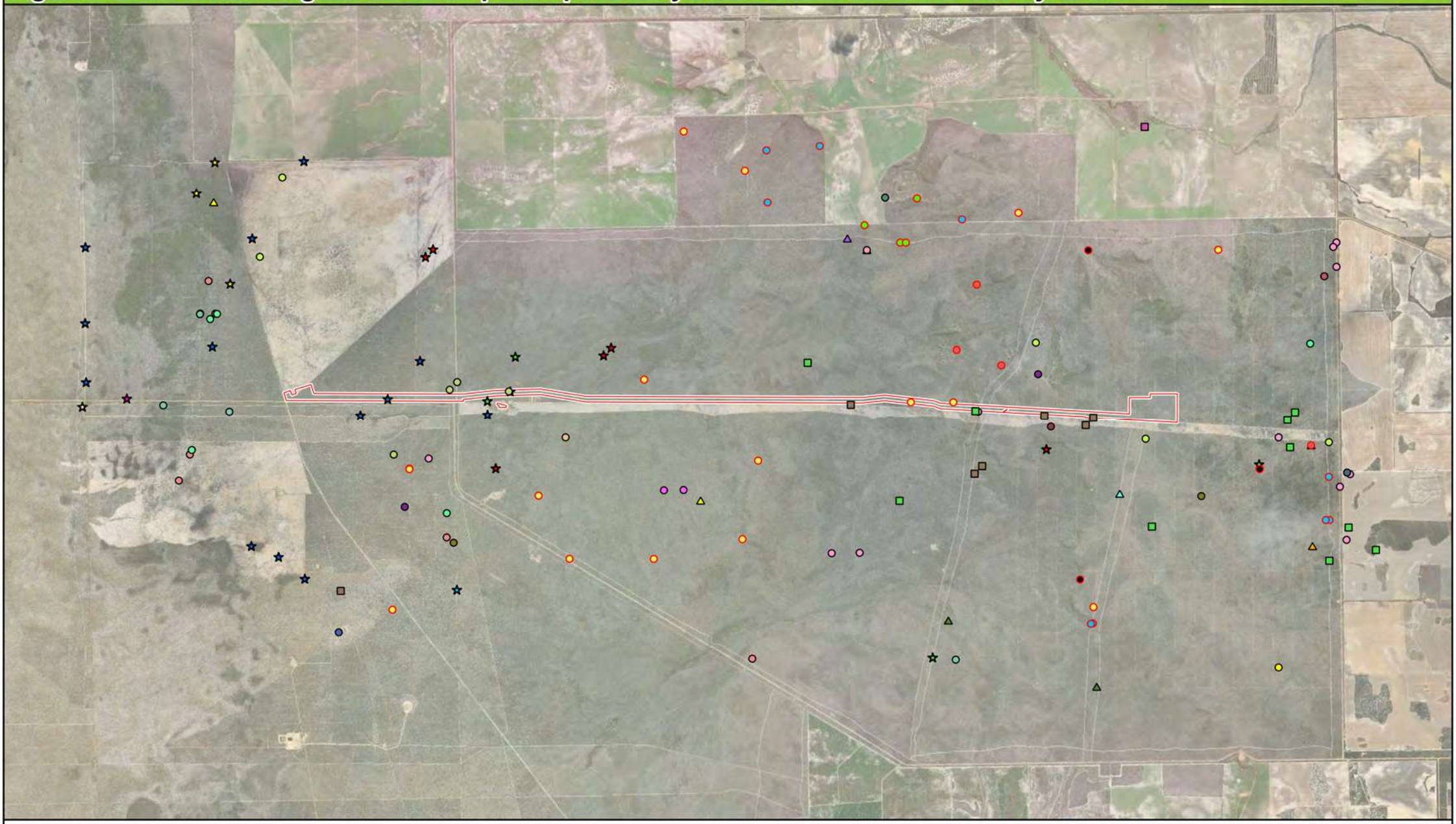
Figure 5: Conservation significant flora species previously found within 5km of the survey area



Legend

- Survey Footprint

Conservation significant species DBCA (2020a)

- *Daviesia speciosa* (T)
- *Eucalyptus crispata* (T)
- *Eucalyptus leprophloia* (T)
- *Paracaleana dixonii* (T)
- *Thelymitra stellata* (T)
- *Lasiopetalum ogilvieanum* (P1)
- *Malleostemon decipiens* (P1)
- *Micromyrtus rogeri* (P1)
- *Comesperma griffinii* (P2)
- *Eucalyptus abdita* (P2)
- *Schoenus badius* (P2)
- *Stylidium pseudocaespitosum* (P2)
- *Synaphea sparsiflora* (P2)
- *Acacia lanceolata* (P3)
- *Allocasuarina grevilleoides* (P3)
- *Beyeria gardneri* (P3)
- *Banksia frasari* var. *crebra* (P3)
- *Comesperma rhadinocarpum* (P3)
- *Eucalyptus macrocarpa* x *pyriformis* (P3)
- *Guichenotia alba* (P3)
- *Hemiandra* sp. Eneabba (H. Demarz 3687) (P3)
- *Hypocalymma gardneri* (P3)
- *Mesomelaena stygia* subsp. *deflexa* (P3)
- *Persoonia filiformis* (P3)
- *Persoonia rudis* (P3)
- *Stylidium drummondianum* (P3)
- *Stylidium torticarpum* (P3)
- *Synaphea oulopha* (P3)
- *Verticordia luteola* var. *luteola* (P3)
- *Banksia elegans* (P4)
- *Banksia scabrella* (P4)
- *Calytrix chrysantha* (P4)
- *Eucalyptus macrocarpa* subsp. *elachantha* (P4)
- *Schoenus griffinianus* (P4)
- *Stawellia dimorphantha* (P4)
- *Thysanotus glaucus* (P4)

0 1 2
Kilometers

Scale: 1:90,000
Datum/Projection:
GDA 1994 MGA Zone 50

N

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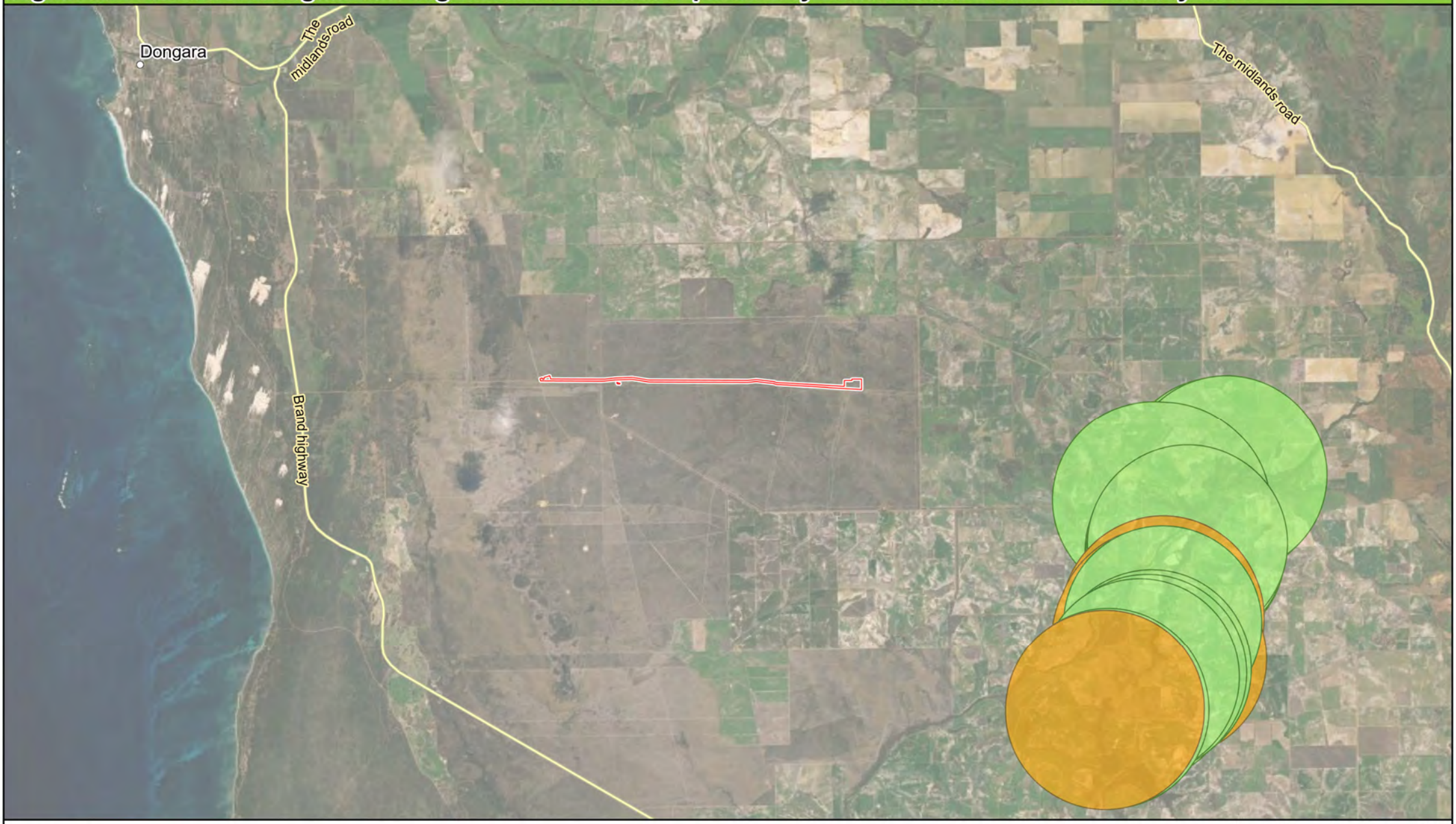
Figure 6: Conservation significant vegetation communities previously found within 20km of the survey area



Legend

- Survey Footprint

Conservation significant vegetation communities (DBCA 2020b)

- Assemblages of organic mound springs of the Three Springs area (EN)
- Ferricrete floristic community (Rocky Springs type) (VU)

0 2.5 5 10
Kilometers
Scale: 1:250,000
Datum/Projection:
GDA 1994 MGA Zone 50

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Figure 7: Conservation significant fauna species previously found within 20km of the survey area

Legend

Survey Footprint

Conservation significant fauna species (DBCA 2020c)

- Carnaby's cockatoo (*Calyptorhynchus latirostris*, EN)
- White-tailed black cockatoo (*Calyptorhynchus* sp. 'white-tailed black cockatoo', EN)
- Malleefowl (*Leipoa ocellata*, VU)
- Black-striped snake (*Neelaps calonotos*, P3)
- Western brush wallaby (*Phasmodes jeeba*, P4)

0 2.5 5
Kilometers
Scale: 1:200,000
Datum/Projection:
GDA 1994 MGA Zone 50

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3.2 Flora and vegetation survey

3.2.1 Flora overview

A total of 170 taxa (168 native and two introduced) from 93 genera and 39 families were recorded across 26 quadrats established within the survey area (161 taxa) and from targeted and opportunistic collections (nine taxa). A flora species list is provided in **Appendix E**. Average species per quadrat was 38.04 species, ranging from a low of 19 species at ELA12 to a high of 57 species at ELA02. The majority of taxa recorded were representative of the Proteaceae (30), Myrtaceae (23 taxa) and Fabaceae (18 taxa) families. *Banksia* and *Hakea* were the best represented genera throughout the survey area with 8 taxa recorded each. A flora species matrix (per quadrat) is provided in **Appendix F**.

3.2.2 Accumulated species – site surveyed (species-area curve)

A species accumulation curve (**Figure 8**) was used to evaluate the adequacy of sampling (Clarke and Gorley 2006). Only species data recorded from defined quadrats were used, no opportunistic flora collections were included. The asymptotic value was determined using Michaelis Menten modelling. Using this analysis, the incidence-based coverage estimator of species richness was calculated to be 181.05. Based on this value, and the total of 161 species recorded within quadrats, approximately 88.9% of the flora species potentially present within the survey area were recorded. This result, in addition to opportunistic collections, indicates that the majority of flora potentially present within the survey area were recorded.

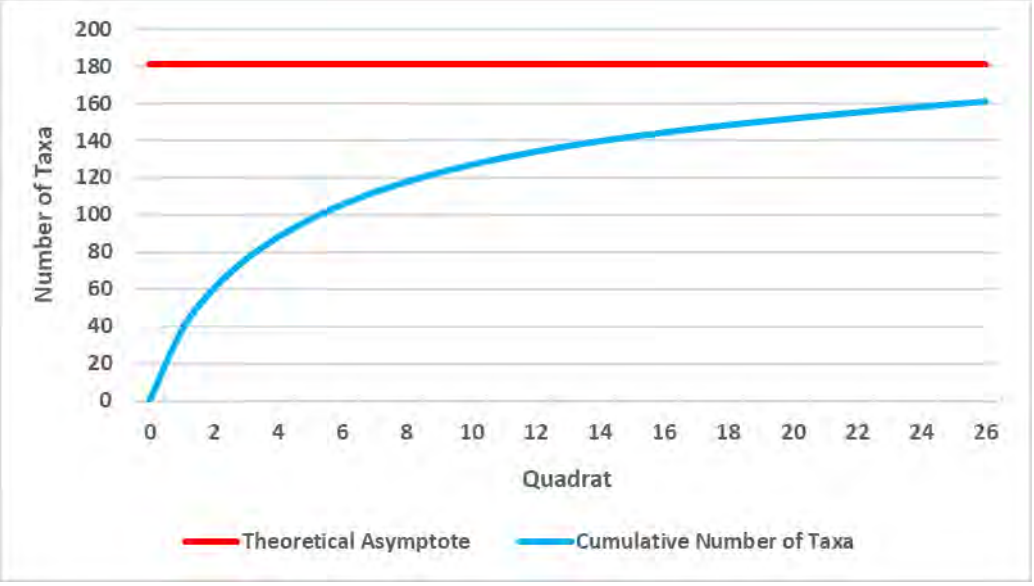

Figure 8: Average randomised species accumulation curve

Note: Only species recorded from quadrats were used to calculate the species accumulation curve and theoretical maximum number of species (asymptotic value).

3.2.3 Conservation significant flora

No Threatened flora species listed under the EPBC Act or the BC Act were recorded within the survey area from the current field survey. Conservation significant flora species listed by DBCA included; *Micromyrtus rogeri* (P1), *Lasiopetalum ogilvieanum* (P1), *Guichenotia alba* (P3), *Mesomelaena stygia* subsp. *deflexa* (P3), *Stylidium drummondianum* (P3), *Banksia scabrella* (P4), *Eucalyptus macrocarpa* subsp. *elachantha* (P4), and *Stawellia dimorphantha* (P4). Locations of these species are presented in

Figure 9 and **Appendix H**. Individual records and abundance of each species within the vegetation communities are presented in **Table 11**.

Table 11: Priority flora records and abundance within each vegetation community

Species and vegetation community	Records	Abundance
Banksia scabrella	**485**	**10776**
AcAhGp	6	43
AcDdMl	2	16
AcEbHh	97	900
BpDdHh	23	256
EtAhHh	357	9561
Echium plantagineum	**1**	**2**
EtBaHh	1	2
Eucalyptus macrocarpa* subsp. *elachantha	**1**	**10**
AcEbHh	1	10
Guichenotia alba	**63**	**607**
AcDdMl	1	1
AcEbHh	55	577
Cleared	3	17
EtBaHh	4	12
Lasiopetalum ogilvieanum	**21**	**100**
AcDdMl	1	12
AcEbHh	5	37
EtAhHh	15	51
Mesomelaena stygia* subsp. *deflexa	**55**	**4648**
AcEbHh	11	443
EtAhHh	44	4205
Micromyrtus rogeri	**18**	**939**
AcAhGp	16	829
EtAhHh	2	110
Stawellia dimorphantha	**45**	**298**
AcDdMl	40	275
AcEbHh	1	5
EtBaHh	4	18
Stylidium drummondianum	**10**	**54**
AcAhGp	3	18
AcEbHh	2	5
EtAhHh	5	31
Grand Total	**699**	**17434**

3.2.3.1 Micromyrtus rogeri

Micromyrtus rogeri was recorded from 18-point locations within the survey area, totalling 939 individuals. Of the 18-point locations occurring within the survey area, the majority (16) were located within the laterite rises of AcAhGp vegetation community. *Micromyrtus rogeri* was recorded from several populations towards the eastern end of the survey area.

Locations of *Micromyrtus rogeri* are presented in **Plate 1**, **Figure 9** and **Appendix H**.


Plate 1: *Micromyrtus rogeri* © Eco Logical Australia

3.2.3.2 Lasiopetalum ogilvieanum

Lasiopetalum ogilvieanum was recorded from 21-point locations within the survey area, totalling 100 individuals. Of the 21-point locations occurring within the survey area, the majority (15) were located within the sandy plains of EtAhHh vegetation community. *Lasiopetalum ogilvieanum* was recorded from several populations towards the eastern end of the survey area.

Locations of *Lasiopetalum ogilvieanum* are presented in **Plate 2**, **Figure 9** and in **Appendix H**.


Plate 2: *Lasiopetalum ogilvieanum* © Eco Logical Australia

3.2.3.3 Guichenotia alba

Guichenotia alba was recorded from 63-point locations within the survey area, totalling 607 individuals. Of the 63-point locations occurring within the survey area, the majority (55) were located within the sandy plains of AcEbHh vegetation community. *Guichenotia alba* was recorded from two populations towards the western end of the survey area.

Locations of *Guichenotia alba* are presented in **Plate 3**, **Figure 9** and in **Appendix H**.


Plate 3: *Guichenotia alba* © Eco Logical Australia

3.2.3.4 Mesomelaena stygia subsp. *deflexa*

Mesomelaena stygia subsp. deflexa was recorded from 55-point locations within the survey area, totalling 4,648 individuals. Of the 55-point locations occurring within the survey area, the majority (44) were located within the sandy plains of EtAhHh vegetation community. *Mesomelaena stygia subsp. deflexa* was recorded from several populations towards the eastern end of the survey area.

Locations of *Mesomelaena stygia subsp. deflexa* are presented in **Plate 4**, **Figure 9** and in **Appendix H**.


Plate 4: *Mesomelaena stygia subsp. deflexa* © Eco Logical Australia

3.2.3.5 Stylidium drummondianum

Stylidium drummondianum was recorded from 10-point locations within the survey area, totalling 54 individuals. Of the 10-point locations occurring within the survey area, five were located within EtAhHh vegetation community, three within AcAhGp and two within AcEbHh. *Stylidium drummondianum* was recorded from several populations towards the eastern end of the survey area.

Locations of *Stylidium drummondianum* are presented in **Plate 5**, **Figure 9** and in **Appendix H**.

Plate 5: *Stylidium drummondianum* © Eco Logical Australia

3.2.3.6 Banksia scabrella

Banksia scabrella was recorded from 485-point locations within the survey area, totalling 10,776 individuals. Of the 485-point locations occurring within the survey area, the majority (357) were located within EtAhHh vegetation community, 97 within AcEbHh, 23 within BpDdHh, six within AcAhGp and two within AcDdMl. *Banksia scabrella* was a dominant structural component of EtAhHh vegetation community and was recorded from several populations across the survey area.

Locations of *Banksia scabrella* are presented in **Plate 6**, **Figure 9** and in **Appendix H**.

Plate 6: *Banksia scabrella* © Eco Logical Australia

3.2.3.7 Eucalyptus macrocarpa subsp. *elachantha*

Eucalyptus macrocarpa subsp. elachantha was recorded from one-point location towards the middle of the survey area, totalling ten individuals. This location was located within the sandy plains of AcEbHh vegetation community.

Locations of *Eucalyptus macrocarpa subsp. elachantha* are presented in **Plate 7**, **Figure 9** and in **Appendix H**.

Plate 7: *Eucalyptus macrocarpa* subsp. *elachantha* © Eco Logical Australia

3.2.3.8 Stawellia dimorphantha

Stawellia dimorphantha was recorded from 45-point locations within the survey area, totalling 298 individuals. Of the 45-point locations occurring within the survey area, the majority (40) were located within AcDdMl vegetation community. *Stawellia dimorphantha* was recorded from one population towards the western end of the survey area.

Locations of *Stawellia dimorphantha* are presented in **Plate 8**, **Figure 9** and in **Appendix H**.

Plate 8: *Stawellia dimorphantha* © Eco Logical Australia

Of the 61 flora species identified from the desktop assessment as possibly occurring within the survey area, the eight species above were found to occur in the survey area. 11 species were considered as likely to occur, and 25 considered as having the potential to occur, based on the species habitat preferences and proximity of records to the survey area. The remaining 17 species were considered

unlikely to occur. The flora likelihood of occurrence assessment is presented in **Appendix C**. A flora likelihood of occurrence assessment was also undertaken by Mattiske (2020), which has been considered for this report.

3.2.4 Introduced flora

Two introduced (weed) flora species was recorded as occurring within the survey area, **Hypochaeris glabra* and **Echium plantagineum*. **E. plantagineum* is listed as a Declared Pest under the State *Biosecurity and Agriculture Management Act 2007* (BAM Act) and on the Western Australian Organism List (WAOL) database as s22. **H. glabra* is not listed as a Weed of National Significance (WoNS) or Declared Pest under the BAM Act and is listed on the WAOL database as s11 (permitted). **E. plantagineum* was recorded once opportunistically, whilst **H. glabra* was recorded in five quadrats (ELA01, ELA08, ELA14, ELA21, ELA24) at a low density (0.01% cover) and is associated with AcEbHh, EtAhHh and EtBaHh vegetation communities.

3.2.5 Vegetation communities

A total of six vegetation communities were delineated and mapped within the survey area (**Table 12**, **Figure 10**, **Appendix G**). The most widespread vegetation community was AcEbHh, which occurred across 34.02% (72.2 ha) of the survey area. Descriptions of vegetation communities resemble those described by Woodman (2013) in a far larger mapped area adject to the current survey area. This report also did not infer the presence of any threatened or priority ecological communities.

No vegetation communities delineated within the current survey area were inferred to represent any or potential conservation significant communities listed under the EPBC Act, the BC Act or by DBCA. This is supported by Woodman (2013) which also found no conservation significant communities.

Similarity Profile Analysis (SIMPROF) separated the 26 quadrats into six statistically dissimilar groupings (Global R= 6.02; Significance level of sample statistic; p = 0.01; **Appendix I**).