Fraser's Legless Lizard <i>Delma fraseri</i>			b		+			
Gray's Legless Lizard <i>Delma grayii</i>			d	+	+			
Burton's Legless Lizard <i>Lialis burtonis</i>			a c f h	+	+	+		
Keeled Legless Lizard <i>Pletholax gracilis</i>			h		+	+		
Common Scaley-foot <i>Pygopus lepidopodus</i>			d f		+			
Agamidae (dragon lizards)								
Southern Heath Dragon <i>Ctenophorus adelaidensis</i>		+	a b c e f g h	+	+	+		
Spotted Military Dragon <i>Ctenophorus maculatus</i>			a c d f g h	+	+			
Thorny Devil <i>Moloch horridus</i>			a					
Bearded Dragon <i>Pogona minor</i>			a c d e f g h	+	+	+		

Appendix 2 - Reptiles								
Species	Conservation Status	Records						
		Study area	Previous studies	ALA	WAM	FSDB	TF	EPBC
Scincidae (skink lizards)								
Fence Skink	<i>Cryptoblepharus buchananii</i>		a b	+	+			
Limestone Ctenotus	<i>Ctenotus australis</i>			+	+			
West Coast Ctenotus	<i>Ctenotus fallens</i>		a c d e f g h i		+	+		
South-western Odd-striped Ctenotus	<i>Ctenotus impar</i>		a b	+	+			
Leopard Ctenotus	<i>Ctenotus pantherinus</i>		a b c d e h	+	+	+		
	<i>Ctenotus schomburgkii</i>		a c	+	+			
Western Slender Blue-tongue	<i>Cyclodomorphus celatus</i>		f	+	+			
Broad-banded Sand Swimmer	<i>Eremiascincus richardsonii</i>							
Bold-striped Slider	<i>Lerista christinae</i>		b d	+	+			
	<i>Lerista distinguenda</i>							
	<i>Lerista elegans</i>			+	+			
	<i>Lerista lineopunctulata</i>			+	+			
	<i>Lerista praepedita</i>		a b c e f g h i	+	+	+		
Bull Skink	<i>Liopholis multiscutata</i>			+	+			
Dwarf Skink	<i>Menetia greyii</i>		a d e f h i	+	+	+		
	<i>Morethia lineoocellata</i>							
	<i>Morethia obscura</i>		a	+	+			
Western Bluetongue	<i>Tiliqua occipitalis</i>		a d					
Bobtail	<i>Tiliqua rugosa</i>		a b c d e f g h	+	+			
Varanidae (monitors & goannas)								
Gould's Goanna	<i>Varanus gouldii</i>		a f g j					
Black-tailed Monitor	<i>Varanus tristis</i>		d e					
Typhlopidae (blind snakes)								
Southern Blind Snake	<i>Anilius australis</i>							
Prong-snouted Blind Snake	<i>Anilius bituberculatus</i>							
	<i>Anilius hamatus</i>							
	<i>Anilius waitii</i>				+			
Boidae (pythons)								
Stimson's Python	<i>Antaresia stimsoni</i>			+				
Woma (southwest population)	<i>Aspidites ramsayi</i>	P						
Carpet Python	<i>Morelia spilota</i>							
Elapidae (front-fanged snakes)								
Narrow-banded Shovel-nosed Snake	<i>Brachyuropis fasciolatus</i>							
Southern Shovel-nosed Snake	<i>Brachyuropis semifasciatus</i>							
Yellow-faced Whipsnake	<i>Demansia reticulata</i>		f					
Bardick	<i>Echiopsis curta</i>		c g	+	+			
Black-naped Snake	<i>Neelaps bimaculatus</i>							
Black-striped Snake	<i>Neelaps calonotos</i>	P					+	
Gould's Hooded Snake	<i>Parasuta gouldii</i>		b c		+			

Appendix 2 - Reptiles								
Species	Conservation Status	Records						
		Study area	Previous studies	ALA	WAM	FSDB	TF	EPBC
Mulga Snake	<i>Pseudechis australis</i>		e h	+	+			
Ringed Brown Snake	<i>Pseudonaja modesta</i>							
Western Brown Snake / Gwardar	<i>Pseudonaja mengdeni</i>		e f g i	+	+	+		
Jan's Banded Snake	<i>Simoselaps bertholdi</i>				+			
West Coast Banded Snake	<i>Simoselaps littoralis</i>		c	+	+			
Number of reptile species:			60 (1 recorded)					

Appendix 3. Birds potentially occurring in the study area.

Study area = (+) species recorded in the study area during the 2021 fauna survey.

Previous studies = records from the following studies in the vicinity of the survey area:

- a – Fauna recorded at South Eneabba Nature Reserve in 1981 (Dunlop 1981)
- b – Vertebrate fauna recorded at rehabilitation sites at Eneabba Operations (McMillan *et al.* 1992)
- c – Fauna recorded in rehabilitation and sandplains (McNee *et al.* 1995)
- d – Fauna recorded in rehabilitation areas at Eneabba Operations (HGM 1998)
- e – Baseline fauna survey at IPL Central and IBL North at Eneabba Operations (HGM 2001)
- f – Fauna recorded at Eneabba Operations in 2007 (Bamford 2007a)
- g – Fauna recorded at Eneabba Operations in 2009 (Bamford 2009)
- h – Fauna recorded at Eneabba Operations 2010 (Everard *et al.* 2010)
- i - Fauna recorded at Eneabba Operations 2013 (Everard and Bamford 2013)
- j – Fauna recorded at Eneabba Operations in 2021 (Western Wildlife 2021)
- k – Fauna recorded at Eneabba Banksia Camp in 2021 (Western Wildlife 2022)

BA = species recorded in the area on the Birds Australia Atlas Database (see Table 1).

Birdata = species recorded in the area on the Birdata Database (see Table 1).

WAM = species recorded in the area on the Western Australian Museum Specimen Database (see Table 1).

FSDB = species recorded in the area on the Fauna Survey Returns Database (see Table 1).

TF = species recorded in the area on the DBCA Threatened and Priority Fauna Database (see Table 1).

EPBC = species or species habitat recorded in the area on the EPBC Protected Matters Search Tool (see Table 1).

Appendix 3 - Birds										
Species	Conservation Status	Records								
		Study area	Previous studies	ALA	BA	Birdata	WAM	FSDB	TF	EPBC
Dromaiidae (emu) Emu <i>Dromaius novaehollandiae</i>		+	d e f h i j	+	+			+		
Megapodiidae (mound-builders) Malleefowl <i>Leipoa ocellata</i>	T									+
Phasianidae (quails) Stubble Quail <i>Coturnix pectoralis</i>			g h							
Accipitridae (osprey, hawks, eagles and harriers) Black-shouldered Kite <i>Elanus caeruleus</i>			a d	+	+					
Square-tailed Kite <i>Hamirostra isura</i>				+						
Whistling Kite <i>Haliastur sphenurus</i>				+	+					
Brown Goshawk <i>Accipiter fasciatus</i>			d e f h	+	+	+				
Collared Sparrowhawk <i>Accipiter cirrocephalus</i>			d h	+	+	+				
Little Eagle <i>Aquila morphnoides</i>			e f	+	+	+				
Wedge-tailed Eagle <i>Aquila audax</i>			a d e f g i	+	+			+		
Spotted Harrier <i>Circus assimilis</i>			i	+	+			+		
Rallidae (crakes, rails, coots & allies) Black-tailed Native Hen <i>Gallinula ventralis</i>				+						
Turnicidae (button-quails) Painted Button-quail <i>Turnix varius</i>			a d j							
Little Button-quail <i>Turnix velox</i>			d e i	+	+			+		
Charadriidae (plovers, dotterels and lapwings) Banded Lapwing <i>Vanellus tricolor</i>		+	g	+	+					
Columbidae (pigeons and doves) Domestic Pigeon <i>Columa livia</i>	Int.		d	+	+					+

Appendix 3 - Birds										
Species	Conservation Status	Records								
		Study area	Previous studies	ALA	BA	Birdata	WAM	FSDB	TF	EPBC
Common Bronzewing <i>Phaps chalcoptera</i>			a d e f h j	+	+	+				
Brush Bronzewing <i>Phaps elegans</i>			d i	+	+			+		
Crested Pigeon <i>Ocyphaps lophotes</i>		+	d e f g h i j	+	+	+		+		
Laughing Turtle-dove <i>Spilopelia senegalensis</i>	Int.			+						
Cuculidae (cuckoos)										
Fan-tailed Cuckoo <i>Cacomantis flabelliformis</i>			f j	+	+	+				
Pallid Cuckoo <i>Cacomantis pallidus</i>		+	f i	+	+			+		
Black-eared Cuckoo <i>Chrysococcyx osculans</i>				+						
Horsfield's Bronze-Cuckoo <i>Chrysococcyx basalis</i>		+	e f g h i	+				+		
Shining Bronze-Cuckoo <i>Chrysococcyx lucidus</i>			f	+						
Strigidae (hawk owls)										
Boobook Owl <i>Ninox boobook</i>			h	+	+		+			
Tytonidae (barn owls)										
Barn Owl <i>Tyto alba</i>			f							
Podargidae (frogmouths)										
Tawny Frogmouth <i>Podargus strigoides</i>				+	+					
Aegothelidae (owlet-nightjars)										
Australian Owlet-Nightjar <i>Aegotheles cristatus</i>										
Apodidae (swifts)										
Fork-tailed Swift <i>Apus pacificus</i>	Mi				+					+
Alcedinidae (kingfishers)										
Laughing Kookaburra <i>Dacelo novaeguineae</i>	Int.			+	+	+				
Red-backed Kingfisher <i>Todiramphus pyrropygia</i>			d e i	+	+			+		
Sacred Kingfisher <i>Todiramphus sanctus</i>			a	+	+					
Meropidae (bee-eaters)										
Rainbow Bee-eater <i>Merops ornatus</i>			a d e g h k	+	+	+	+			
Falconidae (falcons)										
Brown Falcon <i>Falco berigora</i>			a d e f g h	+	+	+				
Australian Kestrel <i>Falco cenchroides</i>		+	a d e f h i j	+	+	+		+		
Australian Hobby <i>Falco longipennis</i>				+	+			+		
Peregrine Falcon <i>Falco peregrinus</i>	Sp		f	+						
Cacatuidae (cockatoos)										
Galah <i>Eolophus roseicapilla</i>			a d e f g h i j k		+			+		
Major Mitchell's Cockatoo <i>Cacatua leadbeateri</i>										
Western Long-billed Corella <i>Cacatua pastinator</i>			d h	+	+	+				
Little Corella <i>Cacatua sanguinea</i>			k	+	+	+				
Red-tailed Black-Cockatoo <i>Calyptorhynchus banksii</i>				+		+				
Carnaby's Black-Cockatoo <i>Calyptorhynchus latirostris</i>	T	+	a d h j	+	+	+	+			+
Cockatiel <i>Nymphicus hollandicus</i>			e	+	+					
Psittacidae (parrots, lorikeets & rosellas)										

Appendix 3 - Birds										
Species	Conservation Status	Records								
		Study area	Previous studies	ALA	BA	Birdata	WAM	FSDB	TF	EPBC
Budgerigar	<i>Melopsittacus undulatus</i>		i	+	+			+		
Elegant Parrot	<i>Neophema elegans</i>		j							
Mulga Parrot	<i>Platycercus varius</i>			+						
Australian Ringneck	<i>Platycercus zonarius</i>		d e f g h j	+	+					
Regent Parrot	<i>Polytelis anthopeplus</i>			+						
Maluridae (fairy-wrens, grasswrens and emu-wrens)										
Variegated Fairy-wren	<i>Malurus lamberti</i>	+	a d e f g j	+	+	+	+			
White-winged Fairy-wren	<i>Malurus leucopterus</i>	+	a d f g h i j	+	+	+	+	+		
Blue-breasted Fairy-wren	<i>Malurus pulcherrimus</i>		d	+	+	+				
Splendid Fairy-wren	<i>Malurus splendens</i>		d g j	+	+	+				
Southern Emu-wren	<i>Stipiturus malachurus</i>		d e h	+	+			+		
Meliphagidae (honeyeaters and chats)										
Spiny-cheeked Honeyeater	<i>Acanthagenys rufogularis</i>		a	+	+					
Western Spinebill	<i>Acanthorhynchus superciliosus</i>			+						
Red Wattlebird	<i>Anthochaera carunculata</i>		e f h i k	+	+	+		+		
Western Wattlebird	<i>Anthochaera lunulata</i>			+	+					
Pied Honeyeater	<i>Certhionyx vareigatus</i>			+						
Tawny-crowned Honeyeater	<i>Glyciphila melanops</i>	+	a d e f g h i j	+	+	+		+		
Brown Honeyeater	<i>Lichmera indistincta</i>	+	a d e f g i j	+	+	+		+		
Singing Honeyeater	<i>Gavialis virescens</i>	+	d e f g h i j k	+	+	+		+		
Yellow-throated Miner	<i>Manorina flavigula</i>		d i k	+	+			+		
Brown-headed Honeyeater	<i>Melithreptus brevirostris</i>		a	+	+					
White-cheeked Honeyeater	<i>Phylidonyris niger</i>	+	a d e f g h i j	+	+	+		+		
New Holland Honeyeater	<i>Phylidonyris novaehollandiae</i>		a d k	+	+					
White-fronted Honeyeater	<i>Purnella albifrons</i>		d	+						
White-fronted Chat	<i>Epthianura albifrons</i>		d f h	+	+	+				
Crimson Chat	<i>Epthianura tricolor</i>		a	+						
Pardalotidae (pardalotes)										
Spotted Pardalote	<i>Pardalotus punctatus</i>		f							
Striated Pardalote	<i>Pardalotus striatus</i>		a d e f g j	+	+	+				
Acanthizidae (thornbills, gerygones & allies)										
Inland Thornbill	<i>Acanthiza apicalis</i>			+	+					
Yellow-rumped Thornbill	<i>Acanthiza chrysorrhoa</i>	+	e f g j	+	+	+		+		
Western Thornbill	<i>Acanthiza inornata</i>		a	+	+					
Chestnut-rumped Thornbill	<i>Acanthiza uropygialis</i>			+	+					
Southern Whiteface	<i>Aphelocephala leucopsis</i>									
Rufous Fieldwren	<i>Calamanthus campestris</i>	+	a d e f g h i j	+	+			+		
Western Gerygone	<i>Gerygone fusca</i>		e f g	+	+	+				
Redthroat	<i>Pyrrholaemus brunneus</i>			+	+					
White-browed Scrubwren	<i>Sericornis frontatus</i>		d e f g j k	+	+	+	+			

Appendix 3 - Birds										
Species	Conservation Status	Records								
		Study area	Previous studies	ALA	BA	Birdata	WAM	FSDB	TF	EPBC
Weebill <i>Smicrornis brevirostris</i>			e d e h i	+	+	+		+		
Pomatostomidae (babblers)										
White-browed Babbler <i>Pomatostomus superciliosus</i>			i	+	+			+		
Artamidae (woodswallows)										
Masked Woodswallow <i>Artamus personatus</i>			a d e f g h j							
Black-faced Woodswallow <i>Artamus cinereus</i>				+	+			+		
Dusky Woodswallow <i>Artamus cyanopterus</i>				+	+	+				
Cracticidae (magpies, butcherbirds & currawongs)										
Grey Butcherbird <i>Cracticus torquatus</i>			f g	+	+	+				
Pied Butcherbird <i>Cracticus nigrogularis</i>			e g i j	+	+	+		+		
Australian Magpie <i>Cracticus tibicen</i>			e h j k	+	+	+				
Grey Currawong <i>Strepera versicolor</i>			f	+	+					
Campephagidae (cuckoo-shrikes and trillers)										
Black-faced Cuckoo-Shrike <i>Coracina novaehollandiae</i>		+	a d e f g h i k	+	+	+		+		
White-winged Triller <i>Lalage tricolor</i>			a g h	+				+		
Neosittidae (sittellas)										
Varied Sittella <i>Daphoenositta chrysoptera</i>										
Oreoicidae (crested bellbird)										
Crested Bellbird <i>Oreoica gutturalis</i>							+			
Pachycephalidae (shrike-tits, whistlers and allies)										
Western Golden Whistler <i>Pachycephala occidentalis</i>			f	+	+					
Rufous Whistler <i>Pachycephala rufiventris</i>		+	a d e f g h	+	+	+				
Grey Shrike-thrush <i>Colluricincla harmonica</i>		+	d e f g h i j	+	+	+		+		
Rhipiduridae (fantails)										
Willie Wagtail <i>Rhipidura leucophrys</i>		+	a d e f g h i j k		+	+		+		
Grey Fantail <i>Rhipidura albiscapa</i>			e g		+	+				
Monarchidae (flycatchers, monarchs & magpie-lark)										
Magpie-lark <i>Grallina cyanoleuca</i>		+	d e f g h i j k	+	+	+		+		
Corvidae (ravens and crows)										
Australian Raven <i>Corvus coronoides</i>		+	a d e f g h i j	+	+	+	+	+	+	
Little Crow <i>Corvus bennetti</i>			d f	+		+				
Petroicidae (robins)										
White-breasted Robin <i>Eopsaltria georgiana</i>			d	+	+		+			
Western Yellow Robin <i>Eopsaltria australis griseogularis</i>										
Jacky Winter <i>Microeca fascinans</i>					+	+				
Hooded Robin <i>Melanodryas cucullata</i>			a f	+						
Red-capped Robin <i>Petroica goodenovii</i>			a d f g	+	+	+	+			
Hirundinidae (swallows and martins)										
White-backed Swallow <i>Cheramoeca leucosterna</i>		+	a d e i j	+	+	+		+		
Welcome Swallow <i>Hirundo neoxena</i>		+	a d e g h i j	+	+	+		+		

Appendix 3 - Birds										
Species	Conservation Status	Records								
		Study area	Previous studies	ALA	BA	Birdata	WAM	FSDB	TF	EPBC
Tree Martin <i>Petrochelidon nigricans</i>		+	d e g h j k	+	+	+		+		
Fairy Martin <i>Petrochelidon ariel</i>			d e	+	+					
Acrocephalidae (reed-warblers)										
Australian Reed Warbler <i>Acrocephalus australis</i>				+	+	+				
Locustellidae (grassbirds, songlarks & old world warblers)										
Rufous Songlark <i>Megalurus mathewsi</i>			g h i	+	+	+		+		
Brown Songlark <i>Megalurus cruralis</i>			a e	+	+	+				
Zosteropidae (white-eyes)										
Silvereye <i>Zosterops lateralis</i>			d e f g	+	+	+				
Dicaeidae (flowerpeckers)										
Mistletoebird <i>Dicaeum hirundinaceum</i>			f	+	+	+				
Estrildidae (grassfinches and allies)										
Zebra Finch <i>Taeniopygia guttata</i>			g i	+	+			+		
Motacillidae (pipits and wagtails)										
Australian Pipit <i>Anthus australis</i>			a d e f h i j	+				+		
# bird species expected in the study area:			118 (25 recorded)							

Appendix 4. Mammals potentially occurring in the study area.

Study area = species recorded in the study area during the 2021 fauna survey.

Previous studies = records from the following studies in the vicinity of the survey area:

- a – Fauna recorded at South Eneabba Nature Reserve in 1981 (Dunlop 1981)
- b – Vertebrate fauna recorded at rehabilitation sites at Eneabba Operations (McMillan *et al.* 1992)
- c – Fauna recorded in rehabilitation and sandplains (McNee *et al.* 1995)
- d – Fauna recorded in rehabilitation areas at Eneabba Operations (HGM 1998)
- e – Baseline fauna survey at IPL Central and IBL North at Eneabba Operations (HGM 2001)
- f – Fauna recorded at Eneabba Operations in 2007 (Bamford 2007a)
- g – Fauna recorded at Eneabba Operations in 2009 (Bamford 2009)
- h – Fauna recorded at Eneabba Operations 2010 (Everard *et al.* 2010)
- i – Fauna recorded at Eneabba Operations 2013 (Everard and Bamford 2013)
- j – Fauna recorded at Eneabba Operations in 2021 (Western Wildlife 2021)
- k – Fauna recorded at Eneabba Banksia Camp in 2021 (Western Wildlife 2022)

ALA = species recorded in the area on the Atlas of Living Australia (see Table 1).

WAM = species recorded in the area on the Western Australian Museum Specimen Database (see Table 1).

FSDB = species recorded in the area on the Fauna Survey Returns Database (see Table 1).




TF = species recorded in the area on the DBCA Threatened and Priority Fauna Database (see Table 1).




EPBC = species or species habitat recorded in the area on the EPBC Protected Matters Search Tool (see Table 1).




Appendix 4 - Mammals							
Species	Conservation Status	Records					
		Study area	Previous studies	ALA	WAM	FSDB	TF
Tachyglossidae (echidnas)							
Echidna <i>Tachyglossus aculeatus</i>			a e f g i j	+		+	
Dasyuridae (dasyurid marsupials)							
Fat-tailed Dunnart <i>Sminthopsis crassicaudata</i>							
Little Long-tailed Dunnart <i>Sminthopsis dolichura</i>				+	+		
White-tailed Dunnart <i>Sminthopsis granulipes</i>			d e h	+	+		
Grey-bellied Dunnart <i>Sminthopsis griseoventer</i>			h				
Tarsipedidae (honey possum)							
Honey Possum <i>Tarsipes rostratus</i>			a b d e	+	+	+	
Macropodidae (kangaroos and wallabies)							
Western Grey Kangaroo <i>Macropus fuliginosus</i>		+	a e f i j k	+	+	+	
Western Brush Wallaby <i>Macropus irma</i>	P						
Euro <i>Macropus robustus</i>			j	+	+		
Molossidae (freetail bats)							
South-western Freetail Bat <i>Ozimops kitcheneri</i>							
White-striped Freetail Bat <i>Tadarida australis</i>			e h				
Vespertilionidae (ordinary bats)							
Gould's Wattled Bat <i>Chalinolobus gouldii</i>			a	+	+		
Chocolate Wattled Bat <i>Chalinolobus morio</i>				+	+		
Greater Long-eared Bat <i>Nyctophilus major</i>							
Southern Forest Bat <i>Vespadelus regulus</i>					+		
Inland Broad-nosed Bat <i>Scotorepens balstoni</i>							
Lesser Long-eared Bat <i>Nyctophilus geoffroyi</i>			a h	+	+		
Muridae (rats and mice)							
House Mouse <i>Mus musculus</i>	Int.		a b d e h	+	+	+	+




Appendix 4 - Mammals									
Species	Conservation Status	Records							
		Study area	Previous studies	ALA	WAM	FSDB	TF	EPBC	
Western Bush Rat <i>Rattus fuscipes</i>	Int.			+	+				
Black Rat <i>Rattus rattus</i>									
Ash-grey Mouse <i>Pseudomys albocinereus</i>			a b d e h	+	+				
Canidae (dogs and foxes)									
Fox <i>Vulpes vulpes</i>	Int.		a e f g h i j			+		+	
Dog <i>Canis familiaris familiaris</i>	Int.		e	+				+	
Felidae (cats)									
Feral/House Cat <i>Felis catus</i>	Int.		e f g h					+	
Leporidae (rabbits & hares)									
Rabbit <i>Oryctolagus cuniculus</i>	Int.	+	a e f g h i j k			+		+	
Bovidae (horned ruminants)									
Goat <i>Capra hircus</i>	Int.		f					+	
Number of mammal species:			26 (2 recorded)						




Appendix 5. Habitat assessment.




Appendix 5 – Habitat Assessment	
Description	Photograph
<p>Eohab 01</p> <p>Kwongan Heathland - uplands</p> <p>Low mixed heath with mixed shrubs including Banksia, Lambertia and sedges on grey sandy plain.</p>	
<p>Eohab 02</p> <p>Kwongan Heathland - uplands</p> <p>Mixed heath with mixed shrubs with emergent Banksia attenuata shrubs, mallee eucalypts and Woody Pear on grey sandy rise.</p>	
<p>Eohab 03</p> <p>Kwongan Heathland - uplands</p> <p>Recently burnt mixed heath including Banksia and sedges with emergent Woody Pear on grey sandy plain.</p>	




Appendix 5 – Habitat Assessment	
Description	Photograph
<p>Eohab 04</p> <p>Kwongan heath - uplands</p> <p>Recently burnt low mixed heath including Banksia and sedges on grey gravelly sand plain.</p>	
<p>Eohab 05</p> <p>Kwongan heath - uplands</p> <p>Low mixed heath including Banksia, Lambertia and sedges on grey sandy plain.</p>	
<p>Eohab 06</p> <p>Kwongan heath - uplands</p> <p>Mixed heath with emergent Banksia attenuata, Eucalyptus todtiana and Woody Pear over low shrubs and sedges on grey sandy rise.</p>	




Appendix 5 – Habitat Assessment	
Description	Photograph
<p>Eohab 07</p> <p>Kwongan heath - uplands</p> <p>Mixed heath including Hakea, Lambertia, Xanthorrhoea and sedges on grey sandy plain.</p>	
<p>Eohab 08</p> <p>Kwongan heath - uplands</p> <p>Mixed shrubby heath with Banksia telmatiaea and emergent Woody Pear and mallee eucalypts over mixed low shrubs and sedges on grey sandy plain.</p>	
<p>Eohab 09</p> <p>Kwongan heath - uplands</p> <p>Mixed heath including Banksia ad Lambertia with emergent Eucalyptus todtiana over brown clayey sand.</p>	


Appendix 5 – Habitat Assessment	
Description	Photograph
<p>Eohab 10</p> <p>Kwongan heath - uplands</p> <p>Mixed heath including Banksia, Xanthorrhoea, Allocasuarina and sedges on brown clayey sand.</p>	
<p>Eohab 11</p> <p>Kwongan heath - uplands</p> <p>Mixed heath including Banksia, Allocasuarina, Lambertia and sedges with emergent mallee eucalypts on brown clayey sand.</p>	
<p>Eohab 12</p> <p>Kwongan heath - uplands</p> <p>Mixed heath including some Banksia, Allocasuarina, Xanthorrhoea and sedges with emergent low mallee eucalypts on brown sandy clay.</p>	

Appendix 5 – Habitat Assessment	
Description	Photograph
<p>Eohab 13</p> <p>Kwongan heath - uplands</p> <p>Shrubby mixed heath with emergent <i>Banksia attenuata</i>, Woody Pear and Flame grevillea on grey sandy rise.</p>	
<p>Eohab 14</p> <p>Kwongan heath - lowlands</p> <p>Mixed heath , generally lacking proteaceous shrubs but including <i>Acacia saligna</i>, <i>Xanthorrhoea</i> and <i>Allocasuarina</i> on brown clay.</p>	
<p>Eohab 15</p> <p>Kwongan heath - lowlands</p> <p>Mixed heath , generally lacking proteaceous shrubs but including <i>Acacia saligna</i>, <i>Xanthorrhoea</i> and <i>Allocasuarina</i> with emergent Christmas Tree on brown clay.</p>	

Appendix 5 – Habitat Assessment	
Description	Photograph
<p>Eohab 16</p> <p>Rehabilitation – planted eucalypts</p> <p>Planted eucalypts on edge of farmland.</p>	
<p>Eohab 17</p> <p>Kwongan heath - uplands</p> <p>Kwongan Heath on low plain</p>	
<p>Eohab 18</p> <p>Kwongan heath - uplands</p> <p>Kwongan Heath, on sandy rise with Banksia telmatiaea, Wood Pear, Eucalyptus tottiana.</p>	

Appendix 5 – Habitat Assessment	
Description	Photograph
<p>Eohab 19</p> <p>Kwongan heath - uplands</p> <p>Melaleuca thicket in low-lying area.</p>	
<p>Eohab 20</p> <p>Kwongan heath - uplands</p> <p>Recently burnt kwongan heath, now dominated by smoke bush</p>	
<p>Eohab 21</p> <p>Rehabilitation – shrublands and heathlands</p> <p>Mixed planted shrubs.</p>	

Appendix 5 – Habitat Assessment	
Description	Photograph
<p>Eohab 22</p> <p>Rehabilitation – shrublands and heathlands</p> <p>Mixed planted tall shrubs.</p>	
<p>Eohab 23</p> <p>Rehabilitation – shrublands and heathlands</p> <p>Mixed planted trees and shrubs incl. Banksia sp. Dieback suspected.</p>	
<p>Eohab 24</p> <p>Rehabilitation – shrublands and heathlands</p> <p>Planted Banksia and Hakea spp., suspected dieback.</p>	

Appendix 5 – Habitat Assessment	
Description	Photograph
<p>Eohab 25</p> <p>Rehabilitation – shrublands and heathlands</p> <p>Revegetated kwongan heath on pale grey sand.</p>	

Appendix 6. EPBC Protected Matters Search Tool results.

Species listed for the study area with a 5km buffer on the EPBC Protected Matters Search Tool.

Species	Status	Type of presence
Curlew Sandpiper <i>Calidris ferruginea</i>	Critically Endangered & Migratory	Species or species habitat MAY OCCUR within area
Carnaby's Cockatoo <i>Calyptorhynchus latirostris</i>	Endangered	BREEDING KNOWN TO OCCUR within area
Grey Falcon <i>Falco hypoleucos</i>	Vulnerable	Species or species habitat MAY OCCUR within area
Malleefowl <i>Leipoa ocellata</i>	Vulnerable	Species or species habitat LIKELY TO OCCUR within area
Eastern Curlew <i>Numenius madagascariensis</i>	Critically Endangered & Migratory	Species or species habitat MAY OCCUR within area
Australian Painted Snipe <i>Rostratula australis</i>	Endangered	Species or species habitat MAY OCCUR within area
Chuditch <i>Dasyurus geoffroii</i>	Vulnerable	Species or species habitat LIKELY TO OCCUR within area
Ghost Bat <i>Macroderma gigas</i>	Vulnerable	Species or species habitat MAY OCCUR within area
Dibbler <i>Parantechinus apicalis</i>	Endangered	Species or species habitat MAY OCCUR within area
Western Spiny-tailed Skink <i>Egernia stokesii badia</i>	Endangered	Species or species habitat MAY OCCUR within area
Grey Wagtail <i>Motacilla cinerea</i>	Migratory (terrestrial)	Species or species habitat MAY OCCUR within area
Common Sandpiper <i>Actitis hypoleucos</i>	Migratory (wetland)	Species or species habitat MAY OCCUR within area
Sharp-tailed Sandpiper <i>Calidris acuminata</i>	Migratory (wetland)	Species or species habitat MAY OCCUR within area
Pectoral Sandpiper <i>Calidris melanotos</i>	Migratory (wetland)	Species or species habitat MAY OCCUR within area
Fork-tailed Swift <i>Apus pacificus</i>	Migratory (marine)	Species or species habitat LIKELY TO OCCUR within area

Appendix 7. Foraging Quality Scoring Tool

Attribute	Carnaby's Cockatoo
Starting Score	10 The 123.8ha site contains 89.2ha of foraging habitat, consisting of Kwongan Heath – uplands (86.8ha) and Rehabilitation – Shrublands and Heathlands (2.4ha) that provide foraging plant species such as <i>Banksia attenuata</i> , other <i>Banksia spp.</i> , <i>Hakea spp.</i> and <i>Lambertia sp.</i>
Foraging Potential <i>Subtract 2 from your score if there is no evidence of feeding debris on your site.</i>	-0 Evidence of foraging present throughout the site (see Figure 8).
Connectivity <i>Subtract 2 from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site.</i>	-0 Site is within 12km of similar Kwongan heaths that are also likely to provide foraging habitat, including large areas in South Eneabba Nature Reserve and Beekeepers Nature Reserve Lake Logue Nature Reserve.
Proximity to breeding <i>Subtract 2 if you have evidence to conclude that your site is more than 12 km from breeding habitat</i>	-2 No breeding is known or considered likely to occur within 12km of the site due to the lack of woodland habitats in the surrounding region.
Proximity to roosting <i>Subtract 1 if you have evidence to conclude that your site is more than 20 km from a known night roosting habitat.</i>	-0 Site is within 20km of known roosting sites, including a site at Eneabba, about 5km north (see Figure 7).
Impact from significant plant disease <i>Subtract 1 if your site has disease present (e.g. <i>Phytophthora spp.</i> or Marri canker) and the disease is affecting more than 50% of the preferred food plants present.</i>	-0 No significant plant disease noted during field survey. Iluka staff report the possibility of dieback being present in rehabilitation areas, as evidenced by deaths of proteaceous species, however, this has not been confirmed by dieback testing and it does not affect the entire site.
Total Score	8
Appraisal	Overall, the site is likely to comprise high quality foraging habitat. Although not likely to be within 12km of breeding habitat, there are known night roosts nearby and the foraging habitat potentially support these roosts of non-breeding birds. There was evidence of foraging present across the site and there are large areas of Kwongan heaths in the region that are also likely to provide foraging habitat. Note that although this score applies to the site as a whole, the 22.8ha of cleared land do not provide foraging habitat.

Appendix 4: Main Roads WA - Letter of Authority



mainroads
WESTERN AUSTRALIA

Enquiries: Jerolina Rankin on 08 9956 1229

Our Ref: 20/4153

Your Ref: N/A

5 May 2023

Ben Kraft
Principal Advisor
Iluka Resources Limited

By email: Ben.Kraft@iluka.com

Dear Ben,

Letter of Authority for Clearing Permit Application within Brand Highway Road Reserve – Brand Highway and Iluka Mine Access Road Upgrade, H004 SLK 219.

Thank you for your recent email correspondence dated 4 May 2023 requesting for a letter of authority from Main Roads to form part of the clearing permit application to upgrade Brand Highway and Iluka Mine Access Road intersection at Eneabba.

Main Roads in principle supports Iluka to undertake clearing works within the Brand Highway road reserve for the purposes of upgrading the Iluka Mine Access Road intersection and as specified under the clearing permit application.

If you would like any further information please contact Jerolina Rankin on (08) 9956 1229.

Yours sincerely

Louise Adamson
Network Manager
Mid West-Gascoyne Region