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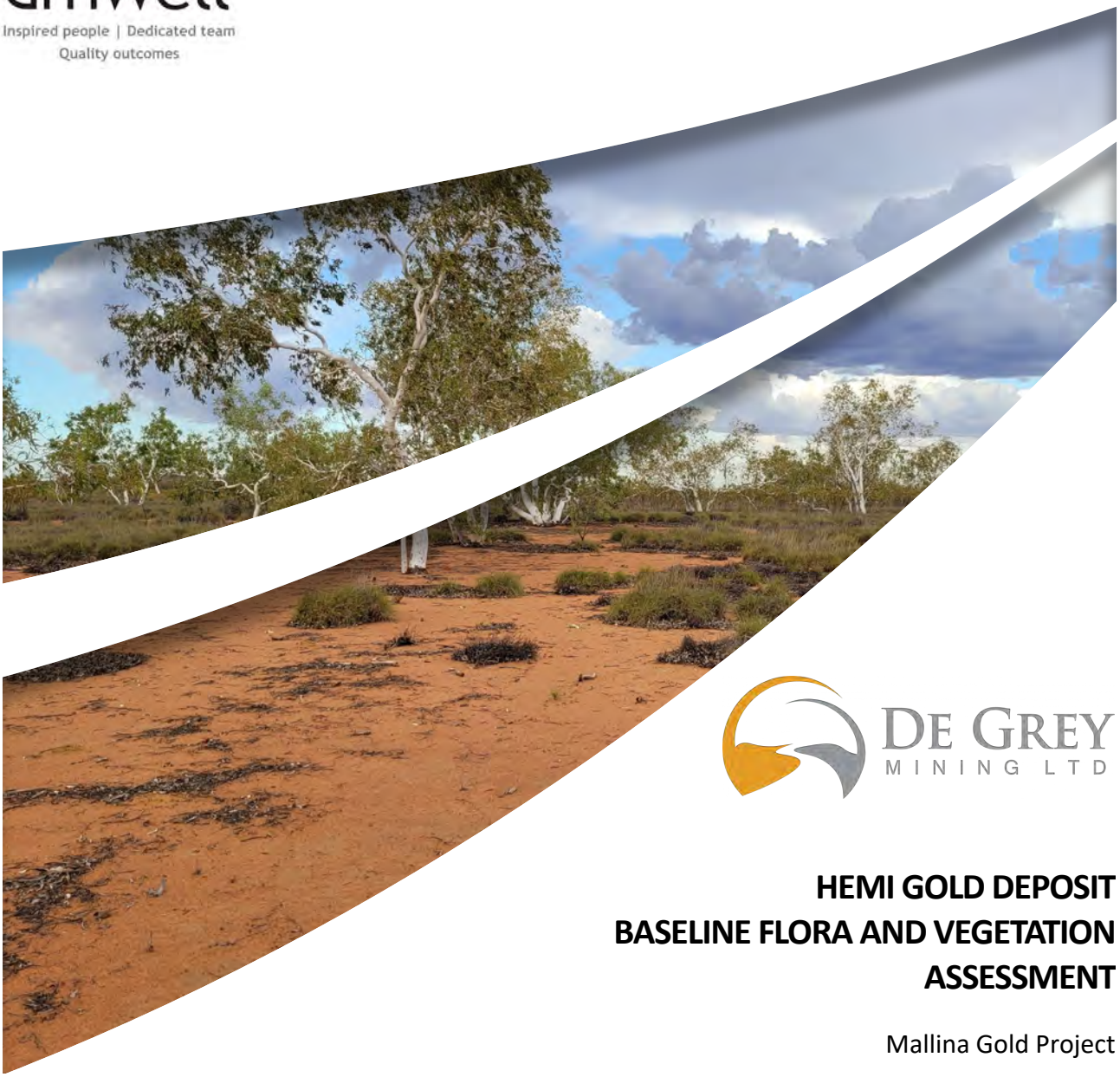

DE GREY MINING LTD

HEMI GOLD DEPOSIT
BASELINE FLORA AND VEGETATION ASSESSMENT

Mallina Gold Project

FINAL

October 2024

HEMI GOLD DEPOSIT
BASELINE FLORA AND VEGETATION ASSESSMENT

Mallina Gold Project

FINAL

Prepared by
Umwelt (Australia) Pty Limited
on behalf of
De Grey Mining Limited

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Report No.	22178/R09
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Definitions

Term	Definition
ALA	Atlas of Living Australia
BAM Act	*Biosecurity and Agriculture Management Act 2007*
BC Act	*Biodiversity Conservation Act 2016*
BC Regs	Biodiversity Conservation Regulations 2018
BoM	Bureau of Meteorology
cm	Centimetres
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
De Grey	De Grey Mining Limited
DEC	Department of Environment and Conservation (now DBCA)
Desktop Study Area	Area encompassing the Survey Area with a 50 km buffer. Used for the purposes of elements of the desktop assessment, including interrogation of databases and searches for relevant literature
DSO	Direct Shipping Ore
DTM	Digital Terrain Model
Ecoscape	Ecoscape (Australia) Pty Limited
Ecoscape Study Area	Study area surveyed by Ecoscape for the Ecoscape survey. Incorporates multiple tenement areas, including Hemi
Ecoscape Survey	Mallina Gold Project: Flora and Vegetation Survey (Ecoscape, 2021)
EIA	Environmental Impact Assessment
EP Act	*Environmental Protection Act 1986*
EPA	Environmental Protection Authority
EPBC Act	*Environment Protection Biodiversity Conservation Act 1999*
GDA94	Geocentric Datum of Australia 1994
GDE	Groundwater Dependent Ecosystem
GDV	Groundwater Dependent Vegetation
Geowater	Geowater Consulting Pty Limited
GIS	Geographic Information System
GPS	Global Positioning System
ha	Hectares
IBRA	Interim Biogeographic Regionalisation for Australia
IBSA	Index of Biodiversity Surveys for Assessments
INDVAL	Indicator taxon value, a measure of taxon fidelity to a given VT
IUCN	International Union for Conservation of Nature
km	Kilometres

Term	Definition
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 **Section 3.9.1** and **Section 3.9.2**
m	Metres
m^2	Metres squared
mm	Millimetres
MNES	Matters of National Environmental Significance
Mount Dove Survey	Mount Dove Direct Shipping Ore Project: Flora and Vegetation Studies (Woodman Environmental, 2011)
NT	Northern Territory
NVIS	National Vegetation Information System
P	Denotes a taxon listed as Priority 1 to 4 by DBCA (2020)
PCA	Principal Component Analysis
PEC	Priority Ecological Community, listed by DBCA (DEC, 2013)
Project, the	Hemi Gold Deposit
Significant flora	As defined in **Section 1.3** and **Section 3.9.1**
Significant vegetation	As defined in **Section 1.3** and **Section 3.9.2**
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 2022 flora and vegetation assessment was conducted, approximately 29,518 in size. Contains the Targeted Survey Area
T	Denotes a taxon listed as Threatened under the BC and/or EPBC Acts (DBCA, 2020; TSSC, 2021)
Targeted Survey Area	Area of focus for Targeted survey for significant flora and vegetation for the 2022 flora and vegetation assessment. Approximately 4,675 ha in size
TEC	Threatened Ecological Community, listed under the BC and/or EPBC Acts (DEC, 2013; TSSC, 2017)
TPFL	Threatened and Priority Flora Database
TSSC	Threatened Species Scientific Committee
Umwelt	Umwelt (Australia) Pty Limited
UPGMA	Unweighted Pair Group Method with Arithmetic Mean
VSA	Vegetation System Association
VT	Vegetation Type
WA	Western Australia
WA Herbarium, WA Herb	Western Australian Herbarium
WoNS	Weeds of National Significance
Woodman Environmental	Woodman Environmental Consulting Pty Ltd (now Umwelt (Australia) Pty Limited)

Executive Summary

De Grey Mining Limited (De Grey) are the proponents of the Mallina Gold Project, located across a series of tenements over an east west distance of approximately 120 kilometres (km), from just south of Whim Creek in the west to just south-east of Port Hedland in the east, within the Pilbara region of Western Australia (WA). De Grey are currently investigating the development of the Hemi Deposit and associated infrastructure (the Project), located approximately 85 km south of Port Hedland, between the Yule and Turner Rivers.

Ecoscape (Australia) Pty Limited (Ecoscape) previously conducted a Detailed flora and vegetation assessment of areas relevant to the Project (Ecoscape, 2021). However, subsequent Project changes and the scope of these surveys resulted in the requirement for further flora and vegetation surveys, to support an Environmental Impact Assessment (EIA) under the *Environmental Protection Act 1986* (EP Act). De Grey commissioned Umwelt (Australia) Pty Limited (Umwelt) in 2022 to undertake a Detailed and Targeted flora and vegetation survey to the requirements of EPA Technical Guidance, building on the work undertaken by Ecoscape (2021), with additional targeted survey for significant flora taxa undertaken by Umwelt in 2024. This baseline report documents all methods from the 2022 and 2024 surveys and presents the desktop assessment and results of field surveys.

The Survey Area for the Project covers an area of 29,518 hectares (ha) and consists of a large southern block associated with the Hemi deposit, proposed borefields, and a narrow section north-west from this block associated with proposed infrastructure corridors, with Vegetation Type (VT) mapping undertaken over this area in 2022. The Targeted Survey Area covers an area of 4,675 ha, and was the area of focus for systematic targeted survey for significant flora and vegetation in 2022 and 2024. The flora and vegetation field survey involved multiple aspects including sampling via quadrats and relevés within the Survey Area, and systematic targeted significant flora searching in the Targeted Survey Area, and were undertaken over multiple visits from March to July 2022, and April to May 2024.

A total of 276 non-permanent flora and vegetation survey quadrats (sampling an area of 2,500 m^2) have been established in the Survey Area by Umwelt, Ecoscape and Woodman Environmental Consulting Pty Ltd (Woodman Environmental), 237 of which were surveyed during the 2022 field survey. In addition, four relevés were surveyed in areas where limited extent or condition of vegetation precluded quadrat establishment, and notes on vegetation pattern boundaries and distribution were also taken while traversing the Survey Area.

A total of 329 discrete vascular flora taxa, three formally-named hybrids (as per WA Herbarium (1998-)) and three putative hybrids were recorded in the Survey Area by the 2022 and 2024 surveys. Following a review and update of the results of the Ecoscape (2021) survey in the Survey Area, it is considered that 336 discrete vascular flora taxa, three formally-named hybrids (as per WA Herbarium (1998-)) and three putative hybrids have been recorded in the Survey Area by the Ecoscape and the 2022 / 2024 surveys. Of these, 11 were introduced flora taxa. The taxa and hybrids represent 53 families and 145 genera.

A total of seven significant flora taxa were recorded in the Survey Area, including the Threatened flora taxon *Seringia exastia*, five Department of Biodiversity, Conservation and Attractions (DBCA) listed Priority flora taxa, and one taxon considered significant under the 'new species or species with anomalous features that indicate a potential new species' reason from EPA (2016a, 2016b). *Seringia exastia* (T) was recently

delisted in WA following recent taxonomic work that has resulted in the taxon no longer meeting the criteria for Threatened status. However, it currently remains listed as Threatened (Critically Endangered) under Commonwealth legislation, but is likely to be delisted in the near future.

The significant flora taxa recorded in the Survey Area were:

- *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3)
- *Euploca mutica* (P3)
- *Gymnanthera cunninghamii* (P3)
- *Polymeria* sp. nov. (potentially undescribed)
- *Rothia indica* subsp. *australis* (P3)
- *Seringia exastia* (T)
- *Triodia chichesterensis* (P3).

All significant flora except *Seringia exastia* (T) have records within the Targeted Survey Area. Two listed significant flora taxa were recorded at Hemi for the first time by the 2022 survey, being *Rothia indica* subsp. *australis* (P3) and *Triodia chichesterensis* (P3) (however, both taxa have previous known records in close proximity to the Survey Area). *Polymeria* sp. nov. (potentially undescribed) was also recorded in the Survey Area for the first time in 2022 (with additional locations recorded during the 2024 survey); however, the WA Herbarium holds five collections of this taxon (WA Herbarium, 1998-), and the Survey Area occurs within the known range of this entity.

Seventeen Vegetation Types (VTs) were defined and mapped based on the results of floristic classification analysis and subsequent examination of data collected from quadrats in the Survey Area. The 17 VTs defined represent five broad groups of vegetation, based on soils and topography:

- **Group 1:** Hummock grasslands on low-lying flood plains and flats on clay or sandy loams (VT 1).
- **Group 2:** Tussock grasslands in clay pans (VT 2).
- **Group 3:** Low woodlands and tall shrublands over low shrublands and hummock grasslands on plains, in minor drainage lines and low stony rises and hills on clay and sandy loams (VTs 3-15).
- **Group 4:** Mid to low woodlands and tall shrublands over low shrublands and hummock grasslands in river channels (VT 16).
- **Group 5:** Tall shrublands over low shrublands and tussock and hummock grasslands on red sand dunes (VT 17).

The ‘Gregory Land System’ PEC (P3) was recorded on a single dune stretching approximately 4 km long and 0.5 km wide in the western central part of the Survey Area, outside the Targeted Survey Area. The vegetation of this PEC is considered to be analogous to VT 17 in the Survey Area, and is characterised by the presence of a tall shrubland dominated by *Acacia sabulosa* (and usually with no other tall shrub taxa), a taxon near-absent from the remainder of the Survey Area, over a low shrubland that included a number of taxa also apparently absent or near-absent from the Survey Area (e.g. *Euphorbia myrtoides*, *Gyrostemon tepperi* and *Triumfetta deserticola*). The 2022 and 2024 surveys did not identify any other vegetation considered to represent any formally listed TECs or any other PECs. With the exception of the ‘Gregory Land System’ PEC (P3) and VT 17, there was no other vegetation recorded by the 2022 and 2024 surveys in the Survey Area that is considered to be potentially significant vegetation.

The vast majority of the vegetation of the Survey Area was considered to be in ‘Excellent’ or ‘Very Good’ condition; areas mapped as ‘Very Good’ displayed signs of impacts associated with cattle, including trampling, some grazing, and low levels of aggressive weeds including *Cenchrus ciliaris*. Only small, isolated areas were considered to be of lower condition, including small historically cleared areas and trough sites at wells.

Several VTs are considered to represent riparian vegetation; all are considered to be reliant on surface water to some extent. Of these, VT 16, which is comprised of all vegetation in the Turner River channel (excluding some large, raised islands), is also considered to represent groundwater dependent vegetation (GDV); this VT is characterised by the presence of obligate and potentially facultative phreatophytes (in particular *Melaleuca argentea* and *Eucalyptus camaldulensis* subsp. *refulgens.*

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1.0 Introduction

1.1 Project Overview

De Grey Mining Limited (De Grey) are the proponents of the Mallina Gold Project, located across a series of tenements over an east-west distance of approximately 120 kilometres (km), from just south of Whim Creek in the west to just south-east of Port Hedland in the east, within the Pilbara region of Western Australia (WA). De Grey are currently investigating the development of the Hemi Deposit and associated infrastructure (the Project), located approximately 85 km south of Port Hedland, between the Yule and Turner Rivers.

In 2021, Ecoscape (Australia) Pty Limited (Ecoscape) conducted a Detailed flora and vegetation assessment of areas relevant to the Project, as well as other areas across the Mallina Gold Project tenements (Ecoscape, 2021). However, subsequent Project changes and the scope of these surveys have resulted in the requirement for further flora and vegetation surveys, to support an Environmental Impact Assessment (EIA) under the *Environmental Protection Act 1986* (EP Act). De Grey commissioned Umwelt (Australia) Pty Limited (Umwelt) in 2022 to undertake a Detailed and Targeted flora and vegetation survey to the requirements of EPA Technical Guidance, building on the work undertaken by Ecoscape (2021), with additional targeted survey for significant flora taxa undertaken by Umwelt in 2024.

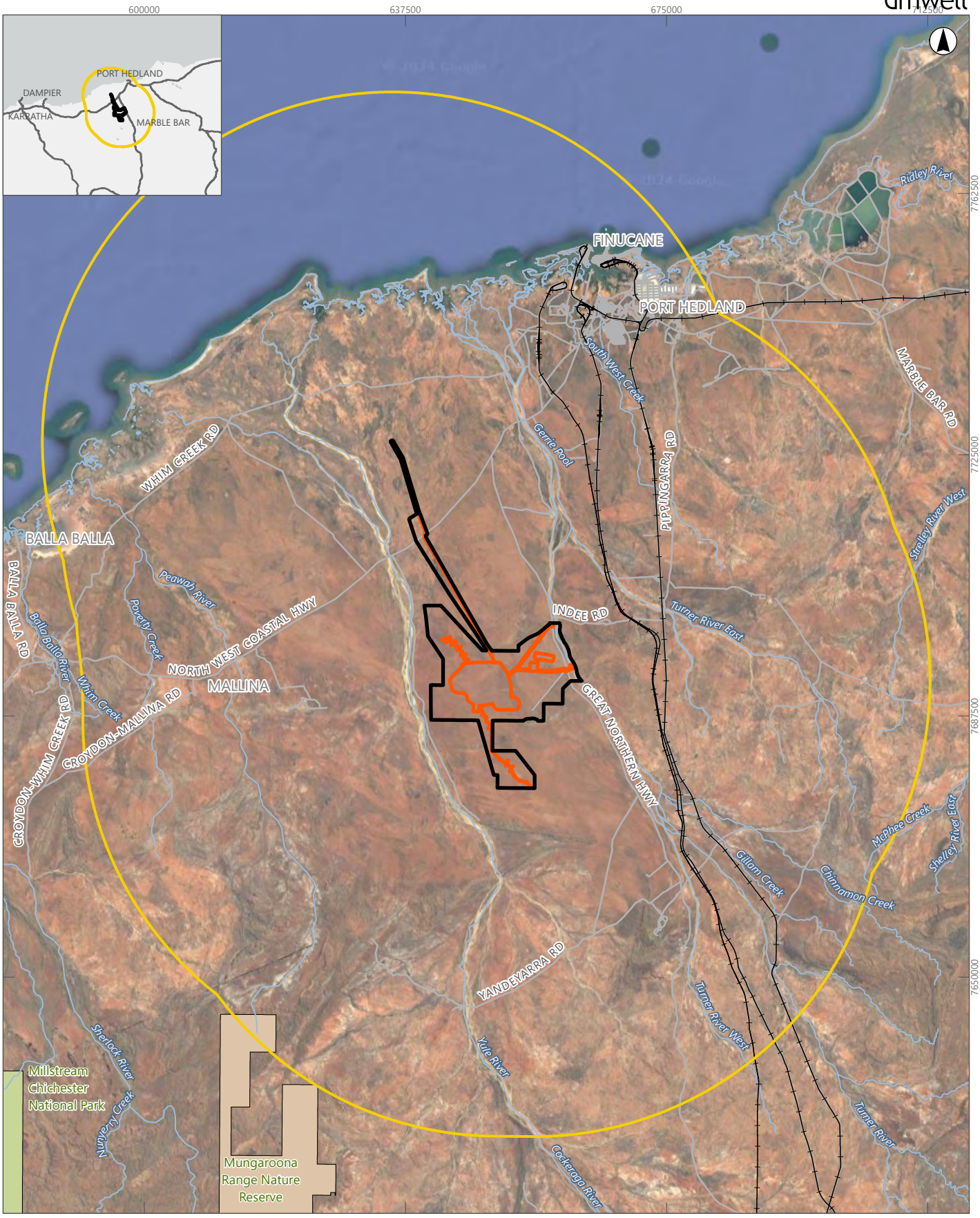
This baseline report documents all methods from the 2022 and 2024 surveys and presents the desktop assessment and results of field surveys.

1.2 Project Area Definitions

For the purposes of the flora and vegetation survey, a Survey Area has been defined, as presented on **Figure 1.1**. The Survey Area is approximately 29,518 hectares (ha) in size and consists of a large southern block associated with the Hemi deposit and proposed borefields, and a narrow section north-west from this block associated with proposed infrastructure corridors. Where the corridors extend north from the northern-most point of the large southern block of the Survey Area, the Survey Area along the infrastructure corridors incorporates both corridors to a width of greater than 1 km, except for the very northern terminus (approximately 11 km in length) of the Survey Area, where the width is approximate 450 m. Although EPA (2016b) guidance stipulates a minimum width of 1 km for linear infrastructure surveys, as the linear infrastructure component of this survey is in itself a component of a much larger survey incorporating an extensive area, that is considered to contain the same landforms and broad vegetation formations, a 1 km wide survey area over this relatively short section is not considered necessary to provide appropriate context, with the remainder of the survey area considered sufficient for this purpose.

A Targeted Survey Area has also been defined; in the context of the flora and vegetation assessment, the Targeted Survey Area was the area of focus for systematic targeted survey for significant flora and vegetation. The Targeted Survey Area is approximately 5,826 ha in size, as presented on **Figure 1.1**.

For the purposes of elements of the desktop assessment, including interrogation of databases and searches for relevant literature, a Desktop Study Area was defined. The Desktop Study Area encompasses the Survey Area with a 50 km buffer (**Figure 1.1**). Note that Ecoscape (2021) undertook interrogations of government databases as part of their desktop assessment, the results of which have been presented in this current report along with updated database interrogations undertaken in 2022 (**Section 5.1**).



Scale: 1:750,000 at A4, GDA2020 MGA Zone 50

Legend

- Desktop Study Area
- Survey Area
- Targeted Survey Area
- Road
- Major Watercourse
- National Park
- Nature Reserve

FIGURE 1.1

Project Location

0 15 30

Kilometres

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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:

- Compile an inventory of vascular flora taxa that occur in the Survey Area.
- Search for and census the following taxa (hereafter referred to as significant flora taxa) identified as occurring or potentially occurring within the Targeted Survey Area, as well as opportunistically within the wider Survey Area, to provide context for EIA:
    - Listed Threatened species (T) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (Commonwealth).
    - Threatened flora (T) under the *Biodiversity Conservation Act 2016* (BC Act) (WA).
    - Priority flora taxa (P) as classified by the WA Department of Biodiversity, Conservation and Attractions (DBCA).
    - Other significant flora taxa as defined by EPA (2016a, 2016b).
- Identify locations and determine the extent of introduced vascular flora taxa, with particular focus on those that are Weeds of National Significance (WoNS), or Declared Pests under the *Biosecurity and Agriculture Management Act 2007* (BAM Act).
- Identify, map and describe Vegetation Types (VTs) that occur within the Survey Area.
- Identify potential groundwater dependent vegetation (GDV) and groundwater dependent ecosystems (GDEs) in the Survey Area.
- 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 EIA:
    - Listed Threatened Ecological Communities (TECs) under the EPBC Act.
    - TECs as classified by DBCA and endorsed by the WA Minister for the Environment.
    - Priority Ecological Communities (PECs) as classified by DBCA.
    - Other significant vegetation as defined by EPA (2016a, 2016b).
- Map the condition of the vegetation in accordance with EPA (2016b).

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 Targeted and Detailed Survey as defined in Sections 4.2 and 4.3 of the *Technical Guidance for Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016b). This is considered appropriate for the Project, which is located in an area (the Pilbara) that is known to support a moderate diversity of flora and vegetation relative to other areas of the state, including significant flora taxa and vegetation types (EPA, 2016b).

As discussed in **Section 1.1**, this survey builds on previous work conducted by Ecoscape (2021); the key results of the Ecoscape assessment are presented in **Section 5.1.3**.

2.0 Background

2.1 Geology, Landforms and Soils

The Survey Area is located in the Pilbara region (Fortescue Botanical District) as defined by Beard (1975, 2015), on the junction of the Roebourne and Chichester Interim Biogeographic Regionalisation for Australia (IBRA) subregions (the majority of the Survey Area being located within the latter) (DAWE, 2020). The Pilbara region is formed of a basement of Archaean granite and volcanics, overlain by massive deposits of Proterozoic sediments and volcanics. This region is generally mountainous, rising to 1,250 metres (m), with hard alkaline red soils on plains and pediments, and shallow and skeletal soils on ranges (Beard, 2015)

The Survey Area traverses one physiographic region as defined by Beard (1975), being the Abydos Plain. The Abydos Plain is alluvial in origin near the coast while further inland is of Archaean granite origin. It consists of a variety of features including alluvial plains, pediplains, low stony hills and dissected pediments, low granite outcrops and tors, and basic dykes. It is divided into a number of isolated sections by the Gorge Ranges. The main soils are hard alkaline red soils, with some areas of coarse-textured A horizons to 45 centimetres (cm) thick, while other areas have shallow stony A horizons. Patches of calcrete also occur. On the eastern part of the plain near the De Grey River, the soils are chiefly neutral and acidic red earths, while on the inland plains behind the Gorge Ranges, chief soils are earthy loams and coarse sands overlying granite within 90 cm of the soil surface. The alluvial plains along the coast generally consist of red earthy sands with extensive areas of red earths, and hard red soils along creek lines. Deep cracking clays occur in the vicinity of residuals of basic and ultrabasic rocks in the Roebourne area (Beard, 1975).

2.2 Climate

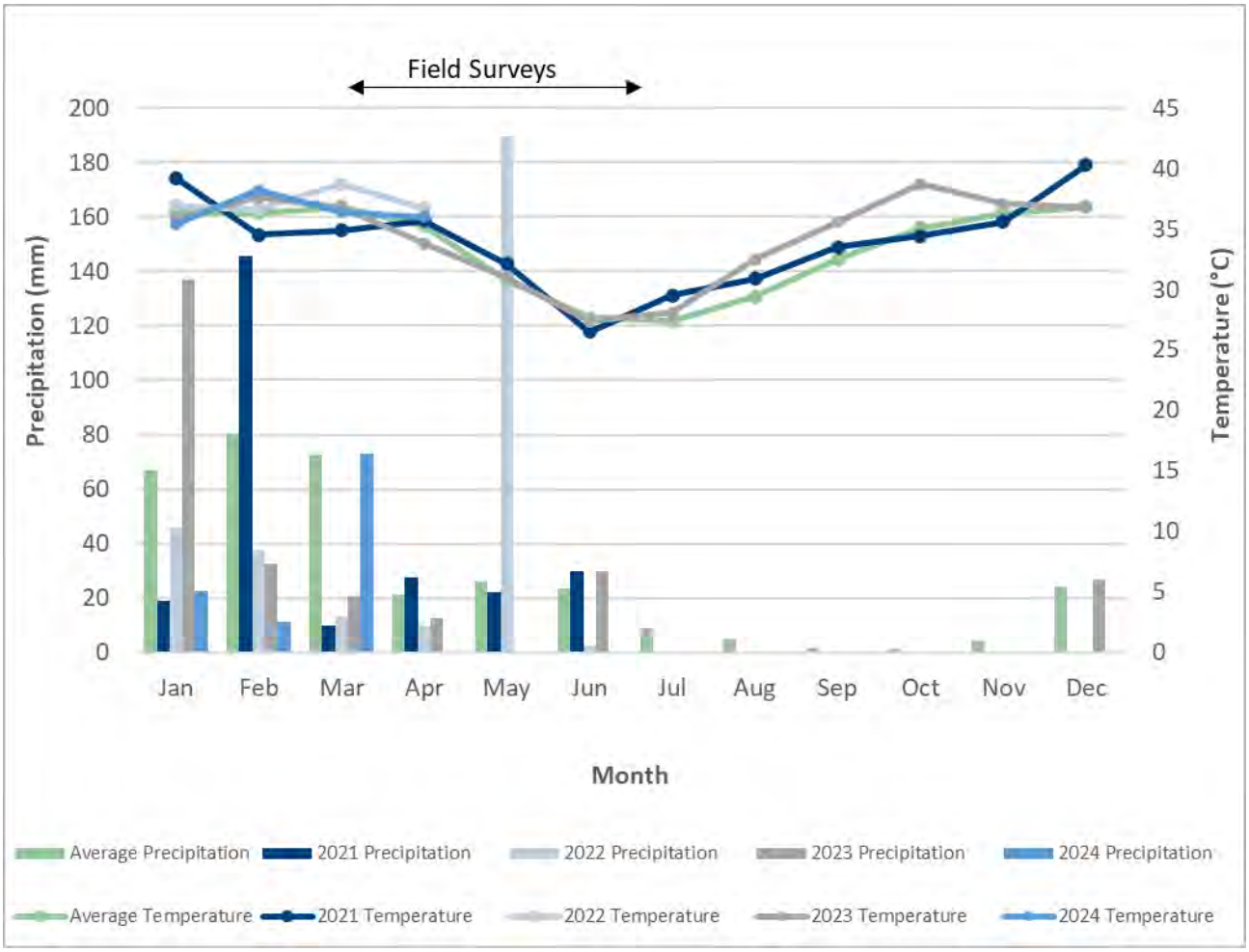
The climate of the Pilbara Bioregion is classified as arid (semi-desert) tropical, with precipitation received primarily over the summer months. Average annual precipitation is 250–300 millimetres (mm); this is generally slightly higher than most of the Eremaean Province of WA due to the influence of relatively frequent tropical cyclones that occur from November to April (Beard, 2015; BoM, 2024a).

Graph 2.1 displays monthly precipitation and monthly maximum temperature statistics for 2021, 2022 and 2024, as well as long-term average monthly maximum temperature and monthly precipitation data recorded at the Bureau of Meteorology (BoM) stations at Indee (precipitation) (station number 4016, data from 1909 to May 2024), and Port Hedland Airport (temperature) (station number 4032, data from 1942 to July 2024) (BoM, 2024a). These stations represent the most relevant meteorological stations to the Survey Area with long-term climate data, with Indee station being located approximately 6.5 km to the north-northeast and Port Hedland Airport station approximately 50 km to the north (note that Indee Station does not record temperature data). Note that the monthly climate data used to prepare **Graph 2.1** has been taken from BoM monthly climate statistics data, which is calculated by BoM from daily temperature and precipitation records; review of the daily data from Indee and Port Hedland Airport stations reveals that there are some gaps in these datasets over the assessed period. In particular, the precipitation data for Indee Station is blank from 2 June 2022. For the purpose of **Graph 2.1**, it has been assumed that no rainfall was received on these dates. This is considered to be a reasonable assumption given that June and July fall in the dry season, and review of daily precipitation data for Port Hedland Airport for the same time period indicates that no rainfall was received at this station between 2 June and the end of July, with the exception of 0.2 mm received on one day in July. Therefore, the data presented in **Graph 2.1** and discussed below should be considered to be indicative only.

Long-term average monthly maximum temperatures at Port Hedland Airport peak from December to March (36.3 °C to 36.8 °C), and long-term average monthly precipitation peaks from January to March (a total of 219.7 mm received over this period on average at Indee Station) (**Graph 2.1**).

The precipitation received at Indee Station in the six months preceding the start of the 2022 field survey (i.e. October 2021 to March 2022) (96.2 mm) was well below the long-term average for this period (249.5 mm). However, rainfall received during the field survey period (March to July 2022) (214.9 mm), was above the long-term average (152.3 mm), due to significant rainfall received at the end of May 2022. The precipitation received at Indee Station in the six months preceding the start of the 2024 field survey (i.e. October 2023 to March 2024) (133.7 mm) was also below the long-term average for this period (**Graph 2.1**).

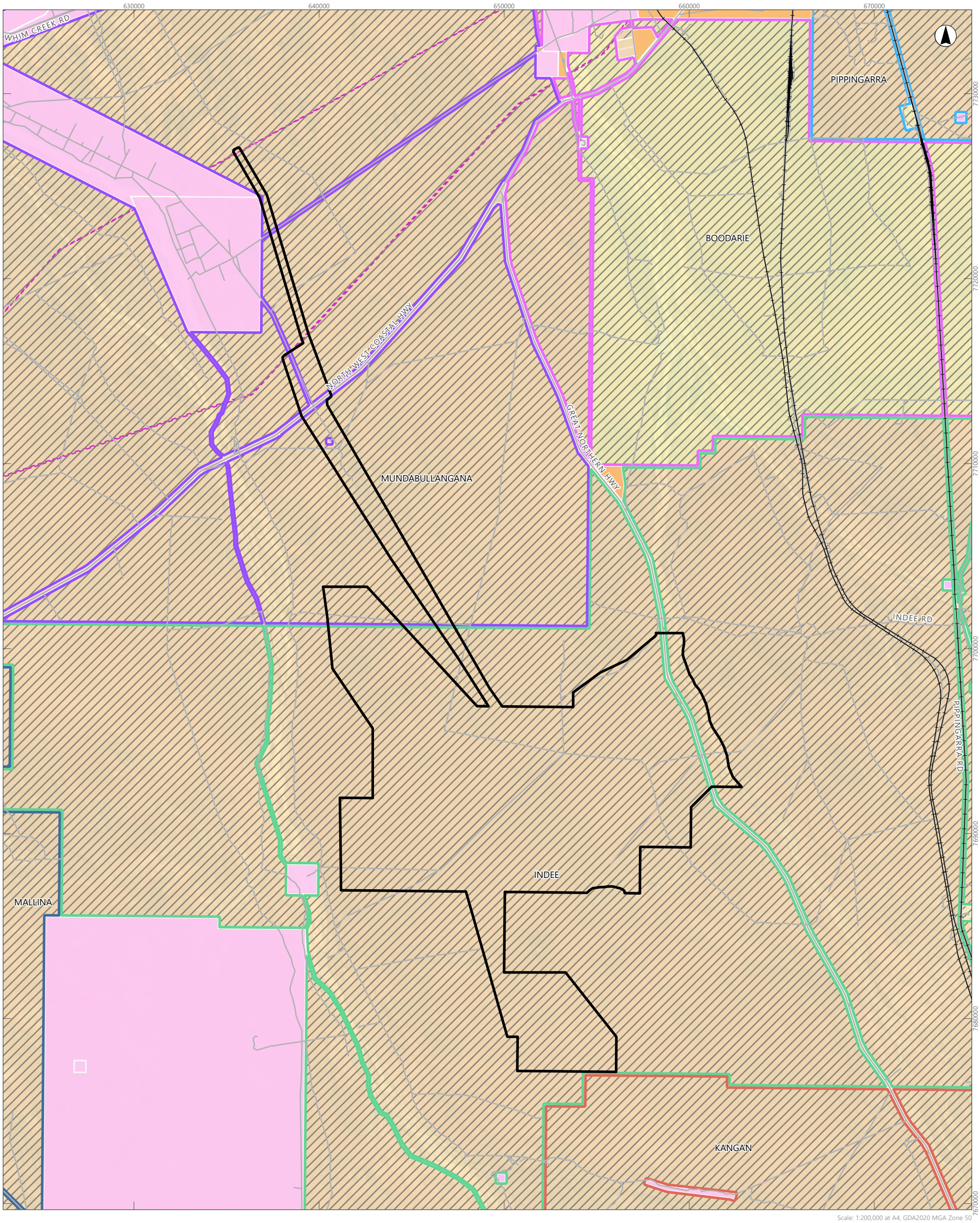
Temperatures at Port Hedland Airport were slightly above average, both for the six months preceding the 2022 and 2024 field surveys (October 2021 / 2023 to March 2022 / 2024) (37.1°C prior to the 2022 and 2024 surveys, compared to the long-term average of 36.3°C) and during the 2022 field survey period (March to July 2022) (32.5°C, compared to the long-term average of 31.6 C) (**Graph 2.1**).



Graph 2.1 Climate Statistics for Indee Station (Precipitation) and Port Hedland Airport (Temperature) (BoM, 2024a)

2.3 Land Tenure

The Survey Area is primarily located on Indee and Mundabullangana pastoral stations, with smaller portions on road reserves and other reserves, as presented on **Figure 2.1**. The nearest DBCA reserved land, Mungaroona Range Nature Reserve, is located approximately 48 km south-southwest of the Survey Area (DBCA, 2024a).



Scale: 1:200,000 at A4, GDA2020 MGA Zone 50

Legend

- Survey Area
- Railway
- Road
- Easements
- Other Interests
- Crown Lease
- Crown Reserve
- Public Road
- Unallocated Crown Land; Closed Road
- Crown Allotment (Type 2)
- Lot on Survey (Type 1)

Pastoral Station

- Boodarie
- Indee
- Kangan
- Mallina
- Mundabullangana
- Pippingarra

FIGURE 2.1

Land Tenure of Survey Area

0 4 8

Kilometres

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Image Source: Landgate (2023) | **Data Source:** Landgate (2024), DPLH (2024), Umwelt (2023)

3.0 Methods

3.1 Desktop Assessment Methods

Prior to commencement of the field surveys, a review of the most recently publicly available flora and vegetation data relevant to the Survey Area was undertaken. This included obtaining and reviewing copies of reports of previous biological surveys carried out within the vicinity of the Survey Area (where available) (including interrogation of the Index of Biodiversity Surveys for Assessments (IBSA) database) and review of desktop assessment and field data collected by Ecoscape (2021) (including the results of interrogation of DBCA databases), as listed in **Table 3.1**, within the Desktop Study Area (**Figure 1.1**). Where TECs or PECs were identified by the desktop assessment, appropriate 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 (DBCA, 2023c).

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

Source	Search Attributes	Search Purpose
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, 2021, 2022a; DCCEEW, 2024)	Database interrogated by Ecoscape (2021) using a 50 km buffer on the approximate centre point of the Ecoscape Study Area. Updated in 2022 and 2024 using Desktop Study Area boundary	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, 2021a, 2022a)	Database interrogated by Ecoscape (2021) using a 40 km buffer on Ecoscape Study Area. Updated in 2022 using Desktop Study Area boundary	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, 2017)	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, 2023d, 2023e)	Manual review of current DBCA TECs and PECs listed for the Pilbara 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, 2021b, 2022b)	Database interrogated by Ecoscape (2021) using a 50 km buffer on Ecoscape Study Area. Updated in 2022 using Desktop Study Area boundary	Obtain records of listed significant flora within or in proximity to the Survey Area
IBSA database (DWER, 2022, 2024)	Database interrogated using approximate Desktop Study Area boundary (exact boundary cannot be used) in 2022 and 2024	Obtain copies of reports and associated spatial data (where available) to identify records of significant flora and vegetation and introduced flora in the vicinity of the Survey Area

Source	Search Attributes	Search Purpose
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 and vegetation and introduced flora in the vicinity of the Survey Area
2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (DBCA, 2019) (Report 3b)	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 considerable previous experience (> 15 years) and field team leaders have previous experience (> 2 years) in conducting flora and vegetation surveys in the Pilbara. 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 (BC Regs)) and *Authorisation to Take or Disturb Threatened Species* (pursuant to Section 40 of the BC Act) as outlined in **Table 3.2**. Personnel managing plant identifications have had extensive previous experience (> 15 years) in plant identifications of flora of the Pilbara 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
Bethea Loudon BSc (Biology)	>15 years	FB62000049-2 TFL 140-2122	2022 targeted survey (field team leader)
Celine Anderson BSc (Environmental Science)	2 years		Detailed survey 2022 targeted survey
David Coultas BSc (Environmental Biology) (Hons)	> 15 years	FB62000051-2 TFL 131-2122	Project Management 2022 / 2024 Reconnaissance survey (field team leader) Detailed survey (field team leader) 2022 targeted survey (field team leader) Plant identifications (including review of identifications undertaken by less experienced staff) Data analysis Report preparation
Diana Barrie BSc (Agricultural Science & Conservation Biology)	3 years	CP60000123-3 FB62000443-2 TFL 2223-0143	2022 targeted survey 2024 targeted survey
Georgia Johnsen BSc (Marine Biology & Conservation Biology)	2 years	FB62000470 TFL 2223-0137	2024 targeted survey

Personnel and Qualifications	Experience	Flora Collecting Licence/Permit	Role
Jaroslav Hruban Mgr (Ecological and Evolutionary Biology)	4 years	FB62000251-3 TFL044-2122	Detailed survey (field team leader) 2022 targeted survey (field team leader) 2024 targeted survey (field team leader) Plant identifications
Kyler Rowson BSc (Marine Biology & Biological Sciences)	1 year	FB62000399 FB62000413-1b TFL 2223-0139	Detailed survey 2022 targeted survey
Leah Firth BSc (Conservation Biology)	3 years	FB62000055-2 TFL 145-1920	Reconnaissance survey Detailed survey Plant identifications
Liam Chirio BSc (Environmental Science & Wildlife Biology)	1 year	FB62000412	2022 targeted survey
Marco Pratissoli PostGrad. Dip. Sc. (Environmental Biology and Management)	6 years	FB62000057-2 TFL 143-1920 TFL-2425-0035	2022 targeted survey (field team leader) 2024 targeted survey (field team leader)
Marlee Starcevich BSc (Environmental Science) (Hons)	6 years	NA	Data analysis Report preparation
Matthew Mullaney BSc (Environmental Science & Ecology)	2 years	-	Detailed survey 2022 targeted survey
Monika Hrubanova BSc (Botany) (Hons) Mgr (Ecological and Evolutionary Biology)	1 year	FB62000375	Detailed survey 2022 targeted survey Plant identifications
William White BSc (Ecology) (Hons)	2 years	FB62000400	2022 targeted survey

3.3 Aerial Photography Interpretation and Survey Design

The design of the 2022 detailed 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 5.1.3**) and the wider Pilbara Bioregion.

As mentioned in **Section 1.1**, a large proportion of the Survey Area has received considerable historical survey effort by Ecoscape (2021). In addition, a number of quadrats previously assessed by Woodman Environmental for the Mount Dove Direct Shipping Ore (DSO) project (hereafter referred to as the 'Mount Dove survey') (Woodman Environmental, 2011) occur within the Survey Area of the current survey:

- A total of 80 quadrats established in 2021 by Ecoscape are located within the Survey Area, of which 24 occur within the Targeted Survey Area; and
- A total of 21 quadrats established in 2010 by Woodman Environmental for the Mount Dove survey are located within the Survey Area, none of which occur within the Targeted Survey Area.

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 areas of restricted or unusual landforms and types). This review considered the size of vegetated areas, visible vegetation patterns and previous quadrat density and locations in the Survey Area. Additional quadrat locations were proposed to ensure that a minimum of three quadrats (either previously established quadrats or proposed quadrats for the 2022 survey) sampled each major discernible vegetation pattern where possible; for smaller patterns, fewer quadrats were allocated based on the size of the pattern, while for widespread vegetation patterns, quadrats were allocated across their geographic range.

In addition, the data and associated reports from the Ecoscape and Mount Dove surveys were reviewed during the desktop assessment (**Section 5.1.3**), and a number of these previously established quadrats were identified as requiring a revisit to ensure taxonomic consistency between these surveys and the current survey. This was particularly relevant for the Mount Dove survey quadrats, as there have been a number of taxonomic and nomenclature changes that have occurred since these quadrats were established and surveyed in 2010.

Data from the existing quadrats located within the Survey Area, as well as from additional quadrats established in 2022, were utilised for the floristic analysis (see **Section 3.6**) and for building a taxon inventory for the Survey Area (see **Section 5.2.1**).

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 and one visit in 2024 as outlined below:

- 1 March 2022: Reconnaissance survey
- 8 to 15 March 2022: Detailed survey
- 5 to 14 April 2022: Targeted survey
- 27 April to 5 May 2022: Targeted survey
- 11 to 28 July 2022: Detailed and Targeted survey
- 1 to 7 May 2024: Targeted survey.

The timing of the field survey was selected to coincide with what is considered to be the most appropriate time to survey in the Pilbara Bioregion; as per EPA Technical Guidance (2016b), this is approximately six to eight weeks post wet season (generally March to June) as most of the taxa in this region flower at this time. This includes the majority of significant taxa that potentially occur in the Survey Area (see **Section 5.1.4**). Note that the final 2022 site visit undertaken in July falls outside the typical recommended survey period; however, significant rainfall was received at the end of May 2022, approximately six weeks prior to the July 2022 site visit. During the final site visit, annual and ephemeral taxa were observed to be abundant, and the majority of perennial flora taxa were flowering. Therefore, the timing of this visit is considered to be appropriate in the context of EPA Technical Guidance.

The Survey Area was accessed by vehicle using existing access tracks/drill lines and via foot traverses. Appropriate landholder/manager permissions were obtained prior to undertaking the field survey.

3.4.2 Sample Sites

A total of 276 non-permanent flora and vegetation survey quadrats have been established in the Survey Area, of which 237 were surveyed during the 2022 field survey, as outlined below:

- 175 quadrats newly established in 2022
- 48 quadrats (out of 80 in total in the Survey Area) established in 2021 by Ecoscape were revisited in 2022
- 14 quadrats (out of 21 in total in the Survey Area) established in 2010 by Woodman Environmental for the Mount Dove survey were revisited in 2022.

The placement of the quadrats within the Survey Area was as below:

- 45 quadrats (of which 32 were surveyed in 2022) within the Targeted Survey Area
- 231 within the wider Survey Area (of which 205 were surveyed in 2022).

The quadrat size utilised for the flora and vegetation survey of the Survey Area is the indicative size for flora and vegetation surveys in the Pilbara IBRA Bioregion, as outlined in Table 1 of the EPA Technical Guidance (EPA, 2016b). All quadrats encompassed a total area of 2,500 metres squared (m^2); most measured 50 m × 50 m; however, occasionally rectangular quadrats with different dimensions (e.g. 100 m × 25 m) were established in narrower vegetation patterns such as those along creek lines. Quadrat boundaries were demarcated using handheld Global Positioning System (GPS) units and surveying tape measures. Quadrat locations were selected to ensure that at least three quadrats sampled each vegetation pattern initially identified from aerial photography interpretation, where possible (as per **Section 3.3**). Vegetation boundaries or transition zones were avoided. Additional quadrats 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 quadrat locations were adjusted from the initial proposed locations where:

- variations in floristic patterning were observed, including placing additional quadrats 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.

All vascular flora taxa (native and introduced) that were visually identifiable within each quadrat were recorded. At least one reference specimen of most taxa encountered (excluding common, distinctive taxa) was collected for verification and identification purposes (see **Section 3.5**).

The following information was recorded at each quadrat:

- personnel

- unique quadrat number
- survey date
- GPS coordinates at start corner of quadrat (recorded using handheld GPS units) (Geocentric Datum of Australia 1994 (GDA94), Zone 50)
- size and dimensions of quadrat
- site photograph, taken diagonally into quadrat from start corner
- compass bearing for two sides of quadrat that commence at start corner of quadrat
- 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 Eremaean and Northern Provinces; scale presented in **Appendix A**) and a description of disturbances (where relevant)
- approximate time since fire
- foliage cover (%) (for each taxon, native and introduced, including cover within the quadrat of individuals rooted outside of the quadrat)
- height (m) (average for each taxon, native and introduced, excluding climbers/aerial shrubs)
- additional flora taxa present immediately outside of the quadrat.

Flora and vegetation survey quadrats are not considered to be the most appropriate sampling method in all instances. Where areas of vegetation in relatively degraded condition are encountered, or if areas of vegetation are too small or narrow to allow for the establishment of quadrats (e.g. narrow road verges), the establishment and survey of relevés rather than quadrats is considered more appropriate. A total of four non-permanent flora and vegetation survey relevés were established and surveyed in the Survey Area during the 2022 field survey. The placement of the relevés within the Survey Area was as below:

- one relevé within the Targeted Survey Area
- three within the wider Survey Area.

Relevés surveyed an area within a radius of approximately 20 m around a central point. All data recorded for quadrats (as listed above) was also recorded for relevés; however, only dominant taxa of each stratum level were recorded, as well as any taxa not previously observed elsewhere.

As mentioned above, a large percentage of previously surveyed quadrats from the Ecoscape (2021) and Mt Dove (Woodman Environmental, 2011) surveys were re-visited, with re-visited quadrats pre-selected based on a review of taxon lists; quadrats with potential taxonomic anomalies were prioritised for re-visiting. Quadrat parameters and taxon lists were taken in the field, and taxon presence was confirmed or updated to align with data collected from quadrats newly established as part of the 2022 survey; representative collections were made where necessary to confirm taxon identities. Changes to taxon nomenclature were also made to quadrats that were not re-visited where it was considered clear that a nomenclatural issue

had been consistently repeated throughout the survey, based on the results of re-visits to other quadrats. Additionally, taxa that were observed to be clearly present within previously surveyed quadrats, but were not present on the quadrat taxon list, were added to the taxon list.

All traverses made during the 2022 detailed field survey are mapped as track logs on **Figure 3.1**, along with vegetation mapping note locations, and quadrat and relevé locations; this includes those established during previous surveys during the Ecoscape and Mount Dove surveys.

3.4.3 Vegetation Notes

Notes on vegetation pattern boundaries and distribution were also taken while traversing the Survey Area during the 2022 survey. 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 allocated quadrats. Not all vegetation pattern polygons received quadrats or relevés due to time constraints; however, many polygons can be confidently allocated to a final vegetation type (VT) 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 quadrats and 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 and 2024 field surveys over a large proportion of the Targeted Survey Area. All taxa and vegetation identified by the desktop assessment as potentially occurring within the Survey Area were considered to be identifiable during the survey (as per **Section 5.1.4**). Therefore, all such taxa and vegetation were targeted. It should be noted that *Seringia exastia* (T) was not targeted during the 2022 survey, as the DBCA advised that targeted survey was not required for this taxon. However, *Seringia exastia* (T) was subsequently targeted during the 2024 survey – this is discussed further in **Sections 5.1.1** and **5.2.2**.

Polymeria sp. nov was provisionally identified as being a plant of potential significance towards the end of the third field trip in 2022 (5–14 April 2022); it was therefore included in the search parameters at the end of the third field trip and in subsequent trips (27 April – 5 May 2022 and 11–28 July 2022). The taxon itself was not conclusively identified as a new taxon until after the completion of field surveys in 2022. It currently remains a taxon of potential significance but is not yet formally listed as a Priority or Threatened taxon. Because of the limited available data for this taxon, and the fact that it was not searched for over much of the Targeted Survey Area in 2022, further targeted survey was conducted in 2024.

Prior to the 2024 targeted survey, a desktop assessment was undertaken to identify areas of suitable habitat for this taxon in the Targeted Survey Area. Suitable habitat was defined based on a combination of VT mapping, as well as fire history; all records of this taxon recorded in 2022 were in recently burnt areas, with survey of longer-unburnt areas of the same VTs within which this taxon was recorded yielding no individuals (discussed further in **Section 5.2.4.1**). Therefore, suitable habitat within the Targeted Survey Area was considered to be areas of VTs that this taxon was recorded in in 2022 that had been burnt within the previous 5 years; fire history was determined using fire scar mapping provided by De Grey, as well as aerial photo interpretation (see **Figure 3.1**). Such areas within the Targeted Survey Area (which had not been searched for this taxon previously) were therefore searched during the 2024 survey.

Survey for this taxon was also undertaken outside the Targeted Survey Area in the wider Survey Area, with the same criteria outlined above used to identify areas of suitable habitat. Previously recorded locations of this taxon were initially prioritized for such 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 50 m apart. Where plants of significant flora taxa were encountered, or where traverses intersected habitat of less conspicuous flora, survey was undertaken between traverses. However, it is worthy of note that due to the grid spacing used, numbers of plants recorded are not considered to be a full census of each taxon within the Targeted Survey Area, but instead provide a conservative estimate of the numbers of individuals present, and their distributions.

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 25 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 25 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.

In addition to *Polymeria* sp. nov., all other taxa recorded in the Targeted Survey Area were also the subject of specific targeted survey in the wider Survey Area, and in some cases outside the Survey Area, to provide contextual information on the distribution and abundance of these taxa, with foot traverses undertaken in suitable habitat. Information recorded at identified locations of these taxa was the same as that recorded during targeted searching.

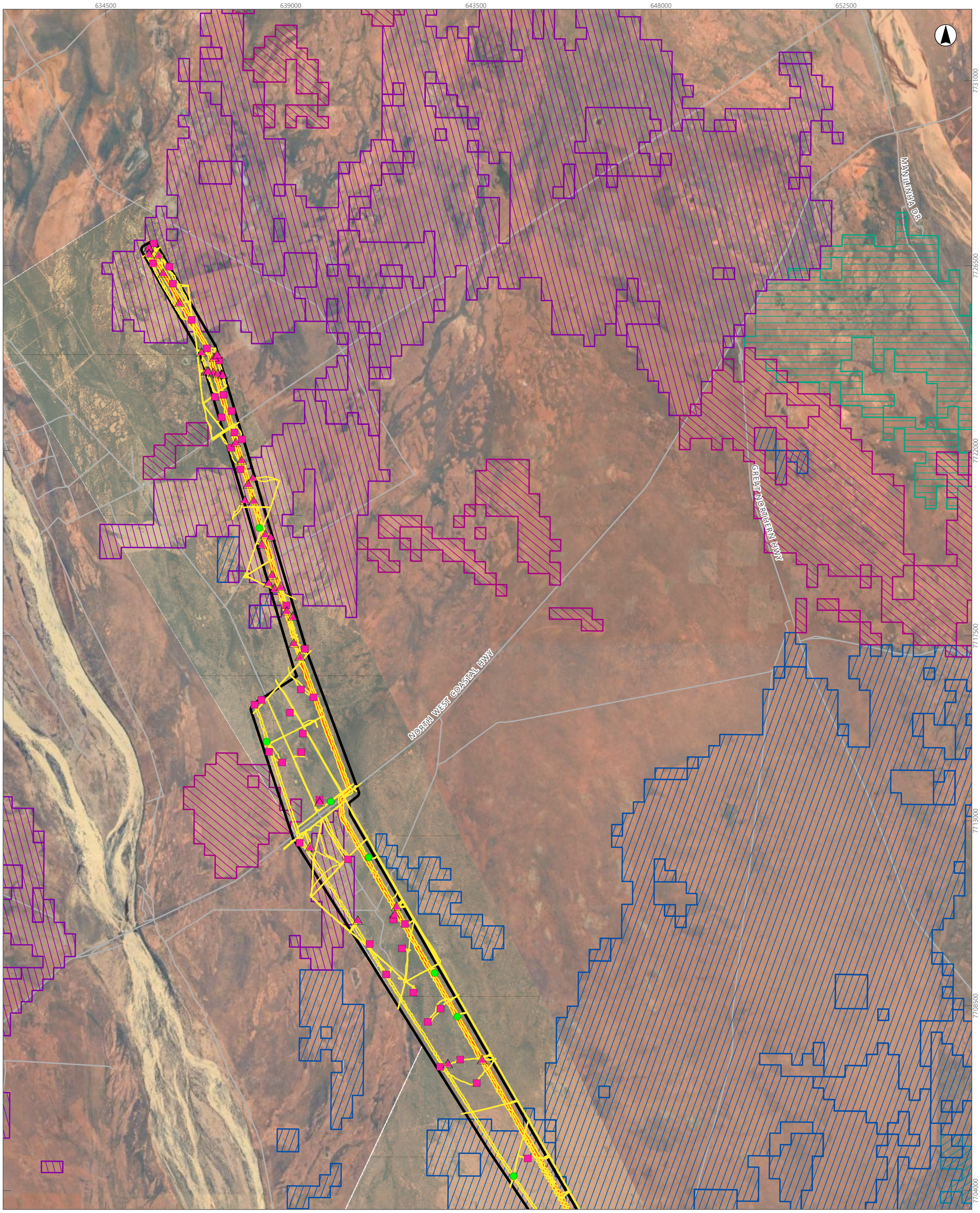
Targeted significant flora and vegetation searching was also undertaken opportunistically while traversing to quadrat and relevé locations. If new locations of significant flora taxa were identified, a representative collection of material was made (**Section 3.5**). Information recorded at such locations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

All traverses made during the 2022 and 2024 targeted field surveys are mapped as track logs on **Figure 3.1**, along with vegetation mapping note, and quadrat and relevé locations.

A proportion of targeted survey in 2022 was conducted in April and early May; although this is generally an appropriate time for such survey in the Pilbara Region, due to below average rainfall prior to the survey some of the ephemeral significant taxa known to occur or potentially occurring in the Survey Area may have been present in very low numbers, or may have been absent altogether. To account for this limitation, targeted surveys were repeated during the July survey period in any areas of suitable habitat for ephemeral significant taxa identified by the desktop assessment.

3.4.5 Introduced Flora Taxa

Opportunistic locations of introduced flora taxa encountered while traversing between quadrats and 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: 1:90,000 at A4, GDA2020 MGA Zone 50

Legend

- Survey Area
- Targeted Survey Area
- Road
- 2022 Track Logs

2022 Survey

- Quadrat
- Relevé
- Vegetation Mapping Note

Ecoscape Survey

- Previous Quadrats

Recently Burnt Areas

- 2023
- 2022
- 2021
- 2020
- 2019

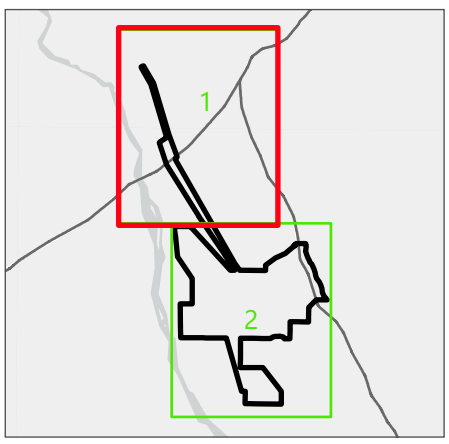


FIGURE 3.1

Track Logs and Sample Sites in the Survey Area (Sheet 1)

0 1.8 3.6

Kilometres

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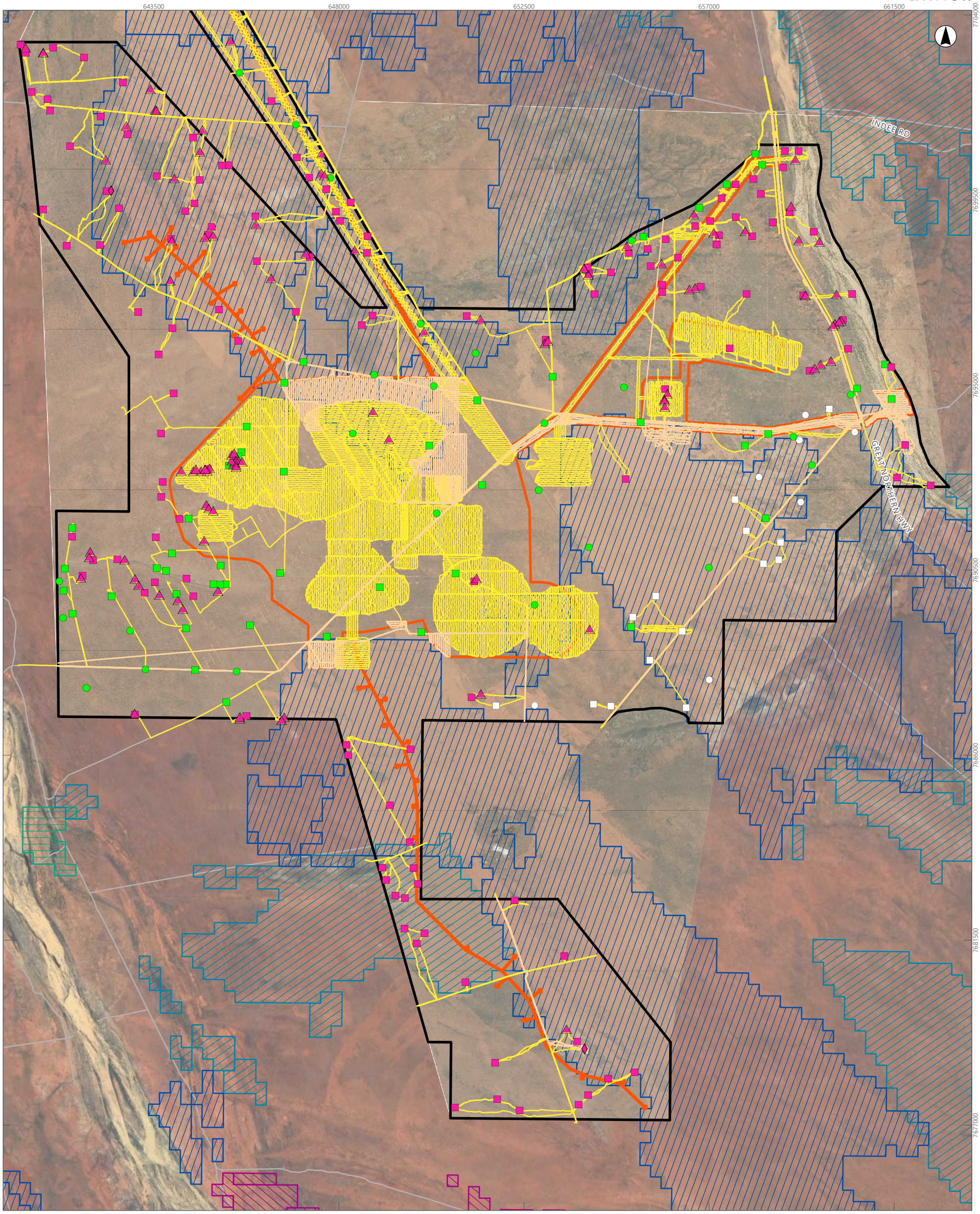

Scale: 1:90,000 at A4, GDA2020 MGA Zone 50

Legend

- Survey Area
- Targeted Survey Area
- Road
- 2024 Track Logs
- 2022 Track Logs

2022 Survey

- Quadrat
- Relevé
- Vegetation Mapping Note

Ecoscape Survey

- Previous Quadrats
- Quadrats Resurveyed in 2022

Mount Dove Survey

- Previous Quadrats
- Quadrats Resurveyed in 2022

Recently Burnt Areas

- 2023
- 2021
- 2020
- 2019

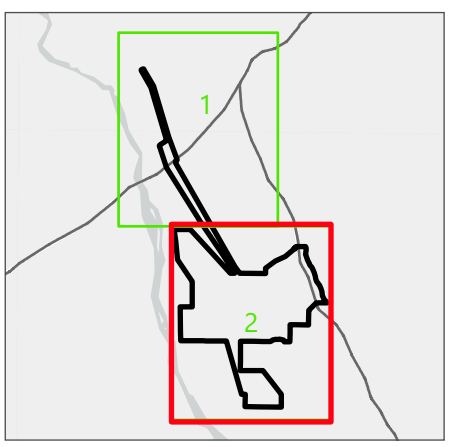

FIGURE 3.1

Track Logs and Sample Sites in the Survey Area (Sheet 2)

0 1.8 3.6

Kilometres

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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 Pilbara (**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 Classification Analysis

Floristic classification analysis of data from 276 quadrats established in the Survey Area (**Section 3.4.2**) was performed to inform the grouping of VTs in the Survey Area. The dataset included floristic data as below:

- 175 quadrats newly established in the Survey Area in 2022 by this current survey (see **Section 3.4.2**)
- 80 quadrats established in 2021 by Ecoscape that are located within the Survey Area, including 48 quadrats that were revisited in 2022
- 21 quadrats established in 2010 for the Mount Dove project that are located within the Survey Area, including 14 that were revisited in 2022.

Data from all historical quadrats were reviewed thoroughly for taxonomic currency (both in a nomenclature and conceptual context), with nomenclature updated where required (see **Section 5.2.1** for further details).

The floristic classification analysis was undertaken by a botanist with considerable previous experience (> 6 years) in undertaking and interpreting floristic analysis results and was reviewed by a botanist with extensive previous experience (> 15 years) in Pilbara analyses.

Taxa belonging to the below categories were removed prior to the classification analysis:

- Annual/ephemeral taxa –the presence of annual or ephemeral taxa is strongly influenced by seasonal conditions, and these taxa can be variably distributed across an area even after above-average rainfall. Furthermore, the presence of many annual or ephemeral taxa is linked to fire history, with greater taxa and individuals present in the first one or two years since fire. Therefore, if fire history is variable across an area, it may introduce the risk of VTs being allocated by the classification analysis based on time since fire.

- Introduced taxa – introduced taxa were removed as their distributions are generally defined by the presence of disturbance (e.g. clearing, animal movement) rather than natural ecological drivers. Vegetation type must be determined independently of vegetation condition for the purposes of EIA; therefore, including weeds in the classification analysis introduces the risk of VTs allocated by the analysis being based on condition (presence/absence of introduced species) rather than native taxon presence/absence.

- Hybrids – hybrids are usually the result of random reproductive events that produce small numbers (often only one) of sterile offspring and are often not associated with particular habitat types.

- Taxa where identification was unclear – taxa were removed from the analysis where identification was unclear due to poor available material in the field. However, if such a taxon was known to be unique within the dataset (i.e. although not identifiable to species level, there was enough material to indicate it representing a unique taxon), and the taxon had multiple records in the dataset, it was included in the analysis (e.g. *Polymeria* sp. nov.).

- Singletons – taxa that occur only once in the dataset were removed, as published studies indicate that they provide little information in the dataset (e.g. Markey & Dillon (2008)).

All taxa removed from the classification analysis (excluding taxa belonging to the abovementioned categories) are presented in **Appendix B**. Also presented in **Appendix B** are taxa that were amalgamated in the classification analysis; this was done, for example, where different infra-taxa could not be consistently positively identified at all quadrats due to inadequate material.

The final dataset contained 170 taxa following the removal and/or amalgamation of the above-noted taxa.

Prior to undertaking agglomerative hierarchical clustering, a principal components analysis (PCA) using R Statistical Software (R Core Team, 2022) was undertaken on a single-layer data matrix consisting of presence/absence species data. Two analyses were then undertaken to determine the optimal number of clusters, with the minimum of these two metrics being considered to capture the majority of variation in the quadrat data:

- The point where the principal components contribute 5 % of the standard deviation and the principal components cumulatively contribute 90 % of the standard deviation.

- The point where the percent change in variation between consecutive principal components is less than 0.1 %.

The same presence-absence data matrix was then used in the classification analysis, with the classification and ordination analysis of the data matrix undertaken using the 'vegan' (Oksanen et al., 2020) and 'cluster' (Maechler et al., 2021) R packages using R Statistical Software (R Core Team, 2022). The Bray-Curtis coefficient was used to generate an association matrix for the classification analysis. This association matrix consisted of pairwise coefficients of similarities between quadrats based on floristic data. Agglomerative hierarchical clustering, using flexible Unweighted Pair Group Method with Arithmetic Mean (UPGMA) (ß = - 0.1), was used to generate a quadrat classification dendrogram using the 'factoextra' R package (Kassambara & Mundt, 2020).

In addition to the dendrogram, a cluster plot was generated using the 'factoextra' R package (Kassambara & Mundt, 2020). Prior to generating the cluster plot, PCA was performed to reduce the number of dimensions such that the data can be represented by clusters in a two-dimensional space. The data was then plotted according to the first two principal components that explain the majority of the variance in the dataset. This plot was utilised to assist in determining the feasibility of clusters and quadrat placement in the dendrogram.

3.7 Vegetation Type Definition, Mapping and Description

The classification analysis of the Survey Area floristic data aggregated quadrats and taxa into clusters according to the optimal number of cluster analysis (**Section 3.6**). The resulting dendrogram and taxon group matrix were initially examined at this level to determine the plausibility of groups with regard to taxon groups, in combination with field observations. This process determined a final number of groups, which were considered to represent VTs.

Following this process, floristic and structural data recorded at relevés was examined to determine whether vegetation sampled by such relevés, such as in the case where vegetation condition may not support classification analysis, was analogous to any of the VTs defined by floristic composition classification. Any such vegetation that was not considered to be analogous with any of the VTs defined by floristic classification was considered to represent a discrete VT.

VT descriptions have been adapted from the National Vegetation Information System (NVIS) Australian Vegetation Attribute Manual Version 6.0 (ESCAVI, 2003), as stipulated by EPA Technical Guidance (EPA, 2016b). This model follows nationally-agreed guidelines to describe and represent VTs, so that comparable and consistent data are produced nation-wide. It should be noted that the NVIS system utilises vegetation descriptions derived from structural characteristics of the individual community units, while VTs presented in this report are defined based on the results of a floristic classification analysis, excluding any structural data. Such VTs therefore may 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 VTs that reflect taxon composition and the influences of the physical and chemical environment, rather than disturbance history.

It should also be noted that this report describes VTs at the NVIS Sub-Association level, rather than the Association level as recommended by EPA (2016b). This level is considered more appropriate for the vegetation of the Survey Area, as often the vegetation possessed one or more additional strata to the traditional three-stratum classification system used at the Association level.

For each VT, indicator taxa were defined via Indicator Taxon Analysis. This was conducted using PC-Ord (V6.08) (McCune & Mefford, 2011) via the method of Dufrêne and Legendre (1997). This generates indicator values (INDVAL) (a measure of taxon fidelity to a given VT) that range from 0 to 100; an INDVAL of 100 indicates that a taxon is present in all quadrats within a particular VT, and absent from all other quadrats included in the analysis. The INDVAL scores were then tested for significance of the indicator taxa using a Monte Carlo permutation test. Indicator taxa were defined as taxa with a significance *p* value of either < 0.05, < 0.01 or < 0.001. The same taxa amalgamations (as per **Appendix B**) and exclusions (i.e. annuals/ephemerals, introduced taxa, hybrids and singletons) were employed for the indicator species analysis as per the floristic classification analysis (**Section 3.6**).

Locations of quadrats and/or relevés within each VT were used in conjunction with aerial photograph interpretation and field notes taken during the field survey to develop VT mapping polygon boundaries. Mapping boundaries were developed using aerial photography on a scale of 1:10,000 and reflected changes in vegetation patterns visible at this scale. The VT mapping polygon boundaries were then digitised using Geographic Information System (GIS) software.

3.8 Vegetation Condition Mapping

Vegetation condition was described using the vegetation condition scale presented in EPA (2016b) for the Eremaean and Northern Botanical Provinces (as per **Appendix A**). Notes on vegetation condition were taken during the field survey via vehicle traverses along access tracks, and during foot traverses undertaken within the Survey Area. Vegetation condition was also recorded at all quadrats and 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 VT polygon boundaries.

3.9 Significant Flora and Vegetation Definitions

3.9.1 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 (GDEs))
- 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 known from the Survey Area are also presented in this section. Note that the values for number of locations and individuals of significant flora taxa of the Survey Area as presented in **Section 5.2.2** includes data collected by the current survey in 2022 and by Ecoscape (2021). Potential duplication of records in the Survey Area has been avoided by assessment of locations of significant flora taxa recorded by the current survey against Ecoscape data in a GIS environment.

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).

3.9.2 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 available for TECs and PECs of the Pilbara region. 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 VTs 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 remaining significant vegetation criteria other than "being identified as a TEC and PEC" were applied to VTs mapped in the Survey Area to determine whether a VT was significant in a local or regional context. However, in a regional context, limited information is available for comparison with VTs in the Survey Area. This is discussed further in **Section 5.2.12**.

In addition, VTs described by Ecoscape (2021) as being of potential significance are specifically discussed, where they occur within/are relevant to the Survey Area.

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

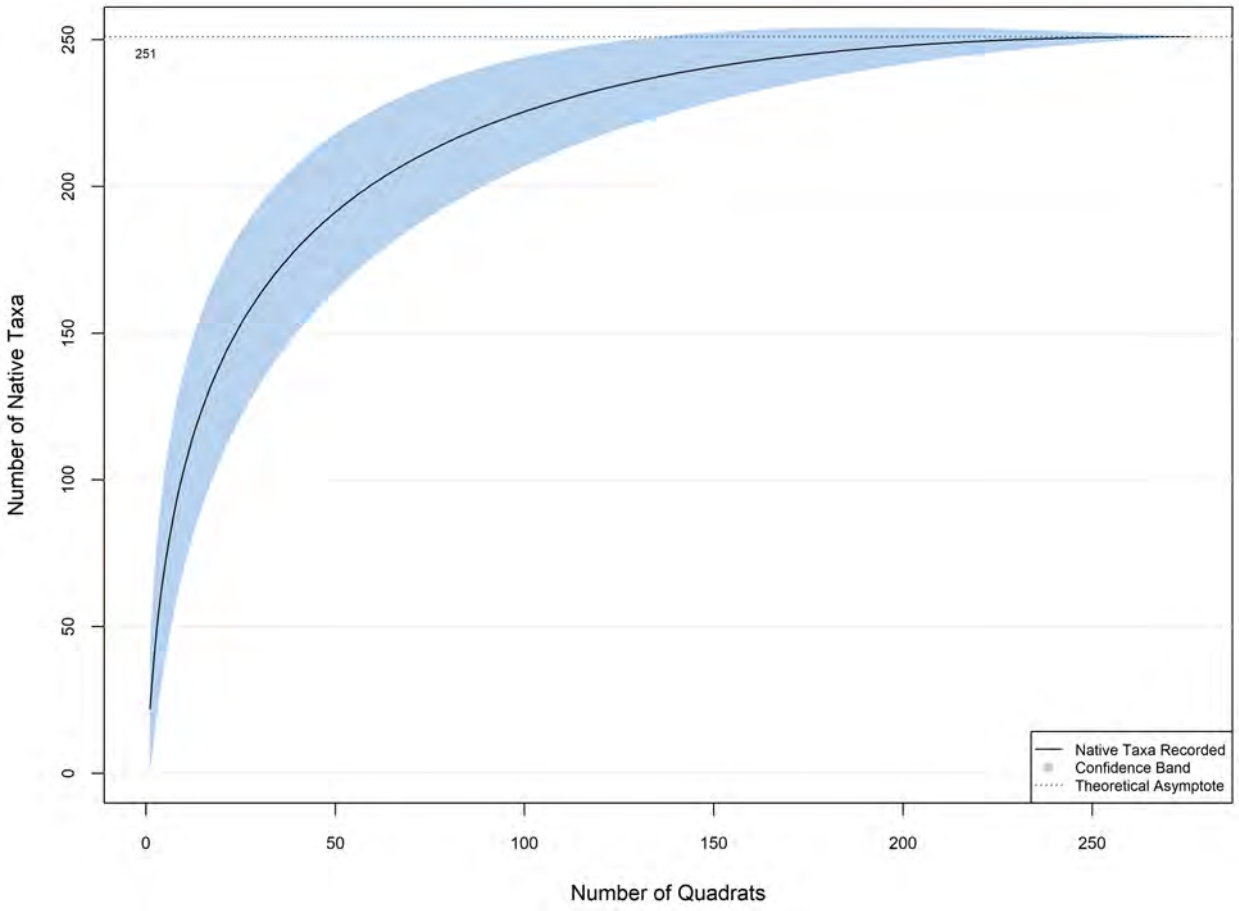
The Survey Area covers 29,518 ha, with 276 quadrats established within it during the 2022 field survey or relevant previous surveys. Quadrats were established in all preliminary vegetation patterns discernible by initial aerial photograph interpretation (**Section 3.3** and **Section 3.4.2**), both to adequately sample variation in vegetation throughout the Survey Area, and to ensure adequacy of sampling for vascular plant taxa.

The number of quadrats established in the Survey Area is considered to be acceptable given the relatively low diversity of topography and soil types noted in the Survey Area, as well as the size of the Survey Area (approximately 1 quadrat established per 110 ha of Survey Area).

To provide an indication of the adequacy of this survey, a taxon accumulation curve was produced with the 'vegan' R package (Oksanen et al., 2020) using R Statistical Software (R Core Team, 2022). Taxon accumulation curves represent a theoretical model of the relationship between sampling intensity and taxon accumulation; when sampling intensity is increased, taxon accumulation is reduced, and the taxon accumulation curve becomes asymptotic.

The taxon accumulation curve for quadrat data in the Survey Area was generated using all native taxa (both annual and perennial) recorded within each quadrat. Taxon accumulation calculations were then undertaken using the 'SpadeR' R package (Chao et al., 2016), utilising the Chao-2 estimator for species richness (bias corrected form) (Chao, 1987) and compared to the actual number of taxa recorded in the Survey Area. This provides an indication as to whether sufficient quadrats were surveyed to adequately sample the species richness in the Survey Area. As the generation of taxon accumulation curves includes quadrat data only, and not opportunistically recorded taxa or taxa recorded at relevés, the indication of adequacy of survey is considered to be conservative.

Graph 4.1 presents the taxon accumulation curve generated from quadrat data from the Survey Area. Using the Chao-2 estimator, the recorded number of taxa within quadrats (251 taxa) has become asymptotic and is equivalent to the estimated taxon richness in the Survey Area, indicating that the Survey Area was well-sampled.



Graph 4.1 Survey Area Quadrat Data Taxon Accumulation Curve

Another adequacy of survey measure is that developed by Mueller-Dombois & Ellenberg (1974), who suggest that a cut-off point might be when a 10 % increase in quadrats surveyed results in a ≤ 5 % increase in taxa recorded. This measure was also calculated using all native flora taxa recorded within each quadrat. The number of quadrats established by the field survey satisfies this adequacy measure, with the final taxon increase value of 0 % recorded following a 10 % increase in quadrats.

4.2 Limitations of Survey

Table 4.1 presents the limitations of the 2022 and 2024 flora and vegetation assessment of the Survey Area in accordance with EPA Technical Guidance (EPA, 2016b). This includes the surveys conducted by Ecoscape (2021) and Woodman Environmental (2011) (where relevant), as data from these surveys has been incorporated into this assessment.

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

Limitation	Determination	Comment
Effort and extent	Partial limitation	A Detailed Survey was undertaken across the entire Survey Area. Overall, 276 quadrats have been established in the Survey Area, of which 175 were newly established by this current survey. In total, 237 quadrats of the 276 total quadrats were assessed by this survey. The number of quadrats is considered adequate to characterise the flora and vegetation of the Survey Area, with at least three quadrats allocated to each vegetation pattern identified pre-survey. While three VTs were sampled by a single quadrat only, these VTs are mapped in single, small polygons in the Survey Area. The small size of these areas prevented replication of quadrats/relevés within them, and heritage restrictions also limited sampling of the vegetation now considered to represent VT 7 (see **Section 5.2.9**). Adequacy of survey measures indicate that the Survey Area was well sampled and it is considered that there was no limitation in terms of detailed survey extent. Systematic targeted survey for all significant flora taxa identified by the desktop assessment was conducted within suitable habitat within the Targeted Survey Area within 2022 and 2024 at 50 m spacings; however, portions of the Targeted Survey Area were not grid searched. Therefore additional significant flora individuals may be present in areas which were not searched. In addition, *Seringia exastia* was not targeted during the 2022 survey, as discussed below. Opportunistic targeted survey for significant flora taxa was also undertaken while traversing the Survey Area to establish quadrats and relevés. Targeted survey for *Polymeria* sp. nov was undertaken over a portion of the Targeted Survey Area in 2022 and 2024; survey in 2024 only covered areas that had been burnt within the last 5 years. Although the occurrence of this taxon only in relatively recently burnt areas cannot be conclusively proven, it is considered likely based on the locations recorded in 2022 in the Survey Area, as well as at other locations outside the Survey Area (see **Section 5.2.4.1**). It is therefore considered that all currently suitable habitat in the Targeted Survey Area has been surveyed. *Seringia exastia* is currently listed as Threatened under the EPBC Act but is no longer listed as Threatened in WA under the BC Act, with taxonomic work determining that it is conspecific with the widespread and common taxon; *Seringia elliptica*. As such, the 2022 survey did not target this species as per advice from DBCA, who stipulated that targeted surveys for the taxon were not required (see **Section 5.1.1**). Targeted survey for *Seringia exastia* was undertaken during the 2024 survey to provide additional data in line with Commonwealth Government requirements, but not all areas of potential habitat for this taxon within the Targeted Survey Area were searched. No constraints prevented appropriate sampling techniques (quadrat/relevé establishment, foot traverses) being employed. Most areas were relatively easy to access using available access tracks/drill lines. Data reliability is therefore considered to be relatively high.

Limitation	Determination	Comment
Competency / experience of the team carrying out the survey	Not a limitation	The Project Manager has previous experience (> 15 years) in conducting similar assessments in the Pilbara Region and conducting systematic sampling and analysis. Other field team leaders have previous experience (> 2 years) in conducting flora and vegetation surveys in the Pilbara 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 and 2024 field surveys, and all field personnel observed in situ locations of significant flora taxa known to occur in the Survey Area prior to surveys commencing. Personnel overseeing plant identifications have > 15 years' experience in plant identification in flora of the Pilbara 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. Personnel undertaking survey of quadrats previously established in the Survey Area (Ecoscape, 2021; Woodman Environmental, 2011) are considered to have been adequately experienced based on review of associated survey reports.

Limitation	Determination	Comment
Proportion of flora recorded and/or collected and identified	Not a limitation	All vascular groups that were present in the Survey Area were sampled. At least one reference specimen of all taxa encountered (excluding common, distinctive taxa) was collected for verification and identification purposes during the 2022 field survey. Four of the five site visits for the 2022 field survey were conducted within what is generally considered to be the ideal time to survey in the Pilbara Region (March to June). However, precipitation received in the six months prior to these site visits was well below average (**Section 2.2**), and as a result, ephemeral species were observed to be in low abundance during these site visits. It is possible that a small number of particularly fragile taxa (e.g. some grass species) may not have been detectable or identifiable. However, the final site visit in July 2022 was conducted within six to eight weeks after significant rainfall received at the end of May 2022 (**Section 2.2**), and ephemeral taxa were observed to be abundant and widely distributed and the majority of perennial taxa were in flower. Therefore, many taxa that were not identifiable or observable during the initial site visits were likely captured by the July 2022 site visit, or by the previous survey conducted by Ecoscape (2021) (see below). The 2024 field survey was conducted in April / May, within the period generally considered to be the ideal time to survey in the Pilbara Region. All unknown vascular taxa were collected, almost all flora taxa could be positively identified. 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. Above average rainfall was received prior to the Ecoscape (2021) survey, which was conducted in the usual 'wet' season; it is considered that the full suite of species expected was present and identifiable, including ephemeral species. Rainfall prior to the Mt Dove Survey (Woodman Environmental, 2011), which was conducted towards the end of the usual post 'wet' season survey period in the Pilbara Region, was below average. Therefore, similar to the surveys conducted during the usual 'wet' season in 2022, abundance of ephemeral taxa was low, and some taxa may not have been detectable. However, it is likely that any such taxa were sampled by the survey in July 2022. Adequacy of survey measures indicate that the Survey Area was well sampled.
Sources of information e.g. previously available information (whether historic or recent) as distinct from new data	Not a limitation	Reasonable 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 Pilbara 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 5.1.3** are also considered to be generally reliable unless where stated. Review of BoM climate data for Indee and Port Hedland Airport stations revealed a small number of gaps in the daily datasets for temperature and precipitation; however, this data was used in an indicative manner only, and therefore this is not considered to be a limitation of this survey.

Limitation	Determination	Comment
Survey timing and weather/season/cycle	Not a limitation	All survey periods were conducted within what is considered to be the most appropriate time to survey in the Pilbara Bioregion. As discussed above, four of the five site visits for the 2022 field survey were conducted within the usual 'wet season' in the Pilbara Region, although below-average precipitation was received in the months prior to these site visits, and consequently, the diversity and abundance of annual and ephemeral taxa was considered to be lower than usual. However, the July 2022 site visit was undertaken within six to eight weeks of significant rainfall received at the end of May 2022; it was apparent that the full suite of ephemeral taxa were present, and most perennial taxa were in flower. Overall, survey timing and climate are not considered to be a limitation of this assessment. Although abundance of ephemeral taxa was lower than expected during the 2022 'wet' season, it is considered that most ephemeral taxa were still present, and any taxa not present were sampled during the July visit after significant rain in May; individual quadrat taxon lists for those undertaken in the 'wet' season may therefore be lacking some ephemeral taxa that would normally be expected to occur at these locations. All significant flora taxa identified during the desktop assessment were considered to be identifiable during the field survey. Some ephemeral significant taxa known to occur or potentially occurring in the Survey Area may not have been present during the 'wet' season surveys and therefore would not have been identifiable during targeted survey undertaken at this time; however, any suitable habitat for such taxa was subsequently re-surveyed in July, when all ephemeral taxa were considered to be present and identifiable. All perennial taxa, including all perennial significant taxa known or potentially occurring in the Survey Area, were in a condition suitable for identification during all surveys. Above average rainfall was received prior to the Ecoscape (2021) survey, which was conducted in the usual 'wet' season; it is considered that the full suite of species expected was present and identifiable, including ephemeral species. Rainfall prior to the Mt Dove Survey (Woodman Environmental, 2011), which was conducted towards the end of the usual post 'wet' season survey period in the Pilbara Region, was below average. Similar to the surveys conducted during the usual 'wet' season in 2022, abundance of ephemeral taxa was low, and some taxa may not have been detectable. Individual quadrat taxon lists may therefore be lacking some ephemeral taxa that would normally be expected to occur at these locations. However, it is likely that any such taxa were sampled by the survey in July 2022. The rainfall received prior to the 2024 targeted field survey was below the long-term average. It is possible that this may have affected the detectability of *Polymeria* sp. nov, as this taxon may only be present as root stock during drought periods (see **Section 5.2.4.1**). It is unlikely that the detectability of any other significant taxon was affected considering the habitat surveyed in 2024.

Limitation	Determination	Comment
Disturbances (e.g. fire, flood, accidental human intervention etc.) that may have affected results of survey	Not a limitation	Small portions of the Survey Area had been affected by recent fires (approximately August 2021 and December 2021), including a small portion of the Targeted Survey Area. This resulted in some difficulty identifying taxa in these areas during the field survey. It is considered that the fire did not affect the detectability or identifiability of any target significant flora taxa, as Targeted survey within the recently burnt areas of the Targeted Survey Area was conducted during the final site visit in 2022 following significant rainfall received at the end of May 2022. It was observed that in these areas, many of these taxa had already matured sufficiently to allow confident identification. In many cases, the abundance of target taxa was significantly higher in burnt areas compared to unburnt areas. Quadrat survey in these areas was also only undertaken during the final site visit in 2022 following significant rainfall received at the end of May 2022; consequently, there were no significant issues related to the identification of any taxa in these areas, however the species composition was affected, with a higher number of short-lived perennial and ephemeral taxa present relative to unburnt areas. This is not considered to constitute a significant limitation of the survey. No recent fires (i.e. subsequent to wet season rainfall) were observed (or otherwise recorded in the DBCA fire history database (DBCA, 2023b)) prior to the 2024 targeted survey. The aforementioned fires did result in some difficulties interpreting vegetation patterns on the ground; while this may have a minor impact on vegetation mapping reliability, the impact is not considered to be significant, with pre-fire aerial photography used to aid vegetation mapping in these areas. The Ecoscape (2021) and Mt Dove (Woodman Environmental, 2011) surveys reported similar fire-related issues, none of which are considered to be significant limitations of these surveys. The lack of recent fire may have resulted in particular significant taxa being absent from areas of suitable habitat. *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3), *Euploca mutica* (P3) and *Polymeria* sp. nov (potentially undescribed) all appear to be disturbance opportunists, and are therefore likely to be absent or near-absent from long-unburnt areas. Field observations indicate that *Euploca mutica* (P3) and *Polymeria* sp. nov (potentially undescribed) are likely to be very short lived, and therefore may only be detected in suitable habitat for a few years post-fire. However, this issue cannot generally be avoided by short-term biological surveys.
Remoteness and/or access restrictions	Not a limitation	Most areas were relatively easy to access using available access tracks, allowing high intensity of sampling across the Survey Area. Areas where access tracks were absent were accessed on foot; the flat terrain and generally low, open vegetation allowed resulted in foot access being relatively straight-forward. One small area at the very southern end of the Survey Area (outside the Targeted Survey Area) could not be accessed because of heritage restrictions; this limited quadrat sampling of what was a relatively unusual habitat within the Survey Area. However, this area was small and could be observed from outside the heritage restriction boundary, and therefore the survey results are not considered to have been significantly affected.

5.0 Results

5.1 Desktop Assessment

5.1.1 Regional Significant Flora

The interrogation of the DBCA WA Herbarium (WA Herb) specimen database and TPFL database (DBCA, 2021b) undertaken by Ecoscape (2021) returned a total of 20 listed significant flora taxa that have records within 50 km of the Ecoscape Study Area (**Table 5.1**). The updated database search undertaken in 2022 (DBCA, 2022b) identified an additional two taxa with records within the Desktop Study Area. With the exception of *Seringia exastia* (Threatened – EPBC Act only) (discussed further below), all taxa returned from the DBCA database interrogations are DBCA-classified Priority flora. Note that *Goodenia nuda* (previously P4) was returned by the 2021 and 2022 database searches; however, this taxon has since been delisted by DBCA, and is therefore not discussed further in a conservation significance context.

Two taxa returned from the DBCA WA Herbarium and TPFL database interrogations have records within the Survey Area, being *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3) and *Euploca mutica* (P3) (shaded in grey in **Table 5.1**). There are no known records on DBCA databases of significant flora taxa within the Targeted Survey Area.

Seringia exastia was returned by the DBCA database interrogation, and has been recorded at Hemi by Ecoscape (2021). This taxon is currently listed as Threatened (Critically Endangered) under the Commonwealth EPBC Act only; it was recently delisted from Threatened status in WA under the BC Act. The listing of this taxon as Threatened was supported by knowledge at the time of listing, which indicated that this taxon was discrete from all other *Seringia* taxa on morphological grounds and was known from a single population within the Port of Broome. Recent taxonomic work has determined that *Seringia exastia* is conspecific with *Seringia elliptica*, a taxon widespread across northern and central WA, Northern Territory (NT) and extending into South Australia (Binks et al., 2020). Consequently, *Seringia elliptica* and *Seringia exastia* were synonymised under the oldest valid name, being *Seringia exastia*. This synonymisation has created an anomalous situation whereby *Seringia exastia* as now circumscribed is a common, widespread species that clearly no longer meets the criteria for Threatened status under either of the aforementioned Acts. It is expected that this taxon will be delisted on a Commonwealth level in the near future given its delisting in WA, but it is unclear when this will occur. Until such time, consultation with DCCEEW will be required to determine whether any proposed impacts to this taxon would constitute a controlled action under the EPBC Act.

At the time of the field survey program in 2022, advice from DBCA was that an Application for Authorisation under Section 40 of the BC Act to Take Threatened Flora was required for *Seringia exastia*, until such time as the taxon is formally delisted, but that Targeted surveys for the taxon were not required:

> *"A nomination to delist the species due to no plausible significant threats to the species has been prepared and considered by the WA Threatened Species Scientific Committee (TSSC). We anticipate that at the next TSSC meeting recommendations will be made to the Minister to delist. However, until changes are officially made to the threatened species list, Seringia exastia is still legally listed as threatened flora, and authorisation to take under section 40 of the Biodiversity Conservation Act 2016 is still required. Although some loss of plants is likely to have occurred and will continue to*

occur during mining and road works in some parts of the species' distribution, this is not expected to be significant in the context of the entire population. Therefore, there should be no impediments to granting authorisation, following the standard process of application made to DBCA's Species and Communities Program.

To reduce timeframes and costs associated with approvals under the BC Act, DBCA will not require the standard targeted surveys to be undertaken to inform the threatened flora authorisation impact assessment for Seringa exastia. However, survey reports should still consider Seringia exastia as a listed threatened species and note the presence of the species within a survey area when encountered. Authorisation applications with basic details that the species is known to occur within the applied project area will be accepted and fast-tracked for approval."

As mentioned in **Section 3.4.4**, this taxon was not considered during targeted surveys in 2022, in accordance with the above advice, but was considered during targeted surveys in 2024.

Table 5.1 Listed Significant Flora Taxa Returned from DBCA Database Searches

Taxon	Status (WA)	Source	
		WA Herb	TPFL
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	x	x
Acacia leeuweniana	P1	x	x
Acacia levata	P3	x	x
Bulbostylis burbidgeae	P4	x	x
Eragrostis crateriformis	P3#	x	
Euphorbia clementii	P3	x	x
***Euploca mutica* (previously *Heliotropium muticum*)**	P3	x	
Gomphrena cucullata	P3	x	x
Gomphrena leptophylla	P3	x	
Gomphrena pusilla	P2	x	
Gymnanthera cunninghamii	P3	x	x
Nicotiana umbratica	P3	x	
Phyllanthus hebecarpus	P3	x	
Ptilotus mollis	P4	x	x
Rothia indica* subsp. *australis	P3	x	
Seringia exastia	T*	x	
***Sida* sp. Barlee Range (S. van Leeuwen 1642)**	P3	x	
Stylidium weeliwolli	P3	x	
***Tephrosia rosea* var. Port Hedland (A.S. George 1114)**	P1	x	
Terminalia supranitifolia	P3	x	
Triodia chichesterensis	P3	x	
Vigna triodiophila	P3	x	

* *Seringia exastia* is no longer listed as Threatened under the WA BC Act, but remains listed under the Commonwealth EPBC Act.
\# *Eragrostis crateriformis* was delisted following the 2022 survey as discussed in **Sections 5.1.4** and **5.2.2**

Note: grey shading indicates taxa with known records within the Survey Area.
Source: DBCA (2021b, 2022b).

The interrogation of the DAWE (now DCCEEW) SPRAT database undertaken by Ecoscape (2021) (DAWE, 2021) with regard to MNES listed under the EPBC Act did not identify any flora taxa listed as Threatened Species under the EPBC Act, or habitat for such species, that are known, are likely to, or may occur within the Desktop Study Area. However, the search undertaken in 2022 and 2024 using a 50 km buffer on the Survey Area boundary (i.e. the Desktop Study Area) identified one Threatened plant taxon, *Quoya zonalis* (previously *Pityrodia* sp. Marble Bar (G. Woodman & D. Coultas GWDC Opp 4)), or habitat for this taxon, as 'likely' to occur within the buffer area (but not within the Survey Area itself) (DAWE, 2022a; DCCEEW, 2024). The full results of the most recent (2024) DCCEEW database search are presented in **Appendix C**; the results of the search conducted by Ecoscape are not available.

5.1.2 Regional Vegetation

The Survey Area is located in the Pilbara IBRA bioregion, specifically within the Abydos Plain (Beard, 1975). Of the four main associations described on the Abydos Plain, shrub steppe is predominant in the Survey Area. This is the main community of the granite plain and is dominated by *Acacia inaequilatera* - *Triodia epactia* associations, with hummock grasses and widely-spaced shrubs (Beard, 1975).

As discussed in **Section 2.1**, the Survey Area is located on the junction of the Roebourne and Chichester subregions of the Pilbara IBRA bioregion (the majority of the Survey Area being located within the latter) (DAWE, 2020). The Chichester subregion is comprised of undulating Archaean granite and basalt plains with significant areas of basaltic ranges. Plains support a shrub steppe characterised by *Acacia inaequilatera* over *Triodia wiseana* hummock grasslands, while *Eucalyptus leucophloia* tree steppes occur on ranges. The climate of the Chichester subregion is semi-desert-tropical and receives 300 mm of rainfall annually. Drainage occurs to the north via numerous rivers (e.g. De Grey, Oakover, Nullagine, Shaw, Yule, Sherlock) (Kendrick & McKenzie, 2001). The Roebourne subregion is comprised of Quaternary alluvial and older colluvial coastal and sub-coastal plains with a grass savannah of mixed bunch and hummock grasses, and dwarf shrub steppe of *Acacia stellaticeps* or *Acacia pyrifolia* and *Acacia inaequilatera*. Uplands are dominated by Triodia hummock grasslands. Ephemeral drainage lines support *Eucalyptus victrix* or *Corymbia hamersleyana* woodlands. The climate of the Roebourne subregion is arid (semi-desert) tropical with highly variable rainfall, falling mainly in summer. Cyclonic activity is significant, with several systems affecting the coast and hinterland annually (Kendrick & Stanley, 2001).

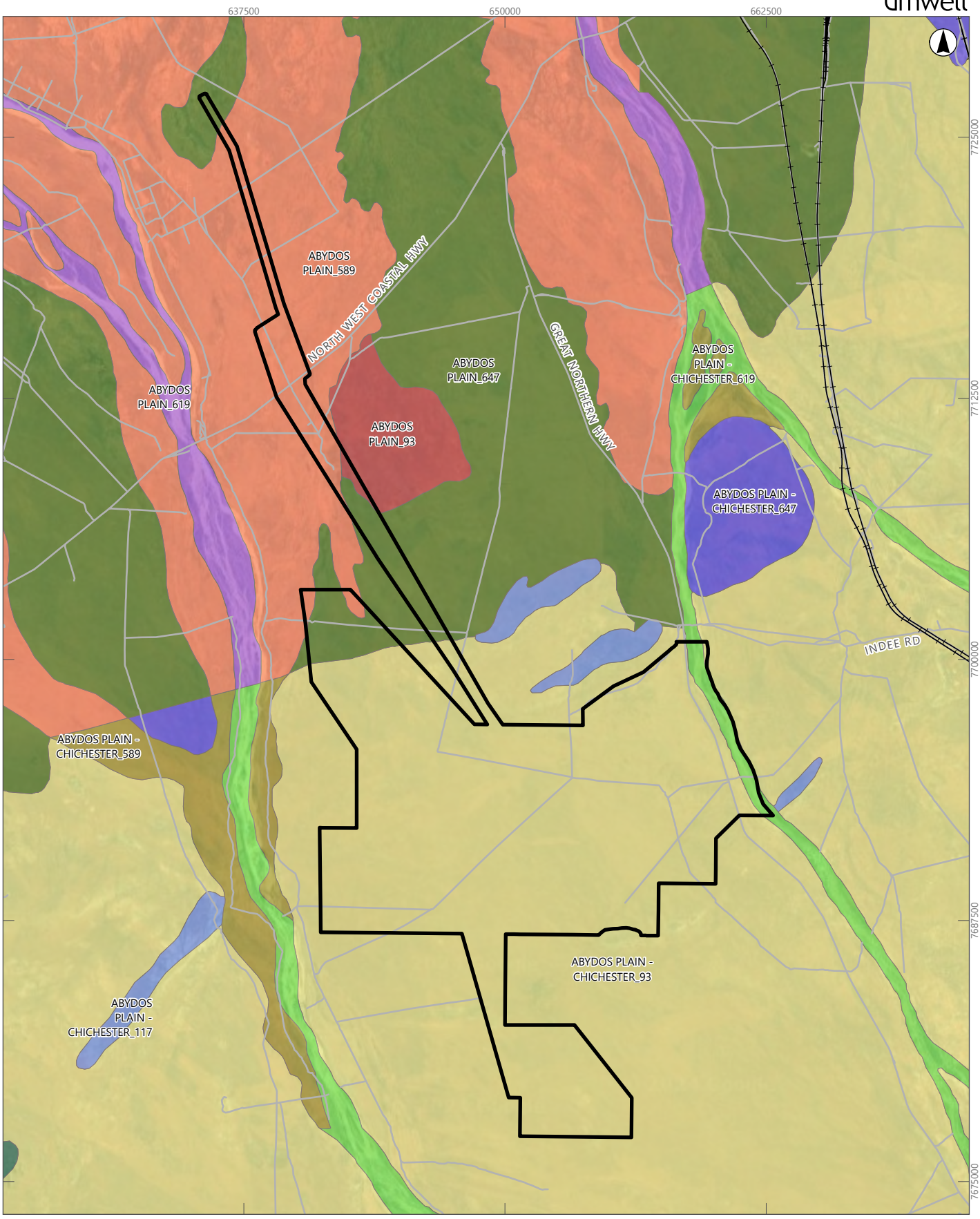
The vegetation of WA as it was presumed to have existed prior to European settlement has been mapped at a scale of 1:250,000 as vegetation system associations (VSAs), with the Pre-European Vegetation spatial database created (Beard et al., 2013; DPIRD, 2019). Five VSAs occur in the Survey Area as summarised in **Table 5.2** and presented on **Figure 5.1**. **Table 5.2** also presents the current extent of each VSA in relation to its pre-European extent within the Chichester/Roebourne IBRA Subregions, and the percentage of the current extent of each VSA currently protected for conservation (as a proportion of the current extent) within the Chichester/Roebourne IBRA Subregions (DBCA, 2019). Note that as per 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.

All VSAs that occur within the Survey Area have almost all their pre-European extents remaining, but three VSAs have very small areas reserved for conservation in their respective subregions, and the remaining two (both in the Roebourne IBRA Subregion) are not protected (**Table 5.2**).

Table 5.2 Vegetation System Associations of the Survey Area

IBRA Subregion	VSA	Description	Extent (ha)			Pre-European Extent Remaining (%)	Current Extent Protected for Conservation (%)
			Survey Area	Pre-European	Current		
Chichester	**Abydos Plain - Chichester_93**	Hummock grasslands, shrub steppe; kanji over soft spinifex	25,063	2,476,378	2,473,007	99.9	0.5
	Abydos Plain - Chichester_619	Medium woodland; river gum (*Eucalyptus camaldulensis*)	556	70,656	70,633	100	0.3
Roebourne	**Abydos Plain_93**	Hummock grasslands, shrub steppe; kanji over soft spinifex	121	17,870	17,867	100	0
	Abydos Plain_589	Mosaic: Short bunch grassland - savanna / grass plain (Pilbara) / Hummock grasslands, grass steppe; soft spinifex	1,860	594,599	592,727	99.7	2.0
	Abydos Plain_647	Hummock grasslands, dwarf-shrub steppe; *Acacia translucens* over soft spinifex	1,919	188,716	184,590	97.8	0

Source: DBCA (2019), DPIRD (2019).



Scale: 1:250,000 at A4, GDA2020 MGA Zone 50

Legend

- Survey Area
- Road

Vegetation System Association

- ABYDOS PLAIN - CHICHESTER_93
- ABYDOS PLAIN - CHICHESTER_117
- ABYDOS PLAIN - CHICHESTER_589
- ABYDOS PLAIN - CHICHESTER_619
- ABYDOS PLAIN - CHICHESTER_626
- ABYDOS PLAIN - CHICHESTER_647
- ABYDOS PLAIN_93
- ABYDOS PLAIN_589
- ABYDOS PLAIN_619
- ABYDOS PLAIN_647

FIGURE 5.1

Vegetation System Associations of the Survey Area

0 5 10
Kilometres

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Image Source: Landgate (2023) | **Data Source:** Landgate (2023), DPIRD (2019), Umwelt (2023)

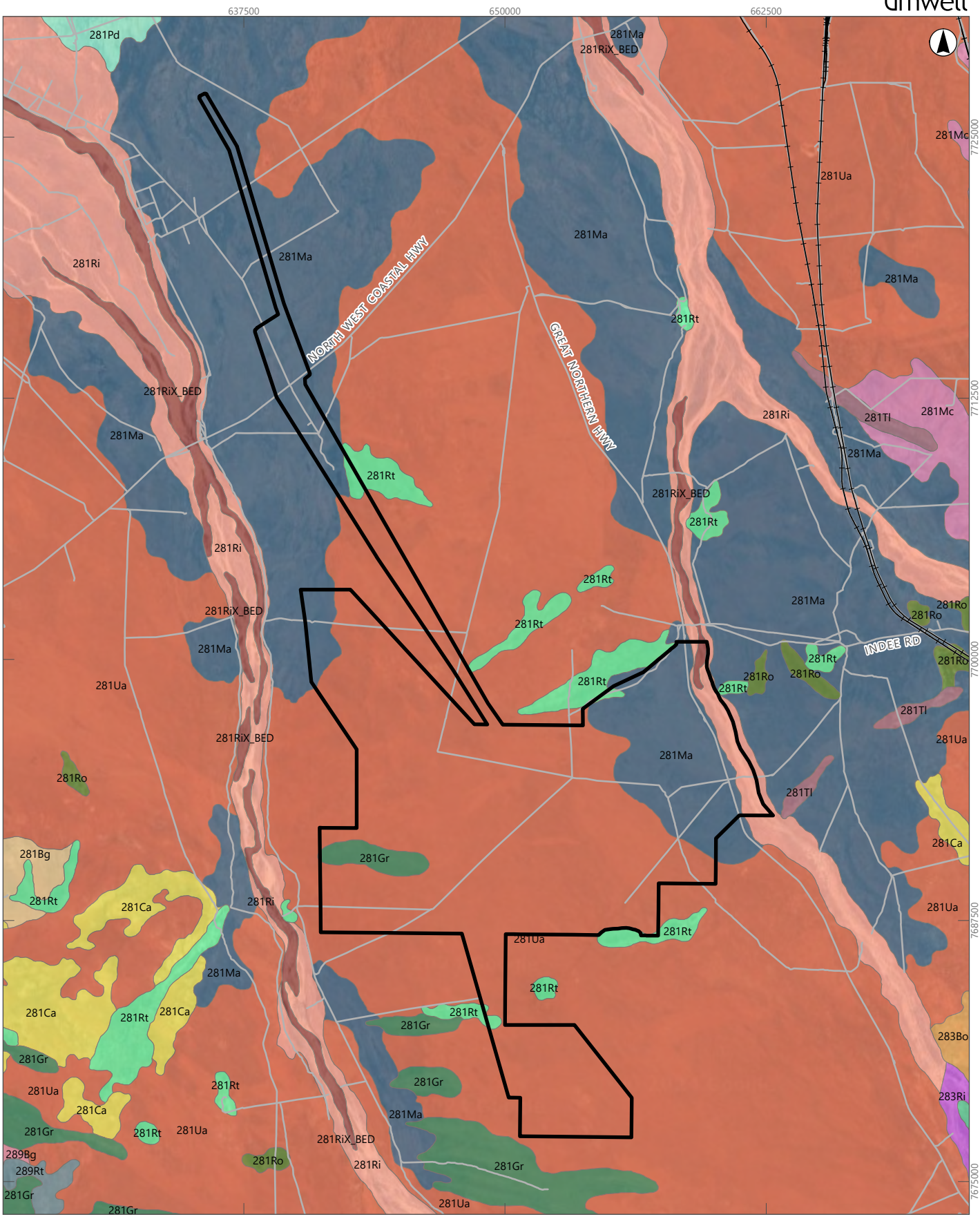
In 2004, the Department of Agriculture described land systems (now referred to as soil landscape units) within the Pilbara IBRA Bioregion, considering general ecological information, vegetation physiognomy and composition, patterns of variation, conservation status, gradational association and land system representation (van Vreeswyk et al., 2004). A total of six soil landscape units occur within the Survey Area as summarised in **Table 5.3** and presented on **Figure 5.2** (DPIRD, 2022a; van Vreeswyk et al., 2004). None of these soil landscape units are listed as TECs under the EPBC Act (DAWE, 2022b); however, the Gregory Land System is a DBCA-classified PEC (P3) (DBCA, 2018, 2022c).

Table 5.3 Soil Landscape Units of the Survey Area

Unit	Description	Mapped Extent (ha)
281Gr: Gregory System	Linear dunes and restricted sandplains supporting shrubby hard spinifex (and occasionally soft spinifex) grasslands	560
281Ma: Mallina System	Sandy surfaced alluvial plains supporting soft spinifex grasslands and minor hard spinifex and tussock grasslands	6,331
281Ri: River System	Narrow, seasonally active flood plains and major river channels supporting moderately close, tall shrublands or woodlands of acacias and fringing communities of eucalypts sometimes with tussock grasses or spinifex	700
281RiX_BED: River bed phase	River bed with no vegetation	86
281Rt: Ruth System	Hills and ridges of volcanic and other rocks supporting shrubby hard spinifex and occasionally soft spinifex grasslands	226
281Ua: Uaroo System	Broad sandy plains, pebbly plains and drainage tracts supporting hard and soft spinifex hummock grasslands with scattered acacia shrubs	21,615

Source: DPIRD (2022a); van Vreeswyk et al. (2004).

The River and River Bed soil landscape units broadly correspond with the Abydos Plain - Chichester_619 VSA (corresponding to major drainage lines with *Eucalyptus camaldulensis*), while the remaining soil landscape units broadly correspond with the Abydos Plain - Chichester_93 VSA (corresponding to shrublands over Triodia hummock grasslands) (**Figure 5.1** and **Figure 5.2**).



Scale: 1:250,000 at A4, GDA2020 MGA Zone 50

Legend

- Survey Area
- Road

Soil Landscape Units

- 281Bg; Boolgeeda system
- 281Ca; Calcrete system
- 281Gr; Gregory system
- 281Ma; Mallina system
- 281Mc; Macroy system
- 281Pd; Paradise system
- 281Ri; River system
- 281RiX_BED; River bed phase
- 281Ro; Robe system
- 281Rt; Ruth system
- 281Tl; Talga system
- 281Ua; Uaroo system
- 283Bo; Boolaloo system
- 283Mc; Macroy system
- 283Ri; River system
- 289Bg; Boolgeeda system
- 289Rt; Ruth system

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0 5 10
Kilometres

Image Source: Landgate (2023) | **Data Source:** Landgate (2023), DPIRD (2022), Umwelt (2023)

FIGURE 5.2

Soil Landscape Mapping of the Survey Area

The interrogation of DBCA's TEC and PEC Database (undertaken by Ecoscape (2021); **Section 3.1**) (DBCA, 2021a) did not return any listed TECs, however three PECs with buffer polygons within the interrogation area (40 km buffer of the Ecoscape Study Area) were identified, as listed below:

- Eighty Mile Land System (P3)
- Gregory Land System (P3)
- Horseflat Land System of the Roebourne Plains (P3).

The updated database search undertaken in 2022 (DBCA, 2022a) and a review of current DBCA TEC and PEC lists (DBCA, 2018, 2022c) did not identify any additional significant vegetation communities within, or having the potential to occur within, the Desktop Study Area. A known location of the Gregory Land System (P3) occurs within the Survey Area, but just outside the Targeted Survey Area (DBCA, 2022a).

A review of DBCA's TEC and PEC records spatial database (DBCA-038) (DBCA, 2017) did not identify any TEC records within the Desktop Study Area. However, an occurrence of the 'Horseflat Land System of the Roebourne Plains' PEC (P3) is located approximately 49 km west-northwest of the Survey Area (DBCA,2017).

Searches of the DAWE SPRAT database with regard to MNES listed under the EPBC Act (initially undertaken by Ecoscape (2021) and updated in 2022) (DAWE, 2021, 2022a) did not identify any TECs as occurring or potentially occurring within the vicinity of the Survey Area (2022 report results presented in **Appendix C**).

5.1.3 Local Flora and Vegetation Surveys

Flora and vegetation surveys undertaken within and in the vicinity of the Survey Area that are relevant to the Project are summarised in **Table 5.4**. The locations of relevant surveys undertaken in the vicinity of the Survey Area are shown on **Figure 5.3** (subject to the availability of survey boundary files). Note that the summary of local surveys in **Table 5.4** has been restricted to those undertaken within 10 years (i.e. 2012 to 2024), with the exception of the Mount Dove survey undertaken by Woodman Environmental (2011), which is directly relevant to the flora and vegetation assessment of the Survey Area.

Note that Ecoscape (2021) purportedly recorded *Bulbostylis burbidgeae* (P4) and a potentially undescribed entity, referred to by Ecoscape as *Sida arenicola* 'dunes', in the Hemi tenement area. However, the presence of the former, and the status of the latter, were discounted following field survey for the current survey and consultation with the WA Herbarium. These species are discussed in more detail in **Section 5.2.2**.

Ecoscape (2021) recorded a location of the taxon *Byblis pilbarana* in the Hemi tenement area in 2021. At the time of the assessment undertaken by Ecoscape, the taxon appeared to be known from a single location in the DBCA's databases (WA Herbarium, 1998-); Ecoscape justifiably proposed that it should be considered a taxon of significance as per EPA (2016a, 2016b). However, consultation with the WA Herbarium revealed that the lack of records in DBCA's databases was due to a curation issue following taxonomic revision of the genus in 2013 (Lowrie, 2013). Following communication with WA Herbarium, specimens of *Byblis filifolia* from the Pilbara and Little Sandy Desert IBRA bioregions were reassigned to *Byblis pilbarana*, although it was noted that the characters used to distinguish *Byblis filifolia* and *Byblis pilbarana* may not hold up to future taxonomic scrutiny. Similarly, collections of *Byblis liniflora* from the Pilbara were also reassigned to *Byblis pilbarana*, as they were found to have been misidentifications of

Byblis pilbarana (M. Hislop, pers. comm., 2022). Following this review, *Byblis pilbarana* is now known from 25 records (as of August 2024) in the DBCA's databases (WA Herbarium, 1998-), with records extending from Porth Hedland, south to near Newman, and east to near Telfer, over a range of more than 400 km. This species has not been listed as a Priority taxon by DBCA, and there now appears to be no case for such a listing. This taxon is therefore not considered to be of significance and is not presented in **Table 5.4** or discussed further in a significant flora context.

An entity identified as *Abutilon* aff. *hannii* was previously recorded in the vicinity of the Survey Area by Woodman Environmental Consulting Pty Ltd (Woodman Environmental), and was reported as being potentially significant (Woodman Environmental, 2020). This entity differs significantly in indumentum characters from all other *Abutilon hannii* collections in the WA Herbarium (all of which are from the Kimberley Region). Steve Dillon, an expert in Malvaceae from the WA Herbarium, investigated this entity recently and believes that it is very unlikely to represent *Abutilon hannii*, and although closer to *Abutilon propinquum* (a name that was sunk into *Abutilon hannii*, but may need to be reinstated), may not represent that taxon either (M. Hislop, pers. comm., 2021). This taxon is still awaiting recognition on the census of plants in WA via a phrase name; it is expected that this will happen in the near future based on communications with the WA Herbarium. This entity is known from a number of locations distributed widely in the Pilbara region, and it is unlikely to be assessed as being significant in a conservation context (M. Hislop, pers. comm., 2021). Therefore, this taxon is not considered to be a significant taxon and is not presented in **Table 5.4** or discussed further in a significant flora context.

Woodman Environmental (2013a) reported a record of *Polymeria distigma* (P3) that was represented in DBCA databases at the time of that assessment; this record was visited in the field by Woodman Environmental but could not be relocated. At the time of the assessment, *Polymeria distigma* (P3) was widespread over a range of approximately 1,130 km across several IBRA bioregions, including Pilbara, Great Sandy Desert, Ord Plain and Dampierland. The genus is currently undergoing revision, and the taxon *Polymeria distigma* (P3) is now known in DBCA databases from a single record on Middle Osborn Island in the Kimberley (WA Herbarium, 1998-), and the record presented by Woodman Environmental (2013a) has been reassigned to *Polymeria* sp. Therefore, *Polymeria distigma* (P3) is not considered to occur in the vicinity of the Survey Area and is not presented in **Table 5.4** or discussed further in this report.

Table 5.4 Summary of Results of Local Flora and Vegetation Surveys

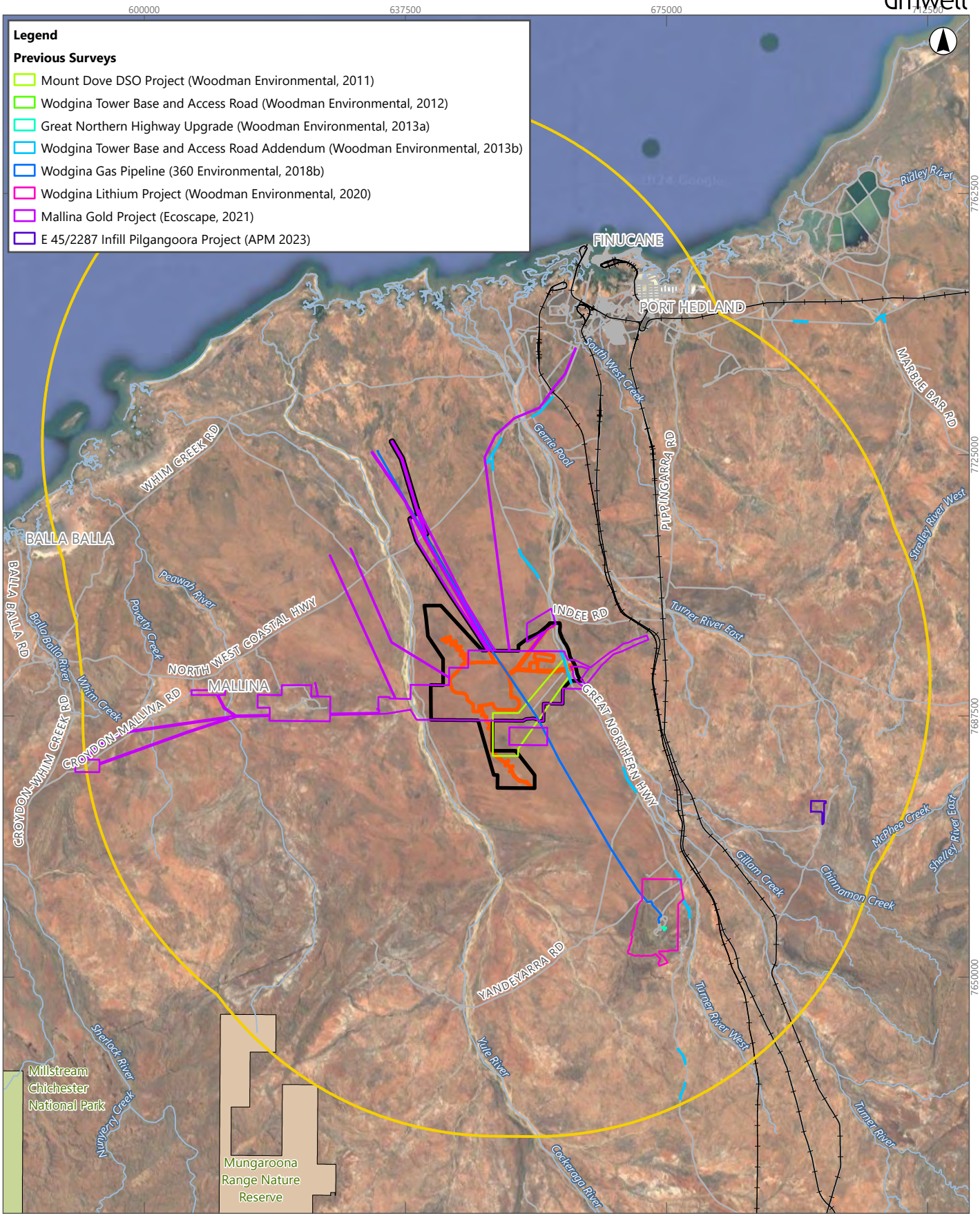
Project, Author and Source	Survey Location	Survey Timing	Scope and Parameters of Survey (Flora and Vegetation)	Number of Taxa Recorded	Vegetation	Significant Flora Taxa^	Significant Vegetation	Introduced Taxa^
Mount Dove Direct Shipping Ore Project: Flora and Vegetation Studies – Woodman Environmental (2011)	Intersects the eastern and southeastern part of the Survey Area	March 2010 June 2010	Initial Level 1 survey (equivalent to a Reconnaissance survey), and subsequent Level 2 survey for vegetation (equivalent to a Detailed survey) and Targeted survey for significant flora taxa: • 49 quadrats surveying 2,500 m^2 established in the Mount Dove survey area • 4 additional quadrats surveying 2,500 m^2 established on the slopes and summits of nearby landforms similar to those of Mount Dove, for context • Targeted survey for significant flora taxa undertaken within proposed disturbance footprints	24 families 52 genera 90 discrete taxa 1 known hybrid	5 VTs described and mapped, one of which was split into two subtypes. Majority of vegetation in Excellent or Very Good condition	1 Priority taxon recorded: • *Euploca mutica* (P3)	No listed vegetation considered to be present. 3 VTs identified as significant as they are associated with uncommon landforms and/or had restricted extents: • VTs 3, 4 and 5. 1 VT identified as significant as it contains significant flora (VT 2; *Euploca mutica* (P3))	2 introduced taxa recorded, none of which are WoNS or Declared Pests: • **Aerva javanica* • **Cenchrus ciliaris*
Wodgina Proposed Tower Base and Access Road Flora and Vegetation Assessment – Woodman Environmental (2012)	Approximately 38 km southeast of the Survey Area	March 2012	Reconnaissance survey for vegetation and Targeted survey for significant flora and vegetation: • 8 relevés • Targeted survey for significant flora taxa along traverses spaced 20 m apart	33 taxa	5 VTs described and mapped. Majority of vegetation in Excellent condition	1 Priority taxon recorded: • *Terminalia supranitifolia* (P3)	No listed vegetation or vegetation otherwise considered to be significant recorded.	2 introduced taxa recorded, none of which are WoNS or Declared Pests: • **Aerva javanica* • **Cenchrus ciliaris*
Great Northern Highway Upgrade Project Flora and Vegetation Assessment – Woodman Environmental (2013a)	Multiple study areas; Hemi area intersects and almost wholly contained within the Survey Area	May 2013 August 2013	Reconnaissance survey for vegetation and Targeted survey for significant flora taxa: • 56 quadrats surveying 2,500 m^2: • Targeted survey for significant flora taxa along traverses spaced 50 m apart	43 families 124 genera 271 discrete taxa 2 putative hybrids	17 VTs described and mapped. Majority of vegetation in Excellent condition	6 Priority taxa recorded: • *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3) • *Acacia levata* (P3) • *Bulbostylis burbidgeae* (P4) • *Euphorbia clementii* (P3) • *Euploca mutica* (P3) • *Phyllanthus hebecarpus* (P3)	No listed vegetation recorded. 5 VTs identified as significant as they are associated with uncommon landforms and/or had restricted extents: • VTs 2, 4, 5, 6 and 7	8 introduced taxa recorded, none of which are WoNS or Declared Pests: • **Aerva javanica* • **Cenchrus ciliaris* • **Cenchrus setiger* • **Citrullus amarus* • **Flaveria trinervia* • **Malvastrum americanum* • **Portulaca pilosa* • **Stylosanthes hamata*
Wodgina Proposed Tower Base and Access Road Flora and Vegetation Assessment: Addendum Report– Woodman Environmental (2013b)	Approximately 38 km southeast of the Survey Area	March 2013	Reconnaissance survey for vegetation and Targeted survey for significant flora and vegetation: • 8 relevés • Targeted survey for significant flora taxa along traverses spaced 20 m apart	26 taxa	7 VTs described and mapped. Majority of vegetation in Excellent condition	1 Priority taxon recorded: • *Terminalia supranitifolia* (P3)	No listed vegetation or vegetation otherwise considered to be significant recorded.	2 introduced taxa recorded, none of which are WoNS or Declared Pests: • **Aerva javanica* • **Cenchrus ciliaris*

Project, Author and Source	Survey Location	Survey Timing	Scope and Parameters of Survey (Flora and Vegetation)	Number of Taxa Recorded	Vegetation	Significant Flora Taxa^	Significant Vegetation	Introduced Taxa^
Targeted Threatened Flora Search, Vegetation Assessment and Fauna Habitat Assessment: Great Northern Hwy Intersection and Realignment – ecologia (2017)	Approximately 35 km southeast of the Survey Area	September 2017	Reconnaissance survey for vegetation and Targeted survey for significant flora and vegetation: • 2 relevés • Targeted survey for significant flora taxa conducted in areas of potentially suitable habitat, and opportunistically elsewhere	32 taxa	3 VTs described and mapped. Majority of vegetation in Very Good condition	No significant flora taxa recorded	No listed vegetation or vegetation otherwise considered to be significant recorded.	1 introduced taxon recorded, which is not a WoNS or Declared Pest: • **Aerva javanica*
Wodgina Aerodrome Detailed Flora and Vegetation Survey – 360 Environmental (2018a)	Approximately 25 km southeast of the Survey Area	June 2018	Detailed survey for vegetation and Targeted survey for significant flora taxa: • 7 quadrats surveying 2,500 m^2, as well as 4 relevés • Targeted survey for significant flora taxa	20 families 36 genera 62 taxa	2 VTs mapped. Majority of vegetation in Very Good condition	1 Priority taxon recorded: • *Euploca mutica* (P3)	No listed vegetation or vegetation otherwise considered to be significant recorded.	No introduced flora taxa recorded
Wodgina Gas Pipeline Detailed Flora and Vegetation Survey – 360 Environmental (2018b)	Linear study area extending from Wodgina, approximately 38 km south-southeast of the Survey Area, passing through the Survey Area to approximately 34 km north-northwest of the Survey Area	February 2018 June 2018	Detailed survey for vegetation and Targeted survey for significant flora taxa: • 36 quadrats surveying 2,500 m^2, as well as 14 relevés • Targeted survey for significant flora taxa	31 families 67 genera 142 taxa	13 VTs described and mapped. Majority of vegetation in Very Good condition	1 Priority taxon recorded: • *Euphorbia clementii* (P3)	No listed vegetation or vegetation otherwise considered to be significant recorded.	3 introduced taxa recorded, none of which are WoNS or Declared Pests: • **Aerva javanica* • **Cenchrus ciliaris* • **Malvastrum americanum*
Wodgina Lithium Project: Detailed Flora and Vegetation Assessment– Woodman Environmental (2020)	Approximately 38 km south-southeast of the Survey Area	June–July 2018 April 2019 June 2019	Detailed survey for vegetation and Targeted survey for significant flora taxa, including consolidating the results of previous assessments: • 170 quadrats surveying 2,500 m^2. Floristic analysis conducted using data from 262 quadrats • Targeted survey for significant flora taxa conducted in specific areas that may host future infrastructure, and opportunistically elsewhere	52 families 138 genera 300 discrete taxa 3 known hybrids 7 putative hybrids	15 VTs described and mapped. Majority of vegetation in Excellent condition	5 Priority taxa recorded: • *Euphorbia clementii* (P3) • *Euploca mutica* (P3) • *Terminalia supranitifolia* (P3) • *Triodia chichesterensis* (P3) • *Vigna triodiophila* (P3)	No listed vegetation or vegetation otherwise considered to be significant recorded. 1 VT potentially represents a GDE: • Vegetation Unit 14 (where groundwater is within 10 m of ground surface)	11 introduced taxa recorded, none of which are WoNS: • **Aerva javanica* • **Calotropis procera* (Declared Pest) • **Cenchrus ciliaris* • **Cenchrus setiger* • **Chloris barbata* • **Cynodon dactylon* • **Eragrostis minor* • **Flaveria trinervia* • **Passiflora foetida* var. *hispida* • **Physalis angulata* • **Trianthema portulacastrum*

Project, Author and Source	Survey Location	Survey Timing	Scope and Parameters of Survey (Flora and Vegetation)	Number of Taxa Recorded	Vegetation	Significant Flora Taxa^	Significant Vegetation	Introduced Taxa^
Mallina Gold Project: Flora and Vegetation Survey – Ecoscape (2021)	Multiple areas; Hemi area broadly corresponds with the Survey Area	March 2021	Detailed survey for vegetation and Targeted survey for significant flora taxa: • 222 quadrats surveying 2,500 m^2 • Targeted survey for significant flora taxa conducted in areas of potentially suitable habitat, and opportunistically elsewhere	51 families 152 genera 380 taxa	28 VTs described and mapped. Majority of vegetation in Excellent condition	1 Threatened and 6 Priority taxa recorded: • *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3) • *Bulbostylis burbidgeae* (P4) • *Euphorbia inappendiculata* var. *inappendiculata* (P2) • *Euploca mutica* (P3) • *Gymnanthera cunninghamii* (P3) • *Seringia exastia* (T)* • *Triodia chichesterensis* (P3) 1 other significant taxon recorded: • *Sida arenicola* 'dunes'	1 PEC identified: • Gregory Land System (P3), represented by VTs AsaSaTOS, TlaAstTscMHG/LS and a small portion of GwAiAanMOS. 9 VTs identified as significant as they are associated with uncommon landforms and/or had restricted extents: • AsaSaTOS • AiAacAanMSS • AiAanGwMSS • EgMhLTG/F • FbLOW • GwAiAanMOS • MlaAanMOS • ExDsXbLTG • EvChLOW 1 VT represents a GDE: • EcMaEvMW	14 introduced taxa recorded, none of which are WoNS: • **Aerva javanica* • **Calotropis procera* (Declared Pest) • **Cenchrus ciliaris* • **Cenchrus setiger* • **Citrullus amarus* • **Digitaria ciliaris* • **Diplachne fusca* subsp. *uninervia* • **Echinochloa colona* • **Eragrostis minor* • **Indigofera oblongifolia* • **Malvastrum americanum* • **Portulaca pilosa* • **Stylosanthes hamata* • **Vachellia farnesiana*
E 45/2287 Infill Pilgangoora Project Biological Survey – Animal Plant Mineral (APM) (2023)	Approximately 40 km south-east of the Survey Area	March 2023	Detailed survey for flora and vegetation: • 17 quadrats surveying 2,500 m2 • Opportunistic survey for significant flora	25 families 67 genera 119 taxa	3 VTs described and mapped. Majority of vegetation in Very Good condition	2 Priority taxa recorded: • *Euploca mutica* (P3) • *Triodia chichesterensis* (P3)	No listed vegetation or vegetation otherwise considered to be significant recorded.	2 introduced taxa were recorded, none of which are WoNS or Declared Pests:

^ Significant and introduced flora taxa nomenclature and status as per Florabase listing at the time of preparation of this report (WA Herbarium, 1998-).

* *Seringia exastia* is no longer listed as Threatened under the WA BC Act, but remains listed under the Commonwealth EPBC Act.



Scale: 1:750,000 at A4, GDA2020 MGA Zone 50

Legend

- Desktop Study Area
- Survey Area
- Targeted Survey Area
- Road
- Major Watercourse
- National Park
- Nature Reserve

FIGURE 5.3

Local Flora and Vegetation Surveys

0 15 30

Kilometres

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Image Source: Landgate (2023) | **Data Source:** Landgate (2023), DBCA (2024), Umwelt (2023), Woodman Environmental (2011, 2012, 2013a, 2013b, 2020), 360 Environmental (2018b), Ecoscape (2021), APM (2023)

5.1.4 Summary of Significant Flora Taxa

Table 5.5 presents a summary of listed significant flora taxa known to occur or potentially occurring within the Desktop Study Area. This list has been compiled from the results of searches of DBCA's TPFL and WA Herbarium databases (undertaken by Ecoscape (2021) and updated in 2022; **Section 3.1**) (DBCA, 2021b, 2022b) and the results of local surveys (**Section 5.1.3**). **Table 5.5** also presents the known flowering period and habitat for each taxon (WA Herbarium, 1998-).

A total of 24 listed significant flora taxa are known to occur or potentially occur within the Desktop Study Area. This includes two Threatened flora taxa listed under the EPBC Act and BC Act, 21 DBCA-classified Priority flora and one taxon considered significant for other reasons as per EPA (2016a, 2016b) (**Table 5.5**). The locations of these taxa are presented on **Figure 5.4** (subject to the availability of spatial data in the case of records from previous local surveys). Three taxa have records within the Targeted Survey Area (shaded in blue in **Table 5.5**) and an additional three taxa have records within the wider Survey Area (shaded in grey in **Table 5.5**).

Eragrostis crateriformis was listed as Priority 3 at the time of the Ecoscape (2021) survey and the 2022 assessment of the Survey Area (DBCA, 2022d, 2022b) and was targeted during searching for these surveys. However, this taxon was delisted prior to the 2024 survey, and is no longer considered to be significant (DBCA, 2024b), and is therefore not considered further in this assessment.

Table 5.5 Significant Flora Taxa Potentially Occurring Within the Desktop Study Area

Taxon	Status (WA)	Source*	Flowering Period^	Habitat^
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	• DBCA (2021b, 2022b) • Ecoscape (2021) • WEC (2013a)	Apr-Sep	Plains, floodplains, sand dunes. Red-brown or orange-brown sandy or loamy soil. Open Acacia shrubland over Triodia grassland
Acacia leeuweniana	P1	• DBCA (2022b)	Apr-May	Granite outcrops and granitic hills. Skeletal red or orange sandy clay
Acacia levata	P3	• DBCA (2021b, 2022b) • WEC (2013a)	May-Jul	Hillslopes. Sand or sandy loam over granite, granite outcrops. Triodia grassland with scattered Acacia shrubs
Bulbostylis burbidgeae	P4	• DBCA (2021b, 2022b) • Ecoscape (2021) • WEC (2013a)	Jan-Jul	Brown loam or sand, granitic soils. Granite outcrops, cliff bases
Euphorbia clementii	P3	• 360 (2018b) • DBCA (2021b, 2022b) • WEC (2013a, 2020)	May-Jul	Flats/plains, rocky slopes, drainage lines. Red-brown or orange clay loam with ironstone gravel. Fire responder
Euphorbia inappendiculata* var. *inappendiculata	P2	• Ecoscape (2021)	Apr-Aug	Cracking clay, clay loam. Drainage lines and clay pans

Taxon	Status (WA)	Source*	Flowering Period^	Habitat^
Euploca mutica	P3	• 360 (2018a) • APM (2023) • DBCA (2021b, 2022b) • Ecoscape (2021) • WEC (2011, 2013a, 2020)	Apr-Nov	Plains/sandplains. Brown to orange or red sand or sandy loam, sometimes with gravel
Gomphrena cucullata	P3	• DBCA (2021b, 2022b)	Feb-Jul	Flats and plains. Red, orange or brown loamy clay. Coastal and near-coastal areas
Gomphrena leptophylla	P3	• DBCA (2021b, 2022b)	May-Sep	Drainage lines, floodplains. Red sandy loam, sometimes granitic
Gomphrena pusilla	P2	• DBCA (2021b, 2022b)	Mar-Jun	Limestone ridges, coastal sand dunes. Calcareous sand, sandstone
Gymnanthera cunninghamii	P3	• DBCA (2021b, 2022b) • Ecoscape (2021)	Oct-May	Creek beds, drainage lines, on margins of mound springs. Sandy soils. Eucalyptus open woodland over Acacia shrubland over hummock/tussock grassland
Nicotiana umbratica	P3	• DBCA (2021b, 2022b)	Apr-Jun	Rocky outcrops with shallow soils. Usually granitic
Phyllanthus hebecarpus	P3	• DBCA (2021b, 2022b) • WEC (2013a)		Granite outcrops, drainage lines. Skeletal brown sand or red sandy loam
Ptilotus mollis	P4	• DBCA (2021b, 2022b)	Jul-Sep	Steep stony hills and screes, often ironstone
Quoya zonalis	T	• DAWE (2022a)~	Jun-Sep	Steep rocky hills and breakaways, sandstone conglomerate and granite. Skeletal brown or red loamy sand. Range restricted
Rothia indica* subsp. *australis	P3	• DBCA (2021b, 2022b)	Apr, Jul	Drainage areas and plains. Red-brown sandy loam
Seringia exastia	T#	• DBCA (2021b, 2022b) • Ecoscape (2021)	After significant rainfall	Various
***Sida arenicola* 'dunes'**	Other$	• Ecoscape (2021)	Unknown	Sand dunes, sand plains
***Sida* sp. Barlee Range (S. van Leeuwen 1642)**	P3	• DBCA (2021b, 2022b)	Mar-Apr, Aug-Oct	Rocky slopes, screes, gullies and breakaways. Skeletal red-brown soils
Stylidium weeliwolli	P3	• DBCA (2021b, 2022b)	Mar-Oct	Drainage lines, seepage areas, pools, sometimes granitic. Damp, gritty red/brown sand or clay soil
***Tephrosia rosea* var. Port Hedland (A.S. George 1114)**	P1	• DBCA (2021b, 2022b)	Mar, Jul-Sep	Sand dunes, predominately coastal. Orange to brown sand

Taxon	Status (WA)	Source*	Flowering Period^	Habitat^
Terminalia supranitifolia	P3	• DBCA (2021b, 2022b) • WEC (2012, 2013b, 2020)	Mar-Oct	Drainage lines, cliffs, slopes, rocky outcrops. Red-brown clay loam or sandy soil
Triodia chichesterensis	P3	• APM (2023) • DBCA (2021b, 2022b) • Ecoscape (2021) • WEC (2020)	Mar-May	Plains, low hills. Orange sandy soil or brown clay loam, sometimes gravelly
Vigna triodiophila	P3	• DBCA (2021b, 2022b) • WEC (2020)	Mar-Jul	Rocky hill slopes. Red-brown soil

Note: blue shading indicates taxa with known records in the Targeted Survey Area, and grey shading indicates taxa with known records within the wider Survey Area.

[#] *Seringia exastia* is no longer listed as Threatened under the WA BC Act, but remains listed under the Commonwealth EPBC Act.

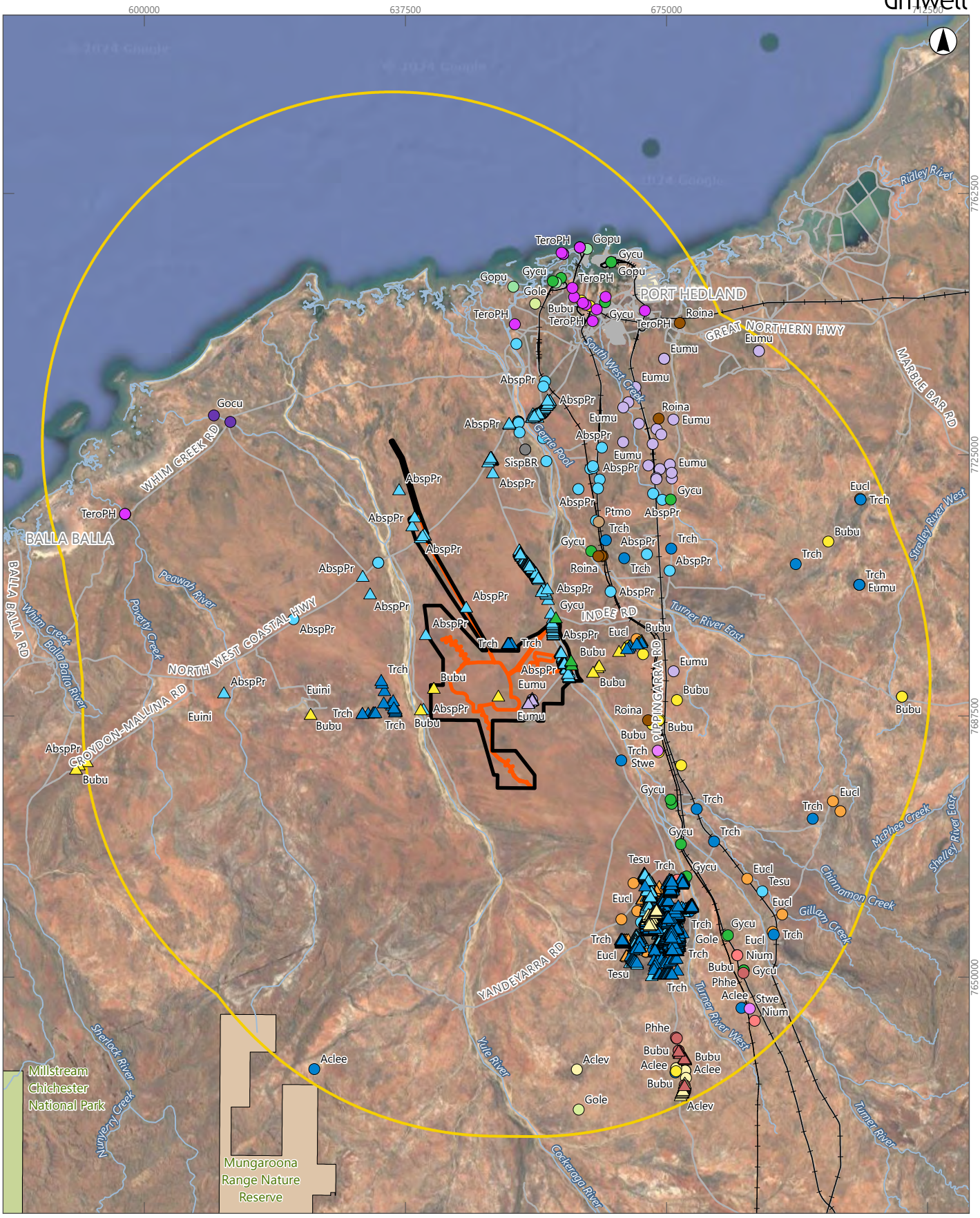
[$] Taxon significant for other reasons as per EPA (2016a, 2016b).

~ Species or species habitat likely to occur within buffer area only.

** Sources are:*

- *360: 360 Environmental (2018a, 2018b)*
- *APM: APM* (2023)
- *DAWE: DAWE (2022a)*
- *DBCA: DBCA* (2021b, 2022b)
- *Ecoscape: Ecoscape (2021)*
- *WEC: Woodman Environmental (2011, 2012, 2013a, 2013b, 2020).*

^ Source: WA Herbarium (1998-).



Scale: 1:750,000 at A4, GDA2020 MGA Zone 50

Legend

- Desktop Study Area
- Survey Area
- Targeted Survey Area
- Road
- Major Watercourse
- National Park
- Nature Reserve

FIGURE 5.4

Existing Significant Flora Records in the Desktop Study Area

0 15 30

Kilometres

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Significant Flora (Previous Surveys)

- AbspPr *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3)
- Aclev *Acacia levata* (P3)
- Bubu *Bulbostylis burbidgeae* (P4)
- Eucl *Euphorbia clementii* (P3)
- Eumu *Euploca mutica* (P3)
- Gycu *Gymnanthera cunninghamii* (P3)
- Phhe *Phyllanthus hebecarpus* (P3)
- Tesu *Terminalia supranitifolia* (P3)
- Trch *Triodia chichesterensis* (P3)
- Vitr *Vigna triodiophila* (P3)

Significant Flora (DBCA, 2022)

- AbspPr *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3)
- Aclee *Acacia leeuweniana* (P1)
- Aclev *Acacia levata* (P3)
- Bubu *Bulbostylis burbidgeae* (P4)
- Eucl *Euphorbia clementii* (P3)
- Eumu *Euploca mutica* (P3)
- Gocu *Gomphrena cucullata* (P3)
- Gole *Gomphrena leptophylla* (P3)
- Gopu *Gomphrena pusilla* (P2)
- Gycu *Gymnanthera cunninghamii* (P3)
- Nium *Nicotiana umbratica* (P3)
- Phhe *Phyllanthus hebecarpus* (P3)
- Ptmo *Ptilotus mollis* (P4)
- Roina *Rothia indica* subsp. *australis* (P3)
- SispBR *Sida* sp. Barlee Range (S. van Leeuwen 1642) (P4)
- Stwe *Stylidium weeliwolli* (P3)
- TeroPH *Tephrosia rosea* var. Port Hedland (A.S. George 1114) (P1)
- Tesu *Terminalia supranitifolia* (P3)
- Trch *Triodia chichesterensis* (P3)
- Vitr *Vigna triodiophila* (P3)

FIGURE 5.4

LEGEND: Existing Significant Flora Records in the Desktop Study Area

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Image Source: Landgate (2023) | **Data Source:** Landgate (2023), DBCA (2022, 2024), Umwelt (2023), Woodman Environmental (2011, 2012, 2013a, 2013b, 2020), 360 Environmental (2018), Ecoscape (2021)

5.1.5 Summary of Introduced Flora Taxa

A list of introduced flora taxa known to occur or with the potential to occur within the Desktop Study Area is presented in **Table 5.6**. This list has been compiled from the results of local flora and vegetation surveys (**Section 5.1.3**). Also presented in **Table 5.6** 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 Pilbara Region* (DBCA, 2014).

A total of 20 introduced taxa are known to occur, or habitat for such taxa likely occurs, in the Desktop Study Area. Of these, one is a Declared Pest under the BAM Act (*Calotropis procera*) (DPIRD, 2022b). No WoNS listed under the EPBC Act are known to occur within the Desktop Study Area (Weeds Australia, 2021).

Table 5.6 Introduced Flora Taxa Potentially Occurring Within the Desktop Study Area

Taxon	Common Name	Source*	Significance	Ecological Impact^	Invasiveness^
Aerva javanica	Kapok Bush	• 360 (2018b) • APM (2023) • ecologia (2017) • Ecoscape (2021) • WEC (2011, 2012, 2013a, 2013b, 2020)		High	Rapid
Calotropis procera	Calotrope	• Ecoscape (2021) • WEC (2020)	Declared Pest	-	-
Cenchrus ciliaris	Buffel Grass	• 360 (2018b) • APM (2023) • Ecoscape (2021) • WEC (2011, 2012, 2013a, 2013b, 2020)		High	Rapid
Cenchrus setiger	Birdwood Grass	• Ecoscape (2021) • WEC (2013a, 2020)		High	Rapid
Chloris barbata	Purpletop Chloris	• WEC (2020)		High	Rapid
Citrullus amarus		• Ecoscape (2021) • WEC (2013a)		Unknown	Moderate
Cynodon dactylon	Couch	• WEC (2020)		High	Rapid
Digitaria ciliaris	Summer Grass	• Ecoscape (2021)		Low	Slow
Diplachne fusca* subsp. *uninervia	Brown Beetle Grass	• Ecoscape (2021)		-	-
Echinochloa colona	Awnless Barnyard Grass	• Ecoscape (2021)		-	-
Eragrostis minor	Smaller Stinkgrass	• Ecoscape (2021) • WEC (2020)		-	-

Taxon	Common Name	Source*	Significance	Ecological Impact^	Invasiveness^
Flaveria trinervia	Speedy Weed	• WEC (2013a, 2020)		-	-
Indigofera oblongifolia		• Ecoscape (2021)		-	-
Malvastrum americanum	Spiked Malvastrum	• 360 (2018b) • Ecoscape (2021) • WEC (2013a)		High	Rapid
Passiflora foetida* var. *hispida	Stinking Passion Flower	• WEC (2020)		High	Rapid
Physalis angulata	Wild Gooseberry	• WEC (2020)		Unknown	Unknown
Portulaca pilosa	Djanggara	• Ecoscape (2021) • WEC (2013a)		-	-
Stylosanthes hamata	Verano Stylo	• Ecoscape (2021) • WEC (2013a)		-	-
Trianthema portulacastrum	Giant Pigweed	• WEC (2020)		-	-
Vachellia farnesiana	Mimosa Bush	• Ecoscape (2021)		High	Rapid

** Sources are:*

- *360: 360 Environmental (2018b)*
- *APM: APM* (2023)
- *ecologia: ecologia (2017)*
- *Ecoscape: Ecoscape (2021)*
- *WEC: Woodman Environmental (2011, 2012, 2013a, 2013b, 2020).*

^ Source: DBCA (2014).

5.1.6 Summary of Significant Vegetation

Table 5.7 presents a summary of listed significant vegetation known from the Survey Area and surrounds. This list has been compiled from the results of searches of DBCA's TEC and PEC Database (undertaken by Ecoscape (2021) and updated in 2022; **Section 3.1**) (DBCA, 2021a, 2022a), DBCA's TEC and PEC lists (DBCA, 2023d, 2023e), and the results of local surveys (**Section 5.1.3**).

No vegetation listed as significant under the EPBC Act or BC Act was identified as being known to occur or likely to occur within the Desktop Study Area. Three DBCA-classified PECs were returned by the desktop assessment (**Table 5.7**), of which the Gregory Land System PEC (P3) (shaded in grey in **Table 5.7**) has buffer polygons that intersect the Survey Area, but are outside the Targeted Survey Area. The locations of significant vegetation (represented by DBCA-applied buffer polygons) from the results of the 2022 DBCA TEC and PEC Database search (DBCA, 2022a) are presented on **Figure 5.5**. Note that as this database interrogation only returned locations of the 'Gregory Land System' PEC (due to the smaller interrogation area), only this community is presented on **Figure 5.5**. The results of the search undertaken in 2021 by Ecoscape are not available.

The nearest known location of each significant vegetation community identified by the desktop assessment to the Targeted Survey Area is also presented in **Table 5.7**. Note that as discussed above, the results of the DBCA database interrogation undertaken by Ecoscape that returned the 'Eighty Mile Land System' and 'Horseflat Land System of the Roebourne Plains' PECs are not available. Therefore, the approximate distance of these PECs to the Targeted Survey Area has been estimated using the boundaries of the soil landscape land systems of the same name (DPIRD, 2022a) in combination with DBCA TEC and PEC spatial data 'DBCA-038' (DBCA, 2017), which does not include any identifying information (i.e. shows boundaries only, but does not indicate which community the boundary represents). However, it is worthy of note that the boundaries of these land systems from soil landscape mapping may not necessarily be an exact match for the PECs of the same name, as it is not clear how DBCA have defined boundaries for significant vegetation communities that originated from land system mapping surveys. Therefore, the distances provided in **Table 5.7** for the 'Eighty Mile Land System' and 'Horseflat Land System of the Roebourne Plains' PECs are intended to be indicative only.

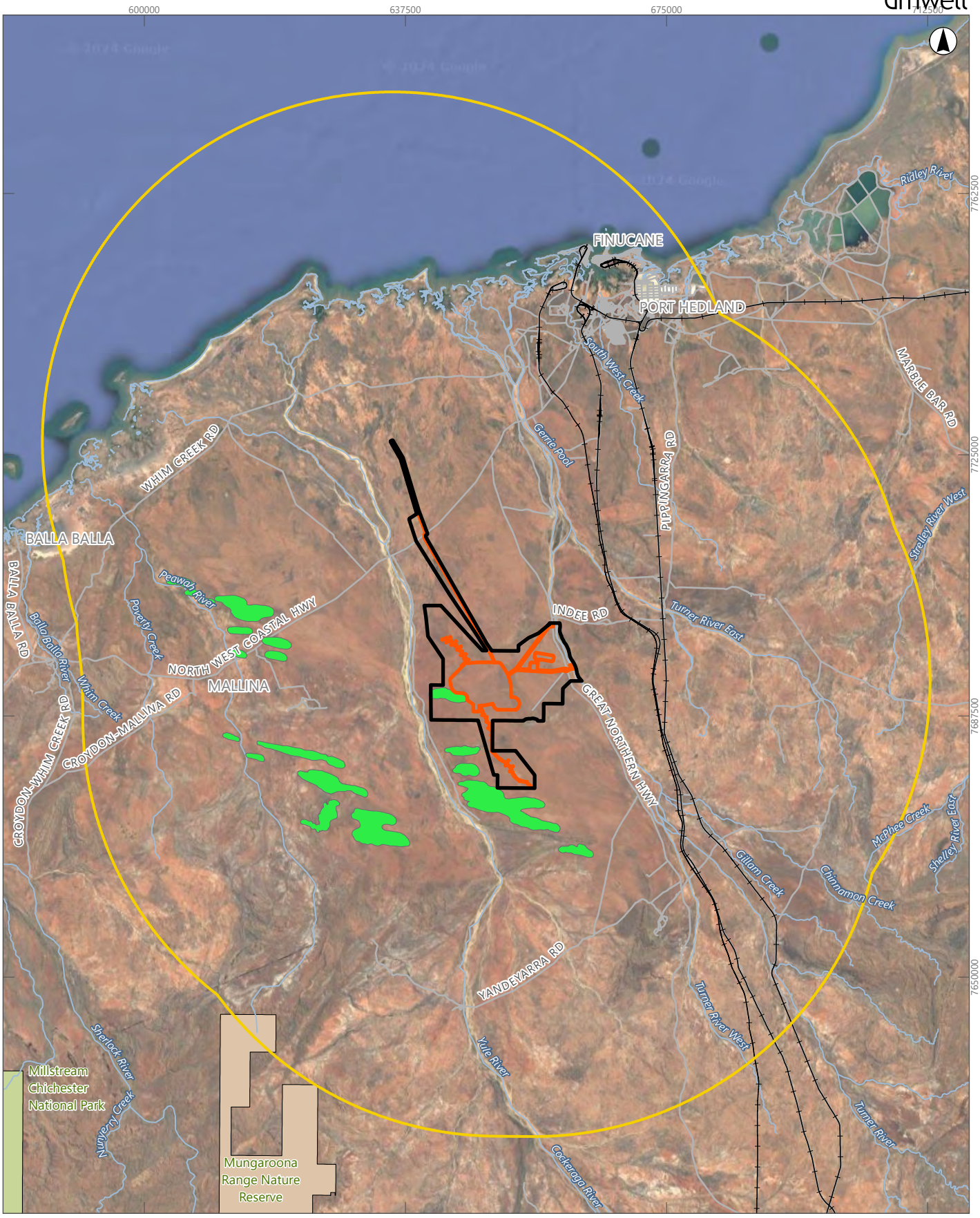
Table 5.7 Significant Vegetation Potentially Occurring Within the Desktop Study Area

Community	Status (WA)	Description*	Distance to Targeted Survey Area^	Source
Eighty Mile Land System	PEC (P3)	Beach foredunes, longitudinal coastal dunes and sandy plains with tussock grasslands and spinifex grasslands	88.7 km to east-northeast	• DBCA (2021a)
Gregory Land System	PEC (P3)	Linear dunes and restricted sandplains supporting shrubby hard spinifex (and occasionally soft spinifex) grasslands	0.15 km to south	• DBCA (2021a, 2022a) • Ecoscape (2021) • PEC list (DBCA, 2023e)
Horseflat Land System of the Roebourne Plains	PEC (P3)	Extensive, weakly gilgaied clay plains dominated by tussock grasslands on mostly alluvial non-gilgaied, red clay loams or heavy clay loams. Perennial tussock grasses include *Eragrostis xerophila* and other *Eragrostis* spp., *Eriachne* spp. and *Dichanthium* spp. The community also supports a suite of annual grasses including *Sorghum* spp. and rare *Astrebla* spp. The community extends from Peedamulla to Balla Balla surrounding the towns of Karratha and Roebourne. This community incorporates Unit 3 (gilgai plains), Unit 5 (alluvial plains) with some Unit 7 (drainage depressions) of the Horseflat land system as described in van Vreeswyk et al. (2004).	47.2 km to west-northwest	• DBCA (2021a)

Note: grey shading indicates vegetation communities with known records within the Survey Area.

** Source: DBCA (2023e)*

^ Source: DBCA (2017), DPIRD (2022a).



Scale: 1:750,000 at A4, GDA2020 MGA Zone 50

Legend

- Desktop Study Area
- Survey Area
- Targeted Survey Area
- Road
- Major Watercourse
- National Park
- Nature Reserve

Significant Vegetation (DBCA, 2022)

- Gregory Land System PEC (P3)

FIGURE 5.5

DBCA Significant Vegetation Records in the Desktop Study Area

0 15 30

Kilometres

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Image Source: Landgate (2023) | **Data Source:** Landgate (2023), DBCA (2022, 2024), Umwelt (2023)

5.1.7 Groundwater and Surface Water Values

5.1.7.1 Surface Water

The Survey Area is located within the local Hemi Deposit catchment (area of 528 km^2), adjacent to the Yule River (8,337 km^2) and Turner River (2,225 km^2) floodplain catchment areas. The proposed Hemi infrastructure area exhibits relatively shallow surface water flows. Maximum 1 % Annual Exceedance Probability (AEP) flow depths across the site are approximately 250 mm on average, with a maximum depth of approximately 500 mm. Velocities are relatively low (< 0.4 metre/second) in the 1 % AEP flood event (Surface Water Solutions, 2022).

The search of the DAWE SPRAT Database with regard to MNES listed under the EPBC Act (initially undertaken by Ecoscape (2021) and updated in 2022 / 2024) (DAWE, 2021, 2022a; DCCEEW, 2024) did not identify any Nationally Important Wetlands or Wetlands of International Importance within the interrogation area.

5.1.7.2 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.
- 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, or those that can survive on soil moisture when available and utilise groundwater only during drier periods or higher elevations (phreatic facultative phreatophytes).

Groundwater dependent vegetation is known to occur in the Pilbara and is generally indicated by the presence of one or several phreatophytic taxa. These are:

- *Melaleuca argentea*: obligate phreatophyte (Graham (2001); cited in Loomes & Braimbridge (2010)). Studies by Graham (2001) indicate that this taxon has a shallow planiform root system adapted to areas of very shallow groundwater (2-3 m below ground level) and has difficulties adjusting to short periods of dry conditions (Loomes & Braimbridge, 2010). Studies undertaken by Woodward-Clyde (1997) for BHP indicate that a decline in groundwater level of 0.5 m may result in decreased vigour of plants and that a decline of 1 m or more may result in plant death.

- *Eucalyptus camaldulensis*: obligate or facultative phreatophyte, depending on the specific hydrological characteristics of a site (Loomes & Braimbridge, 2010). It is likely that this taxon is phreatophytic when groundwater is present within 10 m of the surface and may be sensitive when groundwater drawdown occurs at a rapid rate in these areas.

- *Sesbania formosa*: likely to be an obligate phreatophyte (Loomes & Braimbridge, 2010).

- *Acacia ampliceps*, *Atalaya hemiglauca*, *Melaleuca glomerata* and *Melaleuca linophylla*: likely facultative phreatophytes, primarily based on their presence in major river channels where groundwater is known to be close to the surface (Loomes, 2010a, 2010b; Loomes & Braimbridge, 2010). No impacts through groundwater drawdown have been noted for these taxa based on observations by Woodman Environmental (2019), indicating that these taxa have a low likelihood of being phreatophytes in most situations, and are generally likely to be vadophytes (i.e. taxa that rely on water from the unsaturated soil profile (vadose zone)).

- *Eucalyptus victrix*: suggested to be facultative phreatophyte in some situations (AQ2, 2015; Eastham, 2015; Loomes, 2010a; Loomes & Braimbridge, 2010)); however, it is generally considered to be a vadophyte (AQ2, 2015). Monitoring at the Ridley River (Pardoo) observed no significant long-term impacts or mortalities of *Eucalyptus victrix* trees surrounding a bore over three years of extraction and over five years after extraction cessation (Woodman Environmental, 2019).

Depth-to-groundwater can be used as a potential indicator of groundwater dependence by vegetation. Studies in the Pilbara have shown that there is reduced reliance on groundwater by vegetation where depth to groundwater exceeds 10 m (CSIRO, 2015; Loomes & Braimbridge, 2010; Woodward-Clyde, 1997).

In a local groundwater context, according to the Bureau of Meteorology 'Groundwater Dependent Ecosystems Atlas' (BoM, 2024b), the Survey Area intersects one Moderate potential aquatic GDE, being the Turner River. Aquatic GDEs are described as 'ecosystems that rely on the surface expression of groundwater – this includes surface water ecosystems which may have a groundwater component, such as rivers, wetlands and springs' (BoM, 2024b).

Groundwater characteristics have been investigated for the southern and central parts of the Survey Area, particularly around the Hemi Deposit area, by Geowater Consulting Pty Limited (Geowater). The depth to groundwater across the Hemi Deposit area, and indeed most of the central and southern part of the Survey Area, is typically between 5–10 m below ground level where the topography consists of plains and flats (most of this area). This generally decreases with increasing proximity to the Turner and Yule Rivers, and in the Turner River, the depth to groundwater is approximately 2-4 m below the shallowest parts of the riverbed during dry season periods (Geowater, 2022). The depth to groundwater is greater than 10 m for the low hills and rises in this area, including the sand dune that is an occurrence of the 'Gregory Land System' PEC (P3).

5.2 Field Survey Results

5.2.1 Flora Census

A total of 329 discrete vascular flora taxa, three formally-named hybrids (as per WA Herbarium (1998-)) and three putative hybrids were recorded in the Survey Area by the 2022 and 2024 surveys. Following review of the results of the Ecoscape (2021) survey in the Survey Area, which included review and updating (where required) of quadrat and opportunistic data from the current survey in the field, removal of taxa that were not identified further than family or genus level and could not be resolved in the field in 2022 (e.g. Poaceae sp., *Eriachne* sp.), and alignment of taxa where the Ecoscape survey did not identify material further than species level (e.g. *Indigofera trita* and *Indigofera trita* subsp. *trita*), it is considered that 170 discrete vascular flora taxa and one formally-named hybrid recorded by the 2022 survey were also recorded in the Survey Area by Ecoscape (2021). It is also considered that Ecoscape (2021) recorded seven discrete vascular flora taxa in the Survey Area that were not recorded by the 2022 or the 2024 surveys. However, a further 16 taxa that Ecoscape (2021) reported as occurring in the Survey Area are considered unlikely to occur in the Survey Area, as they are considered to be misidentifications of other taxa. This includes one significant taxon (*Bulbostylis burbidgeae* (P4)), as discussed below in **Section 5.2.2**. The majority of these misidentifications are likely the result of inadequate material, or erroneous field referral to collections made from outside the Survey Area; the latter issue can easily occur in plant genera where microcharacters are required for positive identification, such as *Euphorbia* and *Triumfetta*.

It is therefore considered that 336 discrete vascular flora taxa, three formally-named hybrids (as per WA Herbarium (1998-)) and three putative hybrids have been recorded in the Survey Area by the Ecoscape and the 2022 / 2024 surveys. The taxa and hybrids represent 53 families and 145 genera. The most well-represented families were Fabaceae (67 discrete taxa, three known hybrids and three putative hybrids), Poaceae (54 taxa), Malvaceae (38 taxa), Amaranthaceae (18 taxa) and Cyperaceae (16 taxa). A total of 101 taxa are considered to be ephemeral taxa (30.0% of taxa), and 11 taxa are introduced (3.3 % of taxa) (see **Section 5.2.7**).

Within quadrats established in the Survey Area, average native taxon (excluding hybrids) richness per quadrat was 22 (± 11), with the greatest number of taxa recorded in a single quadrat being 58 (HC28), and the lowest number being 3 (HJ02, HJ05 and MD03).

A full list of flora taxa recorded by the 2022 survey, 2024 survey and Ecoscape survey in the Survey Area is presented in **Appendix D**. **Appendix E** presents a summary of the review of taxa recorded in the Survey Area by Ecoscape (2021) but not by the 2022 survey. Raw quadrat and relevé data and parameters from all sites in the Survey Area (including those previously established by the Ecoscape Survey and Mount Dove Survey that were not resurveyed in 2022) are presented in **Appendix F**.

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. **Opuntia* 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. *Acacia* sp., *Eriachne* ?*obtusa*). 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 Summary of Significant Flora Taxa

Table 5.8 presents a summary of data relating to significant flora taxa recorded in the Survey Area. A total of seven significant flora taxa were recorded, including the Threatened flora taxon *Seringia exastia*, five DBCA-listed Priority flora taxa, and one taxon considered significant under the 'new species or species with anomalous features that indicate a potential new species' reason from EPA (2016a, 2016b) (**Section 3.9.1**); this taxon (*Polymeria* sp. nov.) is subsequently referred to as 'potentially undescribed'.

Of the seven significant flora taxa recorded in the Survey Area, all have records within the Targeted Survey Area (**Table 5.8**). It is possible that additional locations of all taxa except *Gymnanthera cunninghamii* (P3) and *Rothia indica* subsp. *australis* (P3) could occur within the parts of the Targeted Survey Area which were not subject to targeted survey (50 m grid spacing) (see **Figure 3.1**); it is considered that all suitable habitat for *Gymnanthera cunninghamii* (P3) and *Rothia indica* subsp. *australis* (P3) in the Targeted Survey Area has been surveyed. Two listed significant flora taxa were recorded at Hemi for the first time by the 2022 survey, being *Rothia indica* subsp. *australis* (P3) and *Triodia chichesterensis* (P3); however, both taxa have previous known records in close proximity to the Survey Area (**Figure 5.4**). *Polymeria* sp. nov. (potentially undescribed) was also recorded in the Survey Area for the first time in 2022 (with additional locations recorded in 2024); however, the WA Herbarium holds five collections of this taxon (WA Herbarium, 1998-), and the Survey Area occurs within the known range of this entity (**Section 5.2.4.1**).

Table 5.8 also includes a summary of the VTs within which each significant flora taxon was recorded. Preferred habitat for each taxon has been determined based on proportional location representation and landforms/soils and is indicated with '^'. However, it is worthy of note that some taxa recorded by the 2022 and 2024 surveys were recorded from few locations, and therefore there may not be sufficient data to confidently assign preferred habitat for these taxa. Note also that many taxa recorded in the Survey Area by the 2022 and 2024 surveys have records within areas mapped as cleared land. This is due to some taxa being disturbance opportunists (*Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3)), or taxa regrowing in historically cleared areas. In other instances, this may be due to GPS accuracy or mapping scale.

Note that as discussed in **Section 3.9.1**, the values presented in **Table 5.8** includes data collected by the 2022 and 2024 surveys and by Ecoscape (2021). Potential duplication of records in the Survey Area has been avoided by assessment of locations of significant flora taxa recorded by the current survey against Ecoscape data in a GIS environment. Also note, that for the purposes of **Table 5.8**, where plant counts were not recorded during the survey (e.g. within quadrats), these records have been attributed an abundance of 1.

Locations of significant flora taxa recorded in the Survey Area by the 2022 and 2024 surveys, and Ecoscape (2021) are presented on **Figure 5.6**. A detailed description and summary of information for each taxon recorded in the Survey Area is provided in **Sections 5.2.3** and **5.2.4**, and specific location details are presented in **Appendix G** (data from the current survey only).

Ecoscape (2021) recorded a form of *Sida arenicola* with 'anomalous features' (referred to as *Sida arenicola* 'dunes' by Ecoscape) in the Hemi tenement area; the only anomalous feature provided was its 'pale colouration' (typical *Sida arenicola* has the indumentum rusty-brown in colour to some extent). For this reason, Ecoscape noted that this entity was 'of taxonomic interest' and significant with regard to EPA (2016a, 2016b); it was also noted that this form was apparently largely restricted to the Gregory Land System sand dune in VT AsaSaTOS, 'contributing to its potential significance', although a number of locations outside this habitat were reported. However, no evidence was provided that the WA Herbarium

were consulted on the taxonomic or conservation status of this form. During the 2022 survey, Umwelt made collections of this entity and submitted a representative specimen to the WA Herbarium for identification, who remarked that while there is a good deal of variation in the extent of brown hairs in the indumentum of *Sida arenicola*, it is very unusual for the indumentum to be uniformly pale as in the specimens from Hemi. Indeed, no other examples of this were located in the holding of the species at the WA Herbarium (this species also occurs in other states). However, in all other respects, including the critical fruit character, the form conforms with *Sida arenicola*, and the single anomalous indumentum feature is not considered to be sufficient reason to treat it as a plant of particular taxonomic interest (M. Hislop, pers. comm., 2022). Furthermore, Umwelt confirmed that the pale coloured form of *Sida arenicola* extended off the Gregory Land System sand dune and grew alongside typical *Sida arenicola* in some areas. Consequently, this taxon is no longer considered to be of taxonomic interest or conservation significance and is not presented in **Table 5.8** or discussed further in a significant flora context.

Note that *Bulbostylis burbidgeae* (P4) was recorded by Ecoscape (2021) at two locations within the Survey Area. Both locations were visited during the March site visit; although no ephemeral taxa resembling this species were located, likely because of insufficient rainfall, the habitat was noted as likely inappropriate for this species. This species is known to occur in shaded rock crevices and overhangs almost exclusively within granite outcropping areas, or rarely on dolerite or ironstone ridges (WA Herbarium, 1998-); the low rocky rises at the recorded locations did not possess any such crevices or overhangs. One of these locations was re-visited during the July site visit of the 2022 survey. Again, this species was not located; however, the somewhat similar *Bulbostylis barbata* was observed; *Bulbostylis barbata* was not recorded at this location by Ecoscape (2021). It is therefore almost certain that these records of *Bulbostylis burbidgeae* (P4) represent misidentifications of *Bulbostylis barbata*. Furthermore, although it does not conclusively rule out the recording of *Bulbostylis burbidgeae* (P4) at other locations in Ecoscape's Study Area, review of the Ecoscape (2021) report identified that the photo provided that purportedly represents *Bulbostylis burbidgeae* (P4) clearly represents *Bulbostylis barbata* (**Photo 5.1**; an image of *Bulbostylis burbidgeae* (P4) (**Photo 5.2**) collected during a previous Umwelt survey is provided for comparison). It is also considered that there are no other areas of suitable habitat for *Bulbostylis burbidgeae* (P4) present within the Survey Area. Therefore, *Bulbostylis burbidgeae* (P4) is not considered to occur in the Survey Area and is not presented in **Table 5.8** or discussed further in this report.

Photo 5.1 ***Bulbostylis barbata*** **(spikelets in a head) (image presented erroneously as** ***Bulbostylis burbidgeae*** **(P4) by Ecoscape (2021))**

Photo 5.2 ***Bulbostylis burbidgeae*** **(P4) (spikelets in umbels) (Photo: Umwelt, 2010 (Indee Station))**

Table 5.8 Summary of Significant Flora Taxa Recorded Within and Immediately Outside the Survey Area

Taxon	Status (WA)	Targeted Survey Area		Survey Area (excluding Targeted Survey Area)		Outside Survey Area		Total		VTs*
		Number of Locations	Number of Individuals	Number of Locations	Number of Individuals	Number of Locations	Number of Individuals	Number of Locations	Number of Individuals	
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	177	721	398	4,514	80	1,344	655	6,579	1, 2, 3, 4, 5^, 8, 10, 13, 14^, C
Euploca mutica	P3	93	612	152	785	1	2	246	1,399	10^, 14^, C
Gymnanthera cunninghamii	P3	17	35	34	81	0	0	51	116	16^
***Polymeria* sp. nov.**	Potentially undescribed	5	33	2	40	0	0	7	73	7^, 8^, 10, 14
Rothia indica* subsp. *australis	P3	22	991	80	5,235	0	0	102	6,226	1^, 2, 5^, C
Seringia exastia	T[#]	0	0	2	220	0	0	2	220	4^, C
Triodia chichesterensis	P3	34	19,210	128	53,734	0	0	162	72,944	8^, 10, 11^, 12, 14^, C

* Refer to **Section 5.2.8** for VT descriptions.

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

[#] *Seringia exastia* is no longer listed as Threatened under the WA BC Act, but remains listed under the Commonwealth EPBC Act.

NR – Not Required – data not required to be presented for this taxon.

634500 639000 643500 648000 652500

7731000 7726500 7722000 7717500 7713000 7708500 7704000

MANMUNHA DR

GREAT NORTHERN HWY

NORTH WEST COASTAL HWY

Roina Roina Roina

643500 648000 652500 657000 661500

7704000 7699500 7695000 7690500 7686000 7681500 7677000

INDEE RD

GREAT NORTHERN HWY

Legend

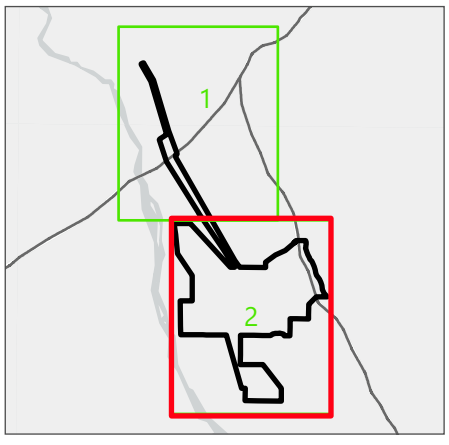
- Survey Area
- Targeted Survey Area
- Road

Significant Flora (Umwelt 2022, 2024)

- AbspPr *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3)
- Eumu *Euploca mutica* (P3)
- Gycu *Gymnanthera cunninghamii* (P3)
- Poly *Polymeria sp. nov* (Pot)
- Trch *Triodia chichesterensis* (P3)

Significant Flora (Ecoscape 2021)

- Eumu *Euploca mutica* (P3)
- Gycu *Gymnanthera cunninghamii* (P3)



Scale: 1:90,000 at A4, GDA2020 MGA Zone 50

FIGURE 5.6

Significant Flora Taxa of the Survey Area (Sheet 2)

0 1.8 3.6

Kilometres

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Image Source: Hemi (2022), Landgate (2023) | **Data Source:** Landgate (2024), Umwelt (2022, 2024), Woodman Environmental (2011), Ecoscape (2021)

5.2.3 Listed Significant Flora Taxa

5.2.3.1 *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3)

Abutilon sp. Pritzelianum (S. van Leeuwen 5095) (P3) is an upright, perennial shrub growing to 1.5 m high with grey felty leaves and yellow flowers (**Photo 5.3**), that occurs on red-brown or orange-brown sandy or loamy soil on plains, floodplains and sand dunes (WA Herbarium, 1998-). This taxon is not listed under the EPBC Act or BC Act, but is classified as P3 by DBCA (2024b). *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3) appears to be endemic to the Pilbara, Carnarvon and Murchison IBRA regions (ALA, 2024) occurring over a range of approximately 760 km from ex-Muggon Station in the south, north to near Carnarvon, and further north to Mulga Downs and Port Hedland (WA Herbarium, 1998-). This taxon is known from 51 WA Herbarium records, potentially representing approximately 35 regional populations, one of which occur within DBCA-managed tenure, being Muggon National Park (WA Herbarium, 1998-). The Survey Area is located within the known range of this taxon, and it has been previously recorded in the Survey Area by Ecoscape (2021) (**Section 5.1.3**).

This taxon was searched for during Targeted survey in 2022 and 2024. A total of 5,235 individuals of *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3) were recorded at 575 point locations across the Survey Area by the 2022 survey, the 2024 survey and Ecoscape (2021), of which 721 individuals were recorded at 177 point locations within the Targeted Survey Area. An additional 1,334 individuals were recorded at 80 point locations immediately outside the Survey Area (**Table 5.8**). *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3) was recorded in a total of nine VTs, on plains and floodplains on sandy or loamy soil across the entire Survey Area, although records were sparser in the southern part of the Survey Area. Within the Survey Area, the taxon's preferred habitat is considered to be represented by VTs 5 and 14. This taxon is likely to be a disturbance opportunist, as it was also recorded from cleared land and areas of disturbance in many instances, including burnt areas, along tracks and roads, and on drill pad and sump windrows (**Figure 5.6**).

Photo 5.3 ***Abutilon*** **sp. Pritzelianum (S. van Leeuwen 5095) (P3) (Photos: Umwelt, 2010 (Boodarie Station) (main), 2022 (Hemi) (inset))**

5.2.3.2 *Euploca mutica* (P3)

Euploca mutica (P3) (previously *Heliotropium muticum*) is an ascending to spreading perennial herb with small white flowers growing to 0.3 m high (**Photo 5.4**), that generally occurs on coarse sandy plains and flats (WA Herbarium, 1998-). This taxon is not listed under the EPBC Act or BC Act, but is classified as P3 by DBCA (2024b). *Euploca mutica* (P3) appears to be endemic to the Abydos Plain in northern part of the Pilbara region of WA (ALA, 2024), occurring over a range of approximately 240 km from Sherlock (east of Roebourne) in the west, to Marble Bar in the east, and south to near Mungaroona Range Nature Reserve (WA Herbarium, 1998-). There are 76 WA Herbarium records of this taxon, representing approximately 56 regional populations, none of which occur in DBCA-managed tenure (WA Herbarium, 1998-). The Survey Area is located within the known range of this taxon, and it has been previously recorded in the Survey Area by Ecoscape (2021) (**Section 5.1.3**).

This taxon was searched for during Targeted survey in 2022 and 2024. A total of 1,397 individuals of *Euploca mutica* (P3) were recorded at 245 point locations across the Survey Area by the 2022 survey, the 2024 survey and Ecoscape (2021), of which 612 individuals were recorded at 93 point locations within the Targeted Survey Area (**Table 5.8**). An additional two individuals were recorded at one point location immediately outside the Survey Area (**Table 5.8**). *Euploca mutica* (P3) was recorded in two VTs, on sandy, stony or calcrete plains (low-lying, but not floodplains) in the eastern part of the Survey Area. While VTs 10 and 14 are both considered to represent preferred habitat for this taxon in the Survey Area, in many areas

it appeared to favour the transition zones between these two VTs. This taxon is also considered to be a disturbance opportunist, as it was observed to be more common in recently burnt areas (**Figure 5.6**). Based on previous field observations, the Survey Area appears to contain only marginal habitat for this taxon; it has been observed in far greater numbers on the eastern side of the Turner River to the east of the Survey Area, where there are plains associated with granite substrate, and the soil contains granite rocks and stones (Umwelt field observations).

Photo 5.4 ***Euploca mutica*** **(P3) (Photos: Umwelt, 2022 (Hemi) (left), 2010 (Turner River) (right)**

5.2.3.3 *Gymnanthera cunninghamii* (P3)

Gymnanthera cunninghamii (P3) is an erect, multi-stemmed perennial shrub growing to 1-2 m high (**Photo 5.5**), that generally occurs in sandy creek beds (WA Herbarium, 1998-). This taxon is not listed under the EPBC Act or BC Act, but is classified as P3 by DBCA (2024b). *Gymnanthera cunninghamii* (P3) has a wide range across northern Australia, occurring from Kennedy Range in WA, between Alice Springs and Tennant Creek in NT, east to near Mount Isa in Queensland (ALA, 2024). Within WA, the taxon has a range of approximately 870 km from Kennedy Range to Eighty Mile Beach (WA Herbarium, 1998-). There are 43 records of this taxon in WA in DBCA databases, representing approximately 37 regional populations, five of which occur within DBCA-managed tenure (Kennedy Range National Park, Walyarta Conservation Park and unnamed nature reserves R 36909 and R 36915) (WA Herbarium, 1998-). The Survey Area is located within the known range of this taxon, and it has been previously recorded in the Survey Area by Ecoscape (2021) (**Section 5.1.3**).

This taxon was searched for during Targeted survey in 2022 and 2024. A total of 116 individuals of *Gymnanthera cunninghamii* (P3) were recorded at 51 point locations in the Survey Area by the 2022 survey, the 2024 survey and Ecoscape (2021), of which 35 individuals were recorded at 17 point locations within the Targeted Survey Area (**Table 5.8**). The locations of *Gymnanthera cunninghamii* (P3) are restricted to the southern part of the section of the Turner River channel that is intersected by the Survey Area (**Figure 5.6**); this area is represented by VT 16, which is considered to represented preferred habitat for this taxon in the Survey Area.

Photo 5.5 *Gymnanthera cunninghamii* (P3) (Photo: Umwelt, 2010 (Turner River))

5.2.3.4 *Rothia indica* subsp. *australis* (P3)

Rothia indica subsp. *australis* (P3) is a prostrate, annual, densely hairy herb with yellow/red flowers (Photo 5.6), that occurs on sand hills and sandy flats, often near drainage lines (WA Herbarium, 1998-). This taxon is not listed under the EPBC Act or BC Act, but is classified as P3 by DBCA (2024b). *Rothia indica* subsp. *australis* (P3) occurs over a wide range of approximately 2,800 km, from near Mulga Downs in the southwest, east to Edgbaston Nature Refuge in Queensland (ALA, 2024; WA Herbarium, 1998-). Within WA, the taxon occurs in the Pilbara, Great Sandy Desert and Dampierland IBRA regions. There are 22 records of this taxon in DBCA databases in WA, representing approximately 16 regional populations, none of which occur within DBCA-managed tenure (WA Herbarium, 1998-). The Survey Area is located on the edge of the known range of this taxon, and while it has not been previously recorded in the Survey Area (prior to the 2022 survey), there are known records within 11 km of the Survey Area boundary (**Section 5.1.3**).

This taxon was searched for during Targeted survey in 2022 and 2024. A total of 6,226 individuals of *Rothia indica* subsp. *australis* (P3) were recorded at 102 point locations across the Survey Area by the 2022 survey, of which 991individuals were recorded at 22 point locations within the Targeted Survey Area (**Table 5.8**). This taxon was not recorded during the 2024 Targeted survey of the Survey Area. These records extend the known distribution of this taxon in WA approximately 30 km to the west. *Rothia indica* subsp. *australis* (P3) was only recorded at the very northern end of the Survey Area within a total of three VTs, on sandy soils in drainage lines, drainage depressions and sheet flow areas (**Figure 5.6**). Within the Survey Area, the taxon's preferred habitat is considered to be represented by VTs 1 and 5.

Photo 5.6 *Rothia indica* subsp. *australis* (P3) (Photo: Umwelt, 2022 (Hemi))

5.2.3.5 *Seringia exastia* (T)

Seringia exastia (T) was recorded in the Survey Area at one location by Ecoscape (2021), which was verified by the 2022 survey; this location is outside the Targeted Survey Area. A second location was recorded by the 2022 survey within the Survey Area, also outside the Targeted Survey Area. As discussed in **Section 5.1.1**, this taxon was recently delisted from the WA BC Act, but remains listed as Threatened (Critically Endangered) under the Commonwealth EPBC Act; however, it is expected that this taxon will be delisted on a Commonwealth level in the near future. At the time of the 2022 field survey, in accordance with advice from DBCA (**Section 5.1.1**), there was only a requirement for this species to be reported as occurring in a survey area; targeted surveys and resultant population data were not required.

This taxon was targeted during the 2024 survey, in line with Commonwealth Government requirements; no further locations of this taxon were recorded in 2024. Although not all of the Targeted Survey Area has been searched for this species, the results of the surveys in 2021, 2022 and 2024 provide a strong indication that this taxon is rare in the Survey Area, and either absent or rare in the Targeted Survey Area. The recorded locations in the Survey Area are presented on **Figure 5.6**.

5.2.3.6 *Triodia chichesterensis* (P3)

Triodia chichesterensis (P3) is a blue-green, non-resinous hummock grass growing to 0.4 m high (**Photo 5.7**) that generally occurs on stony plains and low stony ridges (usually calcrete or quartz-derived) (WA Herbarium, 1998-). This taxon is not listed under the EPBC Act or BC Act, but is classified as P3 by DBCA (2024b). *Triodia chichesterensis* (P3) is endemic to central Chichester IBRA Subregion of the Pilbara (ALA, 2024), occurring over a range of approximately 130 km from near Strelley in the north, to east of Mungaroona Nature Reserve in the south (WA Herbarium, 1998-). There are 42 records of this taxon in DBCA databases, representing approximately 27 regional populations, none of which occur within DBCA-managed tenure (WA Herbarium, 1998-). The Survey Area is located on the western edge of the known range of this taxon, and it has been previously recorded within 1 km of the Survey Area by Ecoscape (2021) (**Section 5.1.3**).

This taxon was searched for during Targeted survey in 2022 and 2024. A total of 72,944 individuals of *Triodia chichesterensis* (P3) were recorded at 162 point locations across the Survey Area by the 2022 survey, of which 19,210 individuals were recorded at 34 point locations within the Targeted Survey Area (**Table 5.8**). This taxon was not recorded during the 2024 Targeted survey of the Survey Area. These records extend the known distribution of this taxon in WA approximately 20 km to the west. *Triodia chichesterensis* (P3) was recorded in a total of five VTs, on sand or loam over rocky or gravelly calcrete on undulating stony plains and low hills, in the central part of the Survey Area (**Figure 5.6**). Within the Survey Area, the taxon's preferred habitat is considered to be represented by VTs 8, 11 and 14.

Photo 5.7 *Triodia chichesterensis* (P3) (Photo: Umwelt, 2019 (Wodgina))

5.2.4 Unlisted Significant Flora Taxa

5.2.4.1 *Polymeria* sp. nov. (Potentially Undescribed)

Several collections were made within the Survey Area during surveys in 2022 of an entity that appeared to represent the genus *Polymeria* but did not match any named (either formally or informally) taxon (). A representative specimen of this entity was sent to the WA Herbarium for identification, who noted that this entity matched several other collections it holds from the northern Pilbara region, and that its current opinion is that this entity represents an undescribed species (M. Hislop, pers. comm., 2021). The WA Herbarium has now segregated material of this entity, with the aim of phrase naming it in the near future (M. Hislop, pers. comm., 2022).

Polymeria sp. nov. (potentially undescribed) is a prostrate, creeping herb with long stems that root at the nodes, sometimes with short (to 0.1 m) erect stems in the centre of the plant with small, dark green leaves and relatively small, pale pink flowers (Umwelt field observations; WA Herbarium (1998-)) (**Photo 5.8**). The WA Herbarium holds five collections of this taxon (WA Herbarium, 1998-); these collections have been made over a range of approximately 260 km, from Karratha in the west, to just west of Marble Bar in the east. The Survey Area is within this range. Two of the collections held by the WA Herbarium may represent the same regional population, as the locality details are similar, while a further collection was made during a survey by Umwelt (as Woodman Environmental), during which a second, discrete record was made. Therefore, collectively this taxon is known from a maximum of six (but more likely five) regional populations (excluding those recorded in the Survey Area in 2022). None of these regional populations occur within DBCA-managed tenure.

This taxon appears to prefer alluvial sandy or clay loam soils, sometimes with stones, in lower lying situations, including minor flow lines and flats, and may favour areas that have been recently disturbed, including by fire or machinery works (Umwelt field observations; WA Herbarium (1998-)).

The WA Herbarium noted that although there are relatively few known collections of this taxon, the relatively wide distribution of the collections means that this taxon would not be given a high conservation priority; this taxon appears to meet the criteria for Priority 3 status, particularly given that there appear to be significant remaining areas of apparently suitable habitat (DBCA, 2023a).

A total of 73 individuals of *Polymeria* sp. nov. (potentially undescribed) were recorded at seven point locations across the Survey Area by the 2022 and 2024 surveys; the point locations appear to represent four discrete populations. Two of these populations, represented by 33 individuals and five point locations, were recorded within the Targeted Survey Area (**Table 5.8**). All locations were in sandy or sandy clay soil in low-lying sites, including on flats, in minor flow lines or in run-off areas around granite outcrops. As noted above, the survey results indicate that this taxon is likely to be a disturbance opportunist, as all point locations were in areas that had been burnt within the previous two years; it was not seen in vegetation that had not been recently burnt (**Figure 5.6**). It was recorded in a total of four VTs, of which VTs 7 and 8 are tentatively considered to represent the taxon's preferred habitat in the Survey Area. Further field survey would be required to confirm the preferred habitat of this taxon in the Survey Area in a VT context.

Despite a significant amount of survey in recently burnt suitable habitat within the Targeted Survey Area in 2024, only 3 senesced individuals were recorded. Additionally, only a small number of senesced individuals were observed at a single known location in the Survey Area; this taxon could not be relocated at all remaining known locations. Consequently, no further survey was undertaken outside the Targeted Survey Area for this taxon. It is possible that lack of wet season rainfall may have influenced survey results; this taxon may retreat to a drought-tolerant root stock during drought periods, and insufficient rainfall was received to stimulate growth in the wet season of 2024. It is also possible that extant individuals of this taxon may no longer be present in the Survey Area. As mentioned above, it is apparent that this taxon is a disturbance opportunist, as all records in the Survey Area were made in relatively recently burnt areas; it is also possible that this taxon is short-lived, and may no longer be detectable in the Survey Area unless suitable habitat is burnt. Further research into the life history of this taxon is required to confirm both its life history and longevity.

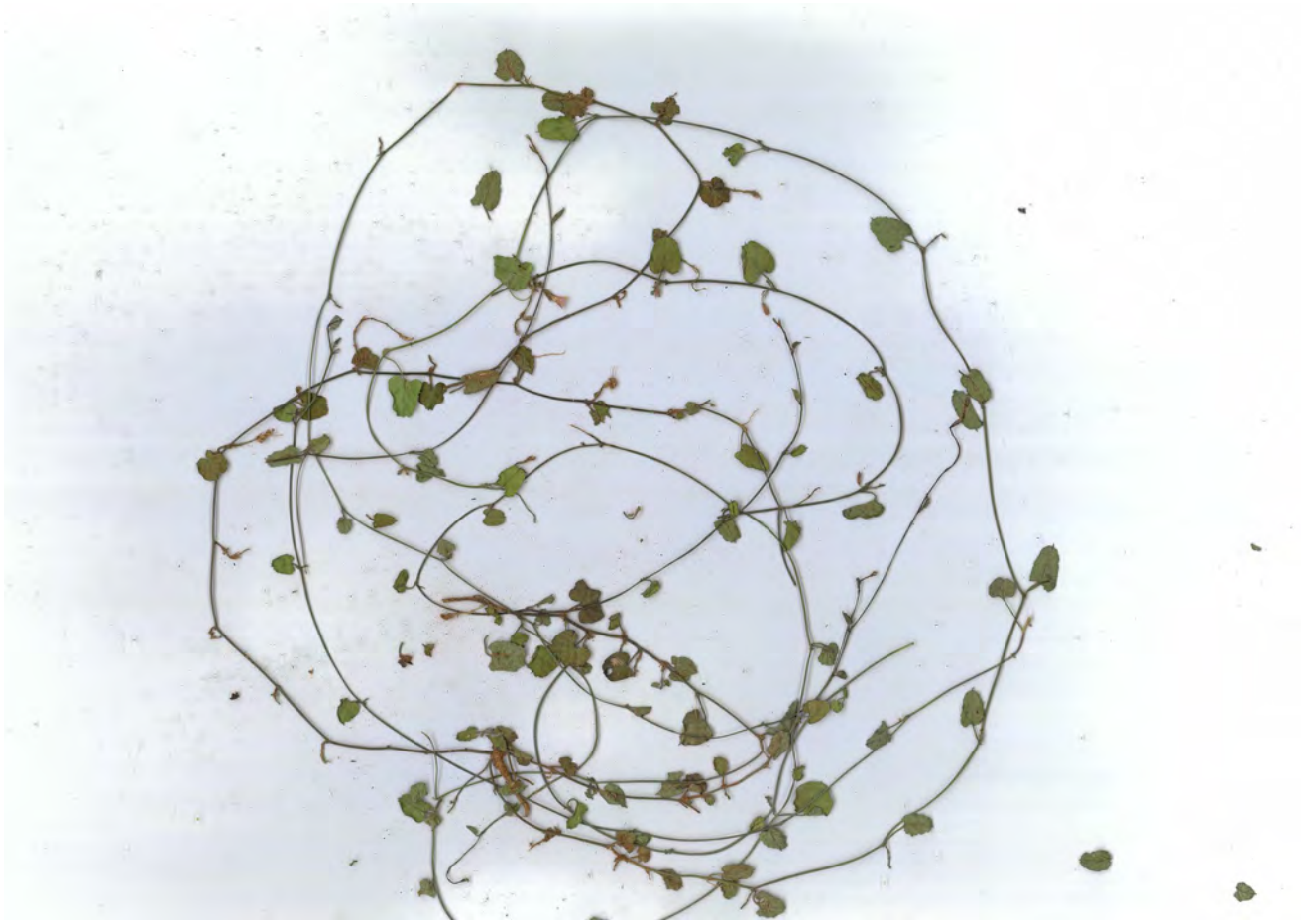


Photo 5.8 *Polymeria* sp. nov. (Potentially Undescribed) (Photo: Umwelt, 2022 (scanned specimen))

5.2.5 Other Flora Taxa of Interest

5.2.5.1 Abutilon aff. *hannii*

One collection made within the Survey Area was identified as *Abutilon* aff. *hannii* (**Photo 5.9**). As noted in **Section 5.1.3**, this taxon is still awaiting recognition on the census of plants in WA via a phrase name, but is known from a number of locations distributed widely in the Pilbara region, and it is unlikely to be assessed as being significant in a conservation context (M. Hislop pers. comm. 2021). It is therefore not considered to be a significant taxon.

Photo 5.9 *Abutilon* aff. *hannii* (Photo: Umwelt, 2021)

5.2.5.2 Distribution Extensions and Distribution Gaps

Table 5.9 presents taxa where collections from the Survey Area made for the 2022 and 2024 survey represent extensions to the known distribution of such taxa, or otherwise fill gaps within their known distributions, according to Florabase. Such taxa recorded during the 2022 survey were based on the existing WA Herbarium records at the time of the 2022 survey (WA Herbarium, 1998-). **Table 5.9** also indicates which year taxa were recorded, and whether these taxa have been recorded during the survey by Ecoscape (2021). Where taxa listed in **Table 5.9** have been recorded by the Ecoscape survey, this indicates that material has not been submitted to the WA Herbarium for lodgement, has been submitted and is still awaiting lodgement, or the WA Herbarium has not lodged submitted specimens (in accordance with its own requirements).

Collections of 25 taxa made during the 2022 survey represent range extensions or fill gaps within their known distributions; of these, two were reported as occurring in the Survey Area by Ecoscape (2021). No collections made during the 2024 targeted survey represents range extensions or distribution gaps. Specimen material from these taxa collected during the 2022 survey were lodged at the WA Herbarium by Umwelt as per the requirements of EPA (2016b), where such material was 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 (2016a, 2016b), none of the taxa listed in **Table 5.9** are considered to be significant taxa in this context (with the exception of the significant flora taxa discussed in **Section 5.2.2**). All such taxa have wide distributions, and the recording of these taxa is considered to be a function of the limited previous survey undertaken in the Survey Area and surrounds.

Table 5.9 Native Taxa Where Collections Represent Range Extensions or Fill Distribution Gaps

Taxon	Description	Year Taxon was Recorded
Abutilon macrum	Locality hole	2022
Aristida hygrometrica	Locality hole	2022
Cajanus marmoratus	Locality hole	2022
Corchorus elachocarpus	Locality hole	2022
Crotalaria ramosissima	Locality hole	2022 and 2021 (Ecoscape)
Euphorbia psilosperma	Locality hole	2022
Euploca vestita	Slight range extension to the west	2022
Glycine tomentella	Slight range extension to the south-west	2022
Halgania erecta	Range extension to the north	2022
***Halgania solanacea* var. *solanacea* ms**	Locality hole	2022
Microstachys chamaelea	Locality hole	2022
Panicum laevinode	Locality hole	2022
Paspalidium reflexum	Range extension to the north-west	2022
Petalostylis cassioides	Locality hole	2022
Polygala galeocephala	Range extension to the south	2022
Portulaca filifolia	Locality hole	2022
Ptilotus appendiculatus	Locality hole	2022
***Rothia indica* subsp. *australis* (P3)**	Slight range extension to the west	2022
Sida arsiniata	Locality hole	2022
***Sida* sp. L (A.M. Ashby 4202)**	Locality hole	2022
***Sida* sp. Pindan (B.G. Thomson 3398)**	Locality hole	2022
***Stackhousia* sp. swollen gynophore (W.R. Barker 2041)**	Locality hole	2022
Tephrosia rosea* var. *rosea	Slight range extension to the west	2022
***Triodia chichesterensis* (P3)**	Slight range extension to the west	2022 and 2021 (Ecoscape)
Triumfetta deserticola	Slight range extension to the west	2022

5.2.6 Likelihood of Occurrence of Further Significant Flora Taxa

As discussed in **Section 5.1.4**, a total of 24 significant flora taxa were identified as occurring (or potentially occurring) within the Desktop Study Area prior to survey, including two taxa listed as Threatened under the EPBC and BC Acts. One of these significant taxa, *Sida arenicola* 'dunes', was determined to not represent a discrete taxon (see **Section 5.2.2**) and is not considered further. Of the remaining 24 taxa, six were recorded within the Survey Area by the 2022 and 2024 surveys (**Section 5.2.2**). **Table 5.10** presents an assessment of the likelihood of the remaining 17 taxa occurring in the Survey Area and Targeted 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. It is worthy of note that suitable habitat has been determined using details recorded at known locations. However, for many of the taxa known from the general vicinity of the Survey Area, suitable habitat is difficult to define, as available habitat information is often vague or very broad and difficult to interpret; for example an area described as a plain with red-brown clay loam could feasibly occur almost anywhere in WA. Therefore, a precautionary approach has been adopted when assessing whether suitable habitat for a species is present in the Survey Area.

It is considered that all of the remaining 17 taxa were identifiable during the 2022 and 2024 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. Of these, it is considered that three taxa (*Euphorbia inappendiculata* var. *inappendiculata* (P2), *Gomphrena leptophylla* (P3) and *Stylidium weeliwolli* (P3)) could potentially still occur in the Survey Area, despite being identifiable at the time of the 2022 and 2024 surveys, based on suitable habitat occurring or potentially occurring in the Survey Area, and the Survey Area being within the known range of the taxon or generally within close proximity to its known range (**Table 5.10**). However, it is considered unlikely that these three taxa are present within the Targeted Survey Area, given they were not recorded in this area despite intensive survey having been conducted by the 2022 and 2024 survey; additionally, in the case of *Euphorbia inappendiculata* var. *inappendiculata* (P2) and *Stylidium weeliwolli* (P3), suitable habitat is also considered unlikely to be present in the Targeted Survey Area. The remaining 14 taxa are considered unlikely to occur in the Survey Area or Targeted Survey Area; in most cases, no suitable habitat is considered to be present.

Note that a number of taxa presented in **Table 5.10** occur in granitic areas, and a small area of granite was recorded in the Survey Area (outside the Targeted Survey Area). This area was sampled by quadrat HD82 and was opportunistically searched for significant flora taxa, with particular emphasis on those that are known to occur in granitic areas (*Acacia leeuweniana* (P1), *Acacia levata* (P3), *Bulbostylis burbidgeae* (P4), *Gomphrena leptophylla* (P3), *Nicotiana umbratica* (P3), *Phyllanthus hebecarpus* (P3) and *Stylidium weeliwolli* (P3)). However, no significant flora taxa were recorded in this area, and it is likely that the area is too small and isolated to represent suitable habitat for these taxa. No other granitic areas were recorded in the Survey Area, and therefore it is considered that there is no suitable habitat in the Survey Area or Targeted Survey Area for significant flora taxa that occur in granitic areas.

Table 5.10 Likelihood of Occurrence of Further Significant Flora Taxa in the Survey Area and Targeted Survey Area

Taxon	Status (WA)	Flowering Period*	Habitat*	Identifiable During Survey?	Nearest Known Location to Survey Area^	Likelihood of Occurrence
Acacia leeuweniana	P1	Apr-May	Granite outcrops and granitic hills. Skeletal red or orange sandy clay	Y	Approx. 43 km southeast	**Survey Area:** Unlikely **Targeted Survey Area:** Unlikely Habitat not considered to be present. Known from a relatively restricted distribution, and closest known record represents northern extent of range
Acacia levata	P3		Hillslopes. Sand or sandy loam over granite, granite outcrops. Triodia grassland with scattered Acacia shrubs	Y	Approx. 41 km south-southeast	**Survey Area:** Unlikely **Targeted Survey Area:** Unlikely Habitat not considered to be present. Known from a relatively restricted distribution, and closest known record represents northern extent of range
Bulbostylis burbidgeae	P4	Jan-Jul	Brown loam or sand, in crevices or under overhangs. Almost exclusively granite outcrops	Y	Approx. 8.3 km east	**Survey Area:** Unlikely **Targeted Survey Area:** Unlikely Habitat not considered to be present. Survey Area and Targeted Survey Area occur just west of known range
Euphorbia clementii	P3	May-Jul	Flats/plains, rocky slopes, drainage lines. Red-brown or orange sand or clay loam with ironstone gravel. Fire responder	Y	Approx. 9.6 km east	**Survey Area:** Unlikely **Targeted Survey Area:** Unlikely Survey Area and Targeted Survey Area occur just west of known range. This taxon is a known fire responder, but it was not observed in the Survey Area despite large areas being recently burnt (within 1 year of field survey), including parts of the Targeted Survey Area, the entirety of which was systematically searched for significant flora taxa. Apparent preferred habitat (sandy flowlines in stony outwash areas) not present in the Survey Area

Taxon	Status (WA)	Flowering Period*	Habitat*	Identifiable During Survey?	Nearest Known Location to Survey Area^	Likelihood of Occurrence
Euphorbia inappendiculata* var. *inappendiculata	P2	Apr-Aug	Cracking clay, clay loam. Drainage lines and clay pans	Y	Approx. 78 km east-southeast	**Survey Area:** Possible **Targeted Survey Area:** Unlikely Recorded by Ecoscape (2021) at Toweranna haul road and Withnell (18 km west of Survey Area), however these records are not represented on DBCA databases. Habitat possibly present in the Survey Area, and Survey Area occurs within known range. However, suitable habitat is considered unlikely to be present in the Targeted Survey Area, and taxon not recorded in Targeted Survey Area despite intensive survey conducted by the 2022 survey
Gomphrena cucullata	P3	Feb-Jul	Flats and plains. Red, orange or brown loamy clay. Coastal and near-coastal areas	Y	Approx. 23 km northwest	**Survey Area:** Unlikely **Targeted Survey Area:** Unlikely Habitat not present
Gomphrena leptophylla	P3	May-Sep	Drainage lines, floodplains. Red sandy loam, sometimes granitic	Y	Approx. 28 km northeast	**Survey Area:** Possible **Targeted Survey Area:** Unlikely Habitat possibly present in Survey Area and Targeted Survey Area. Survey Area occurs within known range. However, taxon not recorded in Targeted Survey Area despite intensive survey conducted by the 2022 survey, and is therefore considered unlikely to occur in the Targeted Survey Area
Gomphrena pusilla	P2	Mar-Jun	Limestone ridges, coastal sand dunes. Calcareous sand, sandstone	Y	Approx. 48 km northeast	**Survey Area:** Unlikely **Targeted Survey Area:** Unlikely Habitat not present

Taxon	Status (WA)	Flowering Period*	Habitat*	Identifiable During Survey?	Nearest Known Location to Survey Area^	Likelihood of Occurrence
Nicotiana umbratica	P3	Apr-Jun	Rocky outcrops with shallow soils, in crevices or under overhangs. Almost exclusively granite outcrops	Y	Approx. 24 km southeast	**Survey Area:** Unlikely **Targeted Survey Area:** Unlikely Habitat not considered to be present. Survey Area and Targeted Survey Area occur outside (north) of known range
Phyllanthus hebecarpus	P3		Granite outcrops. Skeletal brown sand or red sandy loam	Y	Approx. 40 km southeast	**Survey Area:** Unlikely **Targeted Survey Area:** Unlikely Habitat not considered to be present. Survey Area and Targeted Survey Area occur outside (north) of known range
Ptilotus mollis	P4	Jul-Sep	Steep stony hills and screes, often ironstone	Y	Approx. 16 km north-northeast	**Survey Area:** Unlikely **Targeted Survey Area:** Unlikely Habitat not considered to be present
Quoya zonalis	T	Jun-Sep	Steep rocky hills and breakaways, sandstone and ironstone. Skeletal brown or red loamy sand. Range restricted	Y	Approx. 52 km southeast	**Survey Area:** Unlikely **Targeted Survey Area:** Unlikely Habitat not considered to be present; taxon has a very restricted range, and closest known record represents western extent of range
***Sida* sp. Barlee Range (S. van Leeuwen 1642)**	P3	Mar-Apr, Aug-Oct	Rocky slopes, screes, gullies and breakaways. Skeletal red-brown soils	Y	Approx. 17 km east	**Survey Area:** Unlikely **Targeted Survey Area:** Unlikely Habitat not considered to be present. Closest known record is very disjunct from main distribution, with most known records occurring south of Karijini National Park, approximately 150 km south of the Survey Area

Taxon	Status (WA)	Flowering Period*	Habitat*	Identifiable During Survey?	Nearest Known Location to Survey Area^	Likelihood of Occurrence
Stylidium weeliwolli	P3	Mar-Oct	Drainage lines, seepage areas, pools, sometimes granitic. Damp, gritty red/brown sand or clay soil	Y	Approx. 15 km southeast	**Survey Area:** Possible **Targeted Survey Area:** Unlikely Habitat possibly present in the Survey Area, and Survey Area occurs within known range. However, suitable habitat is considered unlikely to be present in the Targeted Survey Area, and taxon not recorded in Targeted Survey Area despite intensive survey conducted by the 2022 survey
***Tephrosia rosea* var. Port Hedland (A.S. George 1114)**	P1	Mar, Jul-Sep	Sand dunes, predominately coastal. Orange to brown sand	Y	Approx. 28 km northwest	**Survey Area:** Unlikely **Targeted Survey Area:** Unlikely Habitat not considered to be present
Terminalia supranitifolia	P3	Mar-Oct	Drainage lines, cliffs, slopes, rocky outcrops. Red-brown clay loam or sandy soil over ironstone or metamorphic rock	Y	Approx. 25 km south-southeast	**Survey Area:** Unlikely **Targeted Survey Area:** Unlikely Habitat not considered to be present
Vigna triodiophila	P3	Apr-Jun	Almost exclusively basalt rockpiles with shallow soils.	Y	Approx. 25 km south-southeast	**Survey Area:** Unlikely **Targeted Survey Area:** Unlikely Habitat not considered to be present

** Source: WA Herbarium (1998-).*

^ Source: DBCA (2022b).

5.2.7 Introduced Flora Taxa

A total of 11 introduced flora taxa were recorded by the 2022 and 2024 surveys of the Survey Area. These taxa are listed in **Table 5.11**, together with location information, and comments regarding the significance of each taxon, including ecological impact and invasiveness ratings under the Ecological Impact and Invasiveness Ratings from the Department of Parks and Wildlife for the Pilbara Region (DBCA, 2014). Table 5.11 also includes location information of weeds recorded in the Survey Area in 2021 by Ecoscape (2021). Note that Ecoscape purportedly recorded **Portulaca pilosa* in the Survey Area, but this was determined to be a misidentification of *Portulaca filifolia* (**Appendix E**).

One WoNS (**Opuntia* sp.; also listed a Declared Pest) and one additional Declared Pest listed under the BAM Act (**Calotropis procera*) were recorded in the Survey Area by the 2022 and 2024 surveys (Table 5.11). While **Calotropis procera* has not been rated for ecological impact and invasiveness by DBCA (2014) (**Table 5.11**), it is considered a widespread, serious weed (Hussey et al., 2007).

Introduced flora taxa were generally most abundant around areas associated with disturbance (recent and historical) and grazing (**Section 5.2.14**), or in areas that experience periodic inundation, including drainage lines.

One introduced taxon recorded in the Survey Area by the 2022 and 2024 survey is rated as having 'Low' ecological impact (**Digitaria ciliaris*) (**Table 5.11**). Taxa with this ecological impact rating are typically cosmopolitan species that generally cause minimal disruption to ecological processes or loss of biodiversity (DBCA, 2014). **Digitaria ciliaris* is a very common garden weed in southern WA. In the Kimberley, it is a weed of crops and disturbed areas (Hussey et al., 2007).

Seven introduced flora taxa recorded in the Survey Area are rated as having 'High' ecological impact (Table 5.11). 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). Of these, **Aerva javanica*, **Cenchrus ciliaris* and **Cenchrus setiger* were most common in the Survey Area (**Table 5.11**), particularly in areas of disturbance (in the case of **Aerva javanica*), and in drainage lines impacted by cattle (in the case of **Cenchrus ciliaris* and **Cenchrus setiger*).

The majority of introduced taxa recorded in the Survey Area by the 2022 and 2024 surveys are rated as having 'Rapid' invasiveness in native vegetation (**Table 5.11**) (DBCA, 2014). These taxa are typically disturbance opportunists and are relatively common around disturbance areas, and as well as along drainage lines and other areas of periodic inundation.

Locations of introduced flora taxa recorded by the 2022 and 2024 surveys are presented on **Figure 5.7** and in **Appendix H**.

Table 5.11 Summary of Introduced Flora Taxa within the Survey Area

Taxon	Common Name	Number of Locations			VTs*	Legislative Significance	Ecological Impact^	Invasiveness^	Risk Assessment – Pilbara Region (Webber et al., 2017)
		2021	2022	2024					
Aerva javanica	Kapok Bush	2	12	0	4, 5, 6, 10, 11, 16, C		High	Rapid	Priority for research to determine environmental impact
Calotropis procera	Calotrope	0	4	2	3, 13, 16, C	Declared Pest – no control category	Priority Alert Species[$] -not assessed	Priority Alert Species[$] -not assessed	Widespread and probably beyond containment, management should focus on asset protection
Cenchrus ciliaris	Buffel Grass	1	26	0	1, 2, 3, 4, 5, 6, 16		High	Rapid	Widespread and probably beyond containment, management should focus on asset protection
Cenchrus setiger	Birdwood Grass	0	10	0	2, 3, 5, 16		High	Rapid	Widespread and probably beyond containment, management should focus on asset protection
Citrullus amarus	Pie Melon	0	0	2	16		Unknown	Moderate	Unlikely to cause environmental impact
Citrullus colocynthis	Colocynth	0	4	0	16, C		Unknown	Moderate	Unlikely to cause environmental impact
Digitaria ciliaris	Summer Grass	0	1	0	5		Low	Slow	Priority for research to determine environmental impact
Echinochloa colona	Awnless Barnyard Grass	0	1	0	2		High	Rapid	Priority for research to determine environmental impact
Malvastrum americanum	Spiked Malvastrum	0	2	0	5, 16		High	Rapid	Priority for research to determine environmental impact

Taxon	Common Name	Number of Locations			VTs*	Legislative Significance	Ecological Impact^	Invasiveness^	Risk Assessment – Pilbara Region (Webber et al., 2017)
		2021	2022	2024					
***Opuntia* sp.[#]**	Prickly Pear	0	1	1	16	Weed of National Significance. Declared Pest – C3 control category (management / restricted)	High	Rapid	Requires management under legislation
Passiflora foetida* var. *hispida	Stinking Passion Flower	0	2	0	16, 3		High	Rapid	Widespread and probably beyond containment, management should focus on asset protection

* Refer to **Section 5.2.8** for VT descriptions.

[$] Priority alert species – at the time of publication, the species was either not found in WA, not found in the DBCA's Pilbara Region but known to exist in an adjacent region or found in the region but not on DBCA managed lands or waters.

[#] Two *Opuntia* species (*O. stricta* and *O. elata*) have been recorded in the vicinity of the Survey Area and are difficult to distinguish from each other – the taxon observed in the Survey Area could not be confidently assigned to either but appears more likely to be *O. stricta*. Both species are considered equivalent in an environmental impact and management context.

^ Source: DBCA (2014).

634500 639000 643500 648000 652500

7731000 7726500 7722000 7717500 7713000 7708500 7704000

MANILINHA DR
GREAT NORTHERN HWY
NORTH WEST COASTAL HWY

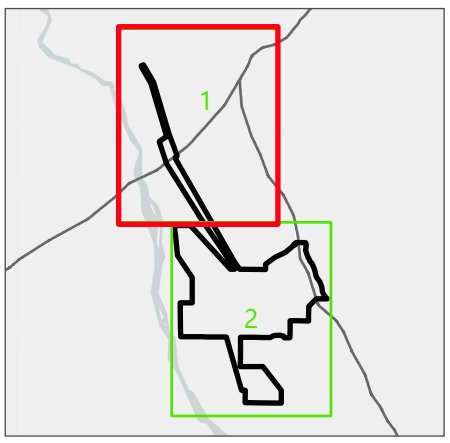
Ecc Cec Cse
Cse Cec
Cse Cec
Cec
Cec
Cec
Cec Cse Aeja
Cec Dci Maa Aeja
Cec
Cse Cec
Cec
Cec
Cec
Aeja

Legend

- Survey Area
- Targeted Survey Area
- Road

Introduced Flora (Umwelt, 2024)

- Aeja **Aerva javanica*
- Cec **Cenchrus ciliaris*
- Cse **Cenchrus setiger*
- Dci **Digitaria ciliaris*
- Ecc **Echinochloa colona*
- Maa **Malvastrum americanum*



Scale: 1:90,000 at A4, GDA2020 MGA Zone 50

FIGURE 5.7

Introduced Flora Taxa of the Survey Area (Sheet 1)

0 1.8 3.6

Kilometres

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Image Source: Hemi (2022), Landgate (2023) | **Data Source:** Landgate (2024), Umwelt (2023, 2024), Woodman Environmental (2011), Ecoscape (2021)

643500 648000 652500 657000 661500

7704000 7699500 7695000 7690500 7686000 7681500 7677000

INDEE RD

GREAT NORTHERN HWY

Cec Cse Cap Cec Cec

Cse Pfh Cec

Cap Cic Cec Aeja

Cap

Aeja

Aeja Maa Cec Cic Opu

Cap

Cap

Cia

Cse Opu Aeja Cia

Aeja Cec

Cap

Aeja

Aeja

Cic

Aeja

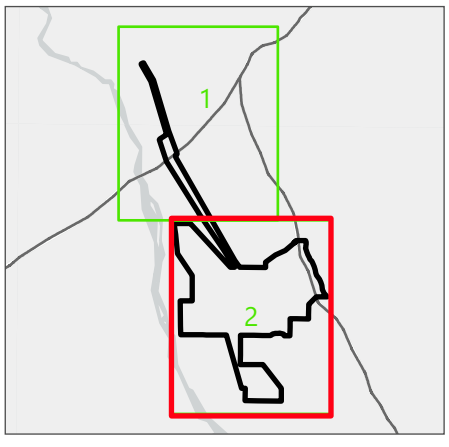
Aeja

Legend

- Survey Area
- Targeted Survey Area
- Road

Introduced Flora (Umwelt, 2024)

- Aeja **Aerva javanica*
- Cap **Calotropis procera*
- Cec **Cenchrus ciliaris*
- Cse **Cenchrus setiger*
- Cia **Citrullus amarus*
- Cic **Citrullus colocynthis*
- Maa **Malvastrum americanum*
- Opu **Opuntia* sp.
- Pfh **Passiflora foetida* var. *hispida*



Scale: 1:90,000 at A4, GDA2020 MGA Zone 50

FIGURE 5.7

Introduced Flora Taxa of the Survey Area (Sheet 2)

0 1.8 3.6

Kilometres

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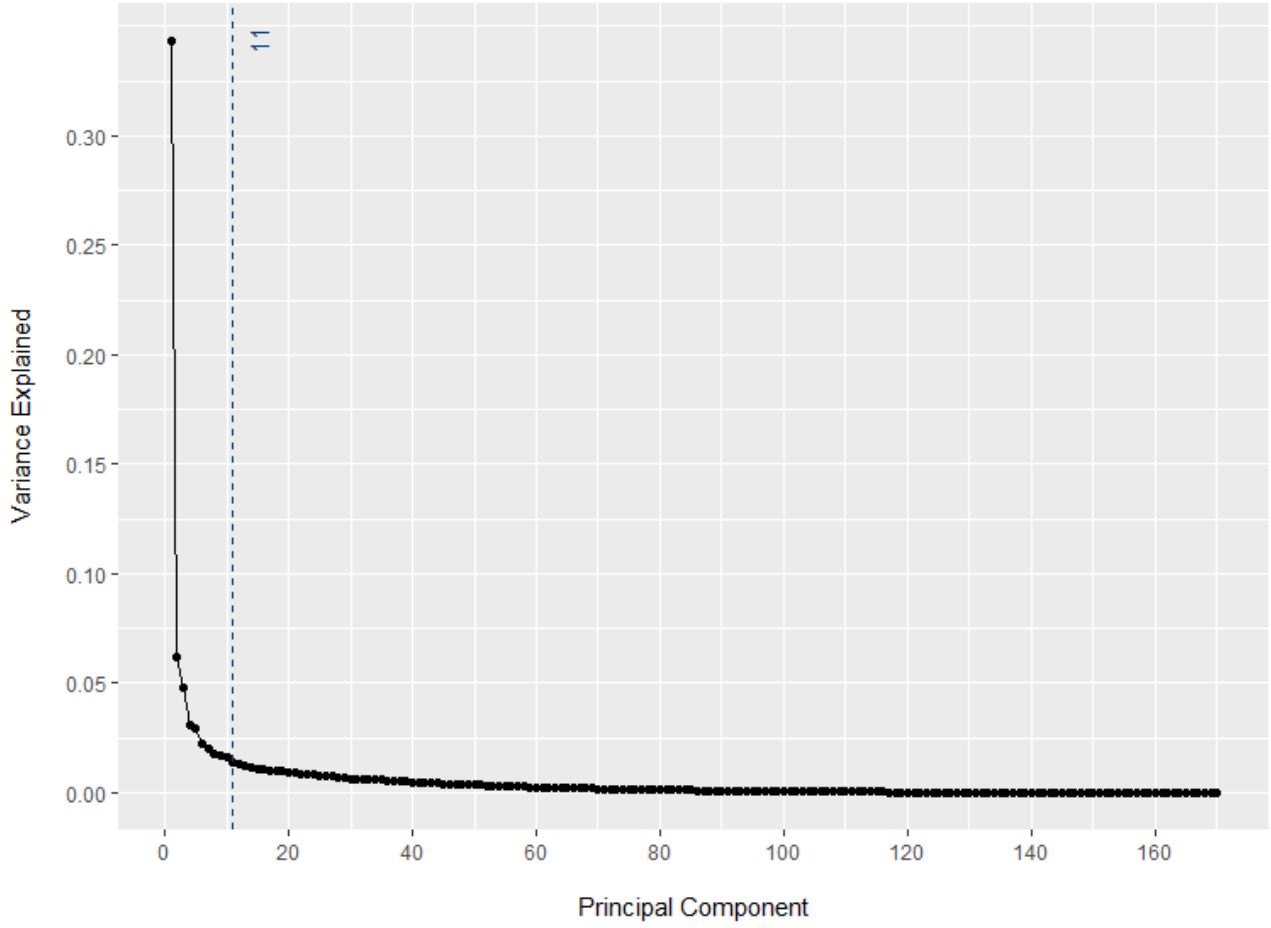
APPROVED FOR AND ON BEHALF OF Umwelt

Image Source: Hemi (2022), Landgate (2023) | **Data Source:** Landgate (2024), Umwelt (2023, 2024), Woodman Environmental (2011), Ecoscape (2021)

5.2.8 Floristic Classification Results

PCA determined that 11 clusters may be appropriate to capture the majority of the variation in the Survey Area quadrat dataset, as presented in **Graph 5.1**; the 'elbow' of the scree plot in **Graph 5.1** indicates where the eigenvalues level off, and hence the principal components to the left of this point should be retained as significant. The dendrogram (**Appendix I**), cluster plot (**Appendix J**) and taxon group matrix (**Appendix K**) were therefore initially examined at this level, to determine the plausibility of clusters with regard to taxon groups as well as field observations. This process identified 45 quadrats that were considered to have been misclassified, due to being taxon-poor, sampling recently burnt vegetation, disturbed vegetation, or being spatially located within the interface of two VTs and therefore possessing taxa common to both. These quadrats were manually reassigned to other clusters, as indicated in **Appendix L**, based on detailed investigation of their species composition, as well other characteristics including topography, soils, and geographic location. Additionally, three quadrats were each considered to represent discrete VTs, as presented in **Appendix L**.

It was ultimately determined that there were 14 plausible clusters that are considered to represent VTs in the Survey Area; these clusters were resolved at differing levels of similarity. As noted above, three quadrats were manually assigned to three additional VTs; this is discussed further in **Section 5.2.9** below. The clusters, as well as the three aforementioned quadrats, are labelled in the dendrogram in **Appendix I**. The initial 11 clusters identified by the analysis are also indicated on the dendrogram in **Appendix I**.



Graph 5.1 PCA Scree Plot and Result of Optimal Number of Clusters Analysis (dashed line)

5.2.9 Vegetation Types of the Survey Area

As described above, a total of 17 VTs were defined in the Survey Area via floristic composition classification and subsequent examination of quadrat data collected by the 2022 survey. The VTs are considered to belong to five broad vegetation groups based on soils and topography:

- **Group 1:** Hummock grasslands on low-lying flood plains and flats on clay or sandy loams (VT 1).
- **Group 2:** Tussock grasslands in clay pans (VT 2).
- **Group 3:** Low woodlands and tall shrublands over low shrublands and hummock grasslands on plains, in minor drainage lines and low stony rises and hills on clay and sandy loams (VTs 3-15).
- **Group 4:** Mid to low woodlands and tall shrublands over low shrublands and hummock grasslands in river channels (VT 16).
- **Group 5:** Tall shrublands over low shrublands and tussock and hummock grasslands on red sand dunes (VT 17).

The review of the relevé data did not identify any additional VTs in the Survey Area. Relevé sites were therefore assigned to one of the 17 VTs defined by the floristic classification analysis, following detailed investigation of their species composition, topography, soils, and geographic location. The locations of quadrats and/or relevés within each VT were used in conjunction with examination of aerial photography and field notes taken during the 2022 survey (presented in **Appendix M**) to develop VT mapping polygon boundaries across the Survey Area.

Table 5.12 presents a description of each of the VTs mapped in the Survey Area, including location, area mapped, sampling regime, significant flora recorded ('^' denotes preferred habitat for a significant taxon), average taxon richness and a description of variation found within the VT. **Figure 5.8** presents an overview of the distribution of VTs (and other areas described in the Survey Area as defined in **Section 5.2.10**). Raw quadrat and relevé data and parameters are presented in **Appendix F**. Detailed VT mapping with locations of quadrats and relevés established in the Survey Area are presented in **Appendix N**. **Appendix O** presents a taxon-VT matrix and **Appendix P** presents the results of the indicator taxa analysis.

As mentioned in **Section 5.2.8**, three VTs are represented by a single quadrat. Although the decision to recognise these quadrats as discrete VTs is somewhat tentative given the limited sample size, the quadrats were located on unusual landforms relative to the remainder of the Survey Area, and the taxon composition of the quadrats indicates that they likely represent vegetation discrete from all other VTs described in the Survey Area. It should be noted that the quadrats representing these VTs were classified within clusters that were ultimately considered to represent other VTs and were therefore assigned manually to discrete VTs. It is considered that the classification of the single quadrats that represent discrete VTs within these clusters is the result of limited sampling of the vegetation considered to represent these VTs. All such VTs are apparently rare within the Survey Area, and occur in single, small polygons that prevented replication of quadrats within them; heritage restrictions also restricted sampling of the vegetation now considered to represent VT 7.

Table 5.12 Summary of VTs Described in the Survey Area

VT	Summary	Representative Photo
1	**Description:** Low isolated shrubs dominated by *Acacia stellaticeps* and *Pluchea tetranthera* over low hummock grassland dominated by *Triodia longiceps* and *Triodia epactia* over ephemeral low sparse sedgeland, tussock grassland and forbland of mixed taxa including *Fimbristylis dichotoma, Bulbostylis barbata, Calandrinia stagnensis, Streptoglossa decurrens* and *Eriachne aristidea* on red-brown clay loam, sandy clay loam or sandy clay on plains and flats **Location:** Mapped over a number of relatively large areas in the northern half of the Survey Area. **Area Mapped (Proportion of Survey Area):** 1,198.0 (4.1 %) **Sample Sites:** 15 quadrats (HC01, HC02, HC05, HC15, HC21, HC23, HC27, HC31, HD57, HD59, HD61, HL02, HL03, HL12, HM13) **Indicator Taxa:** *Fimbristylis dichotoma*, *Streptoglossa decurrens*, *Triodia longiceps* **Significant Taxa:** *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3), *Rothia indica* subsp. *australis* (P3)^ **Average Taxon Richness per Quadrat:** 20.1 ± 9.3 **Variation:** There was little structural variation observed, although occasionally isolated tall shrubs were present. There was variation observed in the composition of the hummock grassland stratum; typically, *Triodia longiceps* and *Triodia epactia* were co-dominant, however at a number of areas either one of these taxa was dominant, with the other rare or absent. At several sites in the southern part of this VT's range, *Triodia secunda* was a co-dominant in this stratum. **Similar VTs:** Not especially similar to any other VTs. VT 1 surrounds the majority of occurrences of VT 2, and a number of common taxa are shared between these VTs; however, VT 2 contains a number of clay pan specialist taxa that are absent or rare in VT 1.	 **Photo 5.10 VT 1 (Quadrat HC02)**

VT	Summary	Representative Photo
2	**Description:** Low tussock grassland to sparse tussock grassland dominated by a combination of *Eriachne glauca* var. *glauca, Eriachne benthamii* and *Eriachne flaccida* over low sparse hummock grassland of *Triodia epactia* and *Triodia longiceps* over ephemeral low sparse sedgeland and forbland of mixed species including *Cyperus iria, Fimbristylis dichotoma, Neptunia dimorphantha, Marsilea hirsuta* and *Calandrinia pumila* on orange, red-brown or brown clay in clay pans **Location:** Mapped over a small number of relatively small areas primarily in the northern part of the Survey Area, with two small areas mapped in the central part of the Survey Area. **Area Mapped (Proportion of Survey Area):** 39.8 (0.1 %) **Sample Sites:** 7 quadrats (HC17, HC18, HC19, HD60, HD63, HL06, M21140), 2 relevés (HD-R01, HD-R02) **Indicator Taxa:** *Cyperus pulchellus, Eriachne benthamii, Eriachne flaccida, Eriachne glauca* var. *glauca, Marsilea hirsuta, Neptunia dimorphantha* **Significant Taxa:** *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3), *Rothia indica* subsp. *australis* (P3) **Average Taxon Richness per Quadrat:** 22.3 ± 12.3 **Variation:** Typically an open tussock grassland was present; however, a number of sites possessed a denser tussock grassland, while some sites possessed only a sparse tussock grassland. The dominant tussock grass varied between mapped areas; at least one of the three taxa mentioned in the description was usually co-dominant, however, at some sites only one of these taxa was present. Other tussock grass taxa (*Eulalia aurea, Eragrostis xerophila*) were also co-dominant in a small number of mapped areas. The ephemeral forb, sedge and grass stratum was usually present, however such taxa were generally more abundant where the tussock grass stratum was less developed. One mapped area had a woodland stratum of *Corymbia candida* subsp. *candida*. **Similar VTs:** Not especially similar to any other VTs. See VT 1 for discussion.	 **Photo 5.11 VT 2 (Quadrat HC17)** **Photo 5.12 VT 2 – variant with woodland stratum (Quadrat HD63)**

VT	Summary	Representative Photo
		 Photo 5.13 VT 2 – variant with sparse tussock grassland, relatively high abundance of ephemeral forbs, sedges and grasses (Relevé HD-R01)

VT	Summary	Representative Photo
3	**Description:** Low woodland to open woodland dominated by *Corymbia candida* subsp. *candida* over tall shrubland to open shrubland dominated by *Acacia colei* and *Acacia tumida* var. *pilbarensis* over low open to sparse shrubland of mixed species including *Pluchea tetranthera, Afrohybanthus aurantiacus* and *Sida rohlenae* subsp. *rohlenae* over low open to sparse hummock grassland dominated by *Triodia epactia* over low sparse tussock grassland of mixed species including *Chrysopogon fallax, Aristida holathera* var. *holathera, Eragrostis eriopoda, Eriachne obtusa* and **Cenchrus ciliaris* on orange sandy or sandy clay loam on flats **Location:** Mapped over a small number of relatively small areas in the northern part of the Survey Area. **Area Mapped (Proportion of Survey Area):** 83.3 (0.3 %) **Sample Sites:** 6 quadrats (HC03, HC04, HC20, HC24, HC25, M21153) **Indicator Taxa:** *Abutilon otocarpum, Acacia colei, Afrohybanthus aurantiacus, Carissa lanceolata, Chrysopogon fallax, Corymbia candida* subsp. *candida, Cucumis variabilis, Cullen leucanthum, Eriachne obtusa, Goodenia nuda, Gossypium australe, Hibiscus sturtii* var. *campylochlamys, Ipomoea muelleri, Pluchea tetranthera, Senna notabilis, Sida fibulifera, Sida rohlenae* subsp. *rohlenae, Sida* sp. Pilbara (A.A. Mitchell PRP 1543), *Waltheria indica* **Significant Taxa:** *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3) **Average Taxon Richness per Quadrat:** 39 ± 8.7 **Variation:** Some smaller occurrences lacked the typical woodland stratum. *Eucalyptus victrix* and *Corymbia hamersleyana* were occasionally present in the woodland stratum. *Cullen leucanthum* was co-dominant in the tall shrubland stratum at a small number of areas. One area was characterised by the presence of a number of climber or vine taxa at high densities (**Passiflora foetida* var. *hispida*, *Tinospora smilacina*, *Cassytha filiformis*). **Similar VTs:** Most similar to VT 4; however, occurs in more low-lying, wetter areas, and consequently generally possesses a woodland stratum, is more taxon-rich, and contains a suite of taxa largely absent from VT 4.	 **Photo 5.14 VT 3 (Quadrat M21153) (Photo: Ecoscape (2021))** **Photo 5.15 VT 3 – variant lacking woodland stratum (Quadrat HC25)**

VT	Summary	Representative Photo
4	**Description:** Tall sparse shrubland of mixed species including *Acacia ancistrocarpa, Acacia inaequilatera, Acacia colei* and *Melaleuca lasiandra* over low open to sparse shrubland dominated by *Acacia stellaticeps, Pluchea tetranthera, Sida arenicola* and *Corchorus elachocarpus* over low hummock grassland to open hummock grassland dominated by *Triodia epactia, Triodia lanigera* and *Triodia schinzii* on red or red-brown sandy loam on plains **Location:** Mapped over a number of large areas in the central western part of the Survey Area, extending just into the northern part of the Survey Area. **Area Mapped (Proportion of Survey Area):** 3,788.0 (12.8 %) **Sample Sites:** 35 quadrats (HC07, HC08, HC11, HC12, HC13, HC22, HC26, HC28, HC30, HD24, HD67, HD70, HD74, HD75, HD76, HD80, HD81, HJ16, HJ17, HL13, HL14, HL15, HL17, HL18, HL19, HM10, HM11, HM12, HM14, HM15, M21001, M21084, M21093, M21094, M21151) **Indicator Taxa:** *Acacia stellaticeps, Melaleuca lasiandra, Trigastrotheca molluginea* **Significant Taxa:** *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3), *Seringia exastia* (T)^ **Average Taxon Richness per Quadrat:** 31.1 ± 11.4 **Variation:** An open woodland stratum was often present; in northern occurrences, *Corymbia zygophylla* and less frequently *Corymbia hamersleyana* were the dominant tree taxa, while *Eucalyptus victrix* was present within one of the southern mapped areas. Part of the latter area was mapped as a discrete VT by Ecoscape (2021); however, further sampling and analysis by this current assessment did not support the definition of a discrete VT in this area (see **Section 5.2.12**). A low tussock grass stratum dominated by *Aristida holathera* var. *holathera*, *Eragrostis eriopoda* and *Eriachne obtusa* was present in a small number of areas. **Similar VTs:** Most similar to VT 3; see that VT for discussion. Also similar to VTs 5 and 10, which also occur on plains in the Survey Area; VT 4 appears to be somewhat transitional between these VTs, however occurs over large areas. VT 5 occurs further north than VT 4 and generally occurs on soils with a slightly greater clay content; it differs most obviously by the near-exclusive dominance of *Triodia epactia* in the hummock grass stratum (cf. several co-dominating *Triodia* species), and the dominance of *Acacia trudgeniana* in the tall shrubland stratum (absent in VT 4). VT 10 generally occurs further east of VT 4, at greater distance from the Yule River, and on slightly higher ground with slightly sandier soils than areas of VT 4; it differs most obviously by the general absence of *Triodia epactia* in the hummock grassland stratum, and of *Acacia colei* in the tall shrubland stratum.	 **Photo 5.16 VT 4 (Quadrat HC08)** **Photo 5.17 VT 4 variant – low woodland stratum (*Corymbia zygophylla*) present (Quadrat HC07)**

VT	Summary	Representative Photo
		Photo 5.18 VT 4 variant – low woodland stratum (*Eucalyptus victrix*) present (Quadrat HD24)

VT	Summary	Representative Photo
5	**Description:** Tall open to sparse shrubland dominated by *Acacia trudgeniana* and *Acacia colei* over low open to sparse shrubland dominated by *Acacia stellaticeps, Corchorus incanus* subsp. *incanus* and *Pimelea ammocharis* over low hummock grassland of *Triodia epactia* over low sparse tussock grassland of mixed species including *Aristida holathera* var. *holathera*, *Eragrostis eriopoda, Chrysopogon fallax* and *Eriachne obtusa* on red-brown clay or sandy loam on plains **Location:** Mapped over a number of large areas near the northern end of the Survey Area. **Area Mapped (Proportion of Survey Area):** 958.6 (3.2 %) **Sample Sites:** 21 quadrats (HC06, HC10, HC14, HC16, HD56, HD58, HD62, HD64, HD65, HD66, HL01, HL04, HL05, HL07, HL08, HL09, HL10, HL11, M21091, M21154, M21157) **Indicator Taxa:** *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3), *Acacia trudgeniana, Bonamia alatisemina, Cajanus marmoratus, Crotalaria ramosissima, Cullen lachnostachys, Dolichandrone occidentalis, Evolvulus alsinoides* var. *decumbens, Evolvulus alsinoides* var. *villosicalyx, Grevillea pyramidalis* subsp. *leucadendron, Indigofera linnaei, Pimelea ammocharis, Solanum lasiophyllum, Tephrosia* sp. D Kimberley Flora (R.D. Royce 1848) **Significant Taxa:** *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3)^, *Rothia indica* subsp. *australis* (P3)^ **Average Taxon Richness per Quadrat:** 31.3 ± 11.8 **Variation:** This VT was relatively consistent in both structure and composition. Occasionally a low open woodland of *Corymbia candida* subsp. *candida* or *Owenia reticulata* was present. **Similar VTs:** Most similar to VT 4; see that VT for discussion. Although the floristic classification suggested a close relationship to VTs 6 and 7, this is not considered to be the case; see those VTs for discussion.	 **Photo 5.19 VT 5 (Quadrat HD64)** **Photo 5.20 VT 5 variant – low woodland stratum (*Corymbia candida* subsp. *candida*) present (Quadrat HC06)**

VT	Summary	Representative Photo
6	**Description:** Tall sparse shrubland dominated by *Acacia trachycarpa* and *Acacia colei* over low sparse shrubland of mixed species including *Acacia stellaticeps* and *Corchorus incanus* subsp. *incanus* over low hummock grassland dominated by *Triodia lanigera* on red-brown sandy loam on low dunes within river channels **Location:** Mapped only in a single small area near the southern boundary of the Survey Area, in the Turner River channel. **Area Mapped (Proportion of Survey Area):** 1.8 (0.01 %) **Sample Sites:** 1 quadrat (HD01) **Indicator Taxa:** NA (VT represented by a single quadrat) **Significant Taxa:** None recorded **Average Taxon Richness per Quadrat:** 28 **Variation:** None observed, single area mapped **Similar VTs:** Unclear as described from a single small area from limited sampling. Further sampling in similar areas outside the Survey Area would be required to clarify affinities. Although the floristic classification indicated that the single quadrat that represents this VT is most similar to quadrats that represent VT 5, this is considered to be an artifact of the limited sampling of this VT; the similarities are considered to be superficial, and the two VTs are widely geographically separated and occur on very different landforms.	 **Photo 5.21 VT 6 (Quadrat HD01)**

VT	Summary	Representative Photo
7	**Description:** Tall sparse shrubland dominated by *Acacia tumida* var. *pilbarensis* over low sparse shrubland dominated by *Corchorus incanus* subsp. *incanus* and *Tephrosia rosea* var. *clementii* over ephemeral low sparse forbland and grassland of mixed species including *Calocephalus beardii*, *Aristida contorta*, *Eragrostis cumingii*, *Indigofera colutea* and *Perotis rara* on brown sandy loam with granite outcropping and stones on and around low granite outcrops **Location:** Mapped only in a single small area near the southern boundary of the Survey Area. **Area Mapped (Proportion of Survey Area):** 24.2 (0.1 %) **Sample Sites:** 1 quadrat (HD82), 1 relevé (HD-R03) **Indicator Taxa:** NA (VT represented by a single quadrat) **Significant Taxa:** *Polymeria* sp. nov. (potentially undescribed)^ **Average Taxon Richness per Quadrat:** 45 **Variation:** None observed – single area mapped **Similar VTs:** Unclear as described from a single small area from limited sampling. Further sampling in similar areas outside the Survey Area would be required to clarify affinities. Although the floristic classification indicated that the single quadrat that represents this VT is most similar to quadrats that represent VT 5, this is considered to be an artifact of the limited sampling of this VT; the similarities are considered to be superficial, and the two VTs are widely geographically separated and occur on very different landforms.	 **Photo 5.22 VT 7 (Quadrat HD82)**

VT	Summary	Representative Photo
8	**Description:** Low open woodland to isolated trees dominated by *Corymbia hamersleyana* over tall open to sparse shrubland dominated by *Acacia bivenosa, Acacia inaequilatera, Grevillea wickhamii* subsp. *aprica* and *Hakea lorea* subsp. *lorea* over low sparse shrubland of mixed species dominated by *Acacia stellaticeps, Scaevola amblyanthera* var. *centralis* and *Corchorus elachocarpus* over low hummock grassland dominated by *Triodia epactia* on red or red brown clay or sandy loam with calcrete and silica stones, occasionally with calcrete or silica outcropping, on low rises or plains **Location:** Mapped over a number of relatively small areas in the western central and northern part of the Survey Area. **Area Mapped (Proportion of Survey Area):** 204.8 (0.7 %) **Sample Sites:** 10 quadrats (HC09, HC29, HC32, HD71, HD72, HD73, HD77, HD78, M21092, M21106), 1 relevé (HMR01) **Indicator Taxa:** *Acacia bivenosa, Bonamia pilbarensis, Corchorus elachocarpus, Eriachne mucronata, Euploca pachyphylla, Goodenia microptera, Hakea lorea subsp. lorea, Scaevola amblyanthera* var. *centralis, Senna symonii, Tribulus hirsutus* **Significant Taxa:** *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3), *Polymeria* sp. nov. (potentially undescribed)^, *Triodia chichesterensis* (P3)^ **Average Taxon Richness per Quadrat:** 29 ± 5.7 **Variation:** *Triodia chichesterensis* (P3) and *Triodia wiseana* were co-dominant in the hummock grassland stratum in some areas. Some areas lacked the low open woodland stratum. **Similar VTs:** Most similar to VT 9; however that VT occurs further south, and on different geological formations (not calcrete). VT 8 differs most obviously from VT 9 by the presence of *Acacia bivenosa* (known to have a preference for calcareous soils) in the tall shrubland stratum, and by the presence of *Scaevola amblyanthera* var. *centralis* in the low shrubland stratum (both taxa are absent from VT 9).	 **Photo 5.23 VT 8 (Quadrat HC09)**

VT	Summary	Representative Photo
9	**Description:** Tall sparse shrubland of mixed species including *Acacia inaequilatera* and *Grevillea wickhamii* subsp. *aprica* over low sparse shrubland of mixed species dominated by *Corchorus parviflorus* over low hummock grassland dominated by *Triodia wiseana* and *Triodia epactia* on red-brown clay loam with chert stones and often chert outcropping on hills and low rises **Location:** Mapped over several of small areas in the southern part of the Survey Area. **Area Mapped (Proportion of Survey Area):** 66.1 (0.2 %) **Sample Sites:** 9 quadrats (HJ08, HK05, HK06, HK07, HK11, HK22, HK23, HK25, M21134) **Indicator Taxa:** *Abutilon lepidum, Corchorus parviflorus, Grevillea wickhamii* subsp. *aprica, Isotropis atropurpurea, Solanum diversiflorum, Tephrosia* sp. Bungaroo Creek (M.E. Trudgen 11601), *Tephrosia* sp. NW Eremaean (S. van Leeuwen et al. PBS 0356), *Tephrosia virens, Themeda triandra, Triumfetta clementii, Tribulus platypterus, Triodia wiseana* **Significant Taxa:** None recorded **Average Taxon Richness per Quadrat:** 29.3 ± 10.9 **Variation:** Little variation observed; a low sparse tussock grassland dominated by *Eriachne mucronata* was present at some areas where significant rock outcropping was present. **Similar VTs:** Most similar to VT 8; see that VT for discussion.	 **Photo 5.24 VT 9 (Quadrat M21134) (Photo: Ecoscape (2021))**
10	**Description:** Tall open to sparse shrubland dominated by *Acacia ancistrocarpa, Acacia inaequilatera, Acacia sericophylla, Acacia acradenia* and occasionally *Melaleuca lasiandra* over low shrubland to sparse shrubland dominated by *Acacia stellaticeps* and occasionally *Sida arenicola*, *Indigofera monophylla, Pluchea tetranthera* and *Corchorus parviflorus* over low hummock grassland to open hummock grassland dominated by *Triodia lanigera* and/or *Triodia schinzii* on red or red-brown sandy loam on plains **Location:** Mapped widely over the central and southern parts of the Survey Area. **Area Mapped (Proportion of Survey Area):** 17,317.0 (58.7 %) **Sample Sites:** 91 quadrats (HD09, HD11, HD13, HD14, HD16, HD17, HD19, HD20, HD21, HD40, HD68, HD69, HD79, HJ07, HJ12, HK01 , HK02, HK03, HK04, HK08, HK09, HK10, HK12, HK13, HK14, HK15, HK16, HK17, HK18, HK19, HK20, HK21, HK24, HL16, HM09, MD10, MD12, MD13, MD16, MD17, MD18, MD19, MD20, MD21, MD32, MD47, MD48, MD49, M21004, M21011, M21012, M21013, M21014, M21015, M21016, M21017, M2109, M21096, M21131, M21132, M21133, M21147, M21149, M21150, M21161, M21165, M21167, M21168, M21169, M21170, M21171, M21172, M21173, M21174, M21175, M21179, M21182, M21183,	 **Photo 5.25 VT 10 (Quadrat HD19)**

VT	Summary	Representative Photo
	M21184, M21186, M21187, M21188, M21191, M21206, M21207, M21208, M21210, M21221, M21222, M21230, M21231) **Indicator Taxa:** None identified **Significant Taxa:** *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3), *Euploca mutica* (P3)^, *Polymeria* sp. nov. (potentially undescribed), *Triodia chichesterensis* (P3) **Average Taxon Richness per Quadrat:** 20.8 ± 7.9 **Variation:** Given the large area that this VT was mapped over, variation was fairly limited. There was some variation in the structure of the tall shrubland stratum; typically the tall shrubland stratum was co-dominated by a combination of the taxa listed above, but often only a single *Acacia* taxon, or *Melaleuca lasiandra*, was dominant. A low open woodland stratum of *Corymbia zygophylla* and/or *Corymbia hamersleyana* was often present. Several small areas had somewhat gravelly soils and possessed a tall shrubland stratum dominated by *Acacia acradenia*, however were otherwise compositionally similar to other VT 10 areas. **Similar VTs:** Considered to be most similar to VT 4; see that VT for discussion. The floristic classification suggested a relatively close relationship to VTs 8 and 9; however, these VTs occur on different landforms (rocky or stony areas), and most obviously differ by the composition of the tall shrubland and hummock grassland strata. They are not considered to be especially similar to VT 10. There is a broad transitional area between this and VT 14 in the central part of the Survey Area; this VT differs most obviously in the composition of the hummock grassland stratum (almost exclusively *Triodia epactia*-dominated), and in the composition of the tall shrubland stratum.	 **Photo 5.26 VT 10 variant – low open woodland stratum (*Corymbia zygophylla*) present (Quadrat HD20)** **Photo 5.27 VT 10 variant – *Acacia acradenia*-dominated tall shrubland stratum (Quadrat HD21)**

11	**Description:** Low open woodland to isolated trees of *Corymbia hamersleyana* over tall open to sparse shrubland dominated by *Acacia orthocarpa, Acacia inaequilatera* and *Grevillea wickhamii* subsp. *aprica* over low sparse shrubland dominated by *Acacia stellaticeps* over low hummock grassland dominated by a combination of *Triodia lanigera, Triodia angusta, Triodia epactia* and *Triodia chichesterensis* (P3) on red or red brown sandy or clay loam with primarily quartz and calcrete stones, occasionally with calcrete or quartz outcropping, on low rises and undulating plains **Location:** Mapped over a number of generally small areas in the eastern central part of the survey area, and adjacent to the Turner River. **Area Mapped (Proportion of Survey Area):** 271.1 (0.9 %) **Sample Sites:** 10 quadrats (HD02, HD43, HD46, HD55, HJ03, HJ04, HJ09, HM01, HM02, HM08) **Indicator Taxa:** *Acacia inaequilatera, Acacia orthocarpa, Scaevola browniana* subsp. *browniana, Triodia angusta, Triodia chichesterensis* (P3) **Significant Taxa:** *Triodia chichesterensis* (P3)^ **Average Taxon Richness per Quadrat:** 14.5 ± 5.9 **Variation:** Most of the variation was observed in the hummock grassland stratum, with some areas dominated by one or two taxa, while the same taxa were absent in other areas; however, otherwise most areas were compositionally similar. The low tree stratum was absent in some areas. **Similar VTs:** Most similar to VT 12; these VTs occupy different geological formations, with VT 11 occurring on low, quartz or calcrete rises and likely calcareous soils, and VT 12 on low chert rises. They differ most obviously in the composition of the tall shrubland stratum, in particular the presence of *Acacia orthocarpa* in VT 11 (near-absent in VT 12), and in the presence of *Goodenia stobbsiana* in the low shrubland stratum of VT 12 (absent in VT 11).	 **Photo 5.28 VT 11 – *Triodia angusta/Triodia lanigera* hummock grassland (Quadrat HJ03)** **Photo 5.29 VT 11 – *Triodia epactia/Triodia lanigera/Triodia chichesterensis* (P3) hummock grassland (Quadrat HD43)**

VT	Summary	Representative Photo
12	**Description:** Isolated low trees dominated by *Corymbia hamersleyana* over low open to sparse shrubland of mixed species including *Acacia inaequilatera*, *Acacia acradenia, Acacia ancistrocarpa* and *Grevillea wickhamii* subsp. *aprica* over low sparse shrubland of mixed species dominated by *Goodenia stobbsiana* over low hummock grassland dominated by *Triodia epactia* and occasionally *Triodia wiseana* on red or red-brown clay loam with silica and chert stones and often silica and chert outcropping on low rises **Location:** Mapped over several relatively small areas in the central and southern part of the Survey Area. **Area Mapped (Proportion of Survey Area):** 68.4 (0.2 %) **Sample Sites:** 14 quadrats (HD18, HD22, HD42, HD48, HD54, HJ10, HJ11, HJ15, M21052, M21053, M21176, M21177, M21178, M21220) **Indicator Taxa:** *Goodenia stobbsiana, Ptilotus calostachyus* **Significant Taxa:** *Triodia chichesterensis* (P3) **Average Taxon Richness per Quadrat:** 17.6 ± 7.3 **Variation:** Little notable variation observed. Occasionally the tree stratum was absent. **Similar VTs:** Most similar to VT 11; see that VT for discussion	 **Photo 5.30 VT 12 (Quadrat HD22)**

VT	Summary	Representative Photo
13	**Description:** Low open woodland dominated by *Corymbia hamersleyensis* and/or *Corymbia candida* subsp. *candida* over tall open to sparse shrubland dominated by *Acacia ancistrocarpa*, *Acacia tumida* var. *pilbarensis*, *Acacia acradenia* and *Acacia colei* over low hummock grassland of *Triodia epactia* on red or red-brown clay or sandy loam on flats or plains **Location:** Mapped over a number of relatively small areas in the eastern central part of the Survey Area. **Area Mapped (Proportion of Survey Area):** 118.1 (0.4 %) **Sample Sites:** 8 quadrats (HD07, HD44, HD47, HD52, HD53, HM07, M21051, M21135) **Indicator Taxa:** *Acacia acradenia, Acacia ancistrocarpa, Acacia tumida* var. *pilbarensis, Cajanus cinereus, Corymbia hamersleyana, Tinospora smilacina* **Significant Taxa:** *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3) **Average Taxon Richness per Quadrat:** 13.9 ± 3.0 **Variation:** No notable variation observed. **Similar VTs:** Considered to be most similar to VT 14; however, VT 13 generally occurs on soils with a greater clay content. These VTs differ most obviously by the composition of the tall shrubland stratum, the presence of a low shrubland stratum dominated by *Acacia stellaticeps* and *Pluchea tetranthera* in VT 14 (both taxa near-absent in VT 13), and the presence of a low open woodland stratum in VT 13 (near-absent in VT 14).	 **Photo 5.31 VT 13 (Quadrat HD53)**
14	**Description:** Tall open shrubland to isolated shrubs dominated by *Acacia ancistrocarpa, Acacia colei* and *Acacia inaequilatera* over low open shrubland to isolated shrubs dominated by *Acacia stellaticeps* and *Pluchea tetranthera* over low hummock grassland dominated by *Triodia epactia* on red or red brown sandy or clay loam, often with colluvial gravel, on plains and flats **Location:** Mapped widely in the eastern central part of the Survey Area. **Area Mapped (Proportion of Survey Area):** 4,020.9 (13.6 %) **Sample Sites:** 34 quadrats (HD04, HD05, HD06, HD08, HD12, HD15, HD41, HD45, HD49, HD50, HD51, HJ02, HJ05, HJ06, HM03, HM04, HM06, MD01, MD02, MD03, MD04, MD05, MD06, MD08, MD09, M21005, M21006, M21007, M21008, M21009, M21019, M21136, M21144, M21189) **Indicator Taxa:** None identified **Significant Taxa:** *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3)^, *Euploca mutica* (P3)^, *Polymeria* sp. nov. (potentially undescribed), *Triodia chichesterensis* (P3)^	 **Photo 5.32 VT 14 (Quadrat HD05)**

VT	Summary	Representative Photo
	Average Taxon Richness per Quadrat: 10.2 ± 4.7 **Variation:** In a number of areas, the tall shrubland stratum was near-absent, or absent entirely. When present, there was also some variation in composition of the tall shrubland stratum; in addition to the taxa mentioned in the above description, *Acacia tumida* var. *pilbarensis*, *Acacia acradenia, Acacia orthocarpa* and *Acacia synchronicia* were occasionally co-dominant. A tree stratum, usually of *Corymbia hamersleyana*, was occasionally present. **Similar VTs:** Considered to be most similar to VT 13; see that VT for discussion. Also has some similarities to VT 10; see that VT for discussion. Although the floristic classification suggested a close relationship to VT 15, this is not considered to be the case; see that VT for discussion.	 **Photo 5.33 VT 14 variant – isolated tall and low shrubs only (Quadrat HM06)** **Photo 5.34 VT 14 variant – tall shrubs absent, low shrubs isolated (Quadrat HD08)**

VT	Summary	Representative Photo
15	**Description:** Low open woodland of *Eucalyptus victrix* over tall sparse shrubland dominated by *Acacia colei* over low open hummock grassland of *Triodia epactia* over ephemeral low sparse herbland of mixed species including *Bergia perennis* subsp. *perennis*, *Marsilea hirsuta*, *Cyperus iria* and *Centipeda minima* subsp. *macrocephala* on pale brown sandy clay loam on the margins of clay pans **Location:** Mapped only in a single small area in the eastern central part of the Survey Area. **Area Mapped (Proportion of Survey Area):** 3.4 (0.01 %) **Sample Sites:** 1 quadrat (HD10) **Indicator Taxa:** NA (VT represented by a single quadrat) **Significant Taxa:** None recorded **Average Taxon Richness per Quadrat:** 7 **Variation:** None observed – single area mapped. **Similar VTs:** Unclear as described from a single small area from limited sampling. Further sampling in similar areas outside the Survey Area would be required to clarify affinities. The floristic classification indicated that the single quadrat that represents this VT is most similar to quadrats that represent VT 14; the single occurrence of VT 15 was surrounded by vegetation considered to represent VT 14, and these VTs share some common species. However, the presence of *Eucalyptus victrix* and several ephemeral taxa that are generally restricted to clay pans or similar wet areas distinguishes VT 15 from VT 14.	 **Photo 5.35 VT 15 (Quadrat HD10)**

VT	Summary	Representative Photo
16	**Description:** Mid to low open woodland dominated by *Eucalyptus camaldulensis* subsp. *refulgens* and *Melaleuca argentea* over tall sparse shrubland dominated by *Melaleuca glomerata, Acacia coriacea* subsp. *pendens* and *Acacia trachycarpa* over mid to low sparse shrubland dominated by *Acacia pyrifolia* var. *pyrifolia, Crotalaria cunninghamii* and *Corchorus incanus* subsp. *incanus* over low sparse hummock grassland dominated by *Triodia epactia* over low sparse sedgeland dominated by *Cyperus vaginatus* on pale red or brown sand with patchy mixed stones in river channels **Location:** Mapped only in the Turner River channel, in the eastern central part of the Survey Area. **Area Mapped (Proportion of Survey Area):** 554.8 (1.9 %) **Sample Sites:** 5 quadrats (HD03, HJ01, HM05, M21023, M21142) **Indicator Taxa:** *Acacia coriacea* subsp. *pendens, Acacia pyrifolia* var. *pyrifolia, Acacia trachycarpa, Cassytha filiformis, Corynotheca pungens, Crotalaria cunninghamii, Cynanchum floribundum, Cyperus ixiocarpus, Cyperus vaginatus, Dentella asperata, Eucalyptus camaldulensis* subsp. *refulgens, Eulalia aurea, Goodenia lamprosperma, Gymnanthera cunninghamii* (P3), *Melaleuca argentea, Melaleuca glomerata, Melaleuca linophylla, Nellica maderaspatensis, Rhynchosia minima, Stemodia grossa, Stemodia viscosa, Tephrosia* sp. B Kimberley Flora (C.A. Gardner 7300) **Significant Taxa:** *Gymnanthera cunninghamii* (P3)^ **Average Taxon Richness per Quadrat:** 32.2 ± 13.5 **Variation:** In some areas where high water flow volumes appear to occur regularly, the shrubland and hummock grassland strata were reduced to isolated plants or were absent entirely. In these areas, *Melaleuca argentea* was generally the only tree present in the tree stratum; in areas that apparently do not receive regular water flows, this species was absent and *Eucalyptus camaldulensis* subsp. *refulgens* was dominant. Occasionally a mid to low sparse tussock grassland dominated by *Eriachne benthamii* and *Eulalia aurea*, and an ephemeral low sparse tussock grassland, forbland and sedgeland of a variety of taxa, were present. **Similar VTs:** Not similar to any other VTs.	 **Photo 5.36 VT 16 (Quadrat HD03)** **Photo 5.37 VT 16 variant – shrubland strata reduced or absent; *Melaleuca argentea*-dominated tree stratum (Quadrat M21023) (Photo: Ecoscape (2021))**

VT	Summary	Representative Photo
		Photo 5.38 VT 16 variant – *Eucalyptus camaldulensis* subsp. *refulgens*-dominated tree stratum (Quadrat HJ01)

VT	Summary	Representative Photo
17	**Description:** Tall open to sparse shrubland dominated by *Acacia sabulosa* over mid open to sparse shrubland of mixed species dominated by *Corchorus incanus* subsp. *incanus, Sida arenicola, Ptilotus arthrolasius, Gyrostemon tepperi* and *Triumfetta deserticola* over low open to sparse hummock grassland dominated by *Triodia lanigera* and *Triodia schinzii* over low sparse tussock grassland dominated by *Aristida holathera* var. *holathera* and *Eragrostis eriopoda* on red sand on dunes **Location:** Mapped on a single dune in the western central part of the Survey Area **Area Mapped (Proportion of Survey Area):** 101.1 (0.3 %) **Sample Sites:** 8 quadrats (HD23, HJ13, HJ14, M21002, M21003, M21145, M21166, M21180) **Indicator Taxa:** *Acacia sabulosa, Aristida holathera* var. *holathera, Bonamia erecta, Bonamia media, Corchorus incanus* subsp. *incanus, Dodonaea coriacea, Eragrostis eriopoda, Eriachne helmsii, Gyrostemon tepperi, Ptilotus arthrolasius, Scaevola parvifolia* subsp. *pilbarae, Sida arenicola, Triumfetta deserticola, Triodia lanigera, Triodia schinzii* **Significant Taxa:** None recorded **Average Taxon Richness per Quadrat:** 18.4 ± 2.9 **Variation:** No notable variation was observed. **Similar VTs:** Not similar to any other VTs. Note: this VT is considered analogous to the 'Gregory Land System' PEC (P3); see **Section 5.2.11** for further detail.	 **Photo 5.39 VT 17 (Quadrat HD23)**

^ Designates preferred habitat for significant flora taxon, based on proportional location representation and landforms/soils.

5.2.10 Other Areas Described

Areas where natural vegetation has been completely removed have been mapped as 'Cleared Land' (C) (where discernible at 1:10,000 scale). This includes roads (and associated infrastructure including culverts), tracks and large drill pads. A total of 698.4 ha of 'Cleared Land' was mapped, representing 2.4 % of the Survey Area (**Figure 5.8**, **Appendix N**). Note that De Grey provided spatial data that mapped the majority of exploration drill lines and drill pads that were cleared in the Survey Area between 2019 and 2022; however, a small number of drill lines and drill pads have been cleared prior to 2019, as well as many old tracks and exploration drill lines in the Survey Area. Many of these have been rehabilitated recently or contain limited regrowth of native taxa. These have been mapped as parts of the VTs within which they occur due to their small size, or, if discernible at a 1:10,000 scale, have been mapped as 'Cleared Land'.

634500 639000 643500 648000 652500

7731000 7726500 7722000 7717500 7713000 7708500 7704000

MANILLINHA DR

GREAT NORTHERN HWY

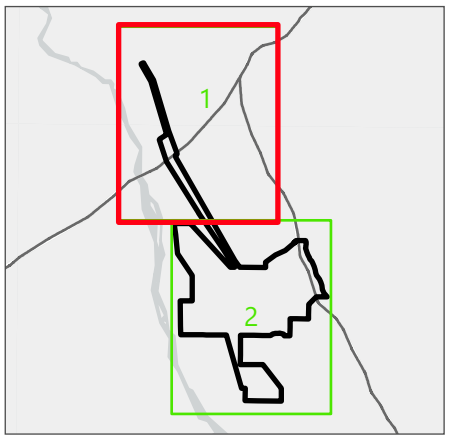
NORTH WEST COASTAL HWY

Legend

- Survey Area
- Targeted Survey Area
- Road

Vegetation Types

- 1
- 2
- 3
- 4
- 5
- 8
- C



Scale: 1:90,000 at A4, GDA2020 MGA Zone 50

FIGURE 5.8

Overview of VTs and Other Areas of the Survey Area (Sheet 1)

0 1.8 3.6

Kilometres

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Image Source: Hemi (2022), Landgate (2023) | **Data Source:** Landgate (2024), Umwelt (2022)

643500 648000 652500 657000 661500

7704000 7699500 7695000 7690500 7686000 7681500 7677000

INDEE RD

GREAT NORTHERN HWY

Legend

- Survey Area
- Targeted Survey Area
- Road

Vegetation Types

- 1
- 2
- 3
- 4
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- C

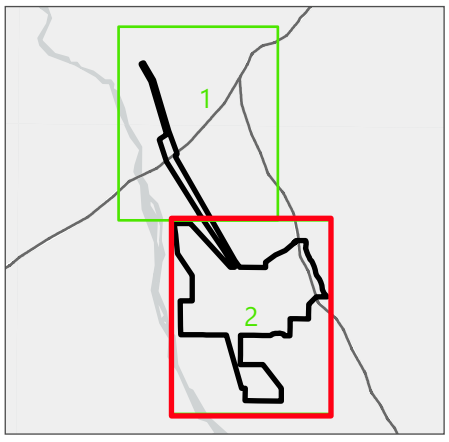

FIGURE 5.8

Overview of VTs and Other Areas of the Survey Area (Sheet 2)

Scale: 1:90,000 at A4, GDA2020 MGA Zone 50

0 1.8 3.6

Kilometres

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Image Source: Hemi (2022), Landgate (2023) | **Data Source:** Landgate (2024), Umwelt (2022)

Vegetation Types

1 Low isolated shrubs including *Acacia stellaticeps* and *Pluchea tetranthera* over low hummock grassland dominated by *Triodia longiceps* and *Triodia epactia* over ephemeral low sparse sedgeland, tussock grassland and forbland of mixed taxa including *Fimbristylis dichotoma*, *Bulbostylis barbata*, *Calandrinia stagnensis*, *Streptoglossa decurrens* and *Eriachne aristidea* on red-brown clay loam, sandy clay loam or sandy clay on plains and flats

2 Low tussock grassland to sparse tussock grassland dominated by a combination of *Eriachne glauca* var. *glauca*, *Eriachne benthamii* and *Eriachne flaccida* over low sparse hummock grassland of *Triodia epactia* and *Triodia longiceps* over ephemeral low sparse sedgeland and forbland of mixed species including *Cyperus iria*, *Fimbristylis dichotoma*, *Neptunia dimorphantha*, *Marsilea hirsuta* and *Calandrinia pumila* on orange, red-brown or brown clay in clay pans

3 Low woodland to open woodland dominated by *Corymbia candida* subsp. *candida* over tall shrubland to open shrubland dominated by *Acacia colei* and *Acacia tumida* var. *pilbarensis* over low open to sparse shrubland of mixed species including *Pluchea tetranthera*, *Afrohybanthus aurantiacus* and *Sida rohlenae* subsp. *rohlenae* over low open to sparse hummock grassland dominated by *Triodia epactia* over low sparse tussock grassland of mixed species including *Chrysopogon fallax*, *Aristida holathera* var. *holathera*, *Eragrostis eriopoda*, *Eriachne obtusa* and *Cenchrus ciliaris* on orange sandy or sandy clay loam on flats

4 Tall sparse shrubland of mixed species including *Acacia ancistrocarpa*, *Acacia inaequilatera*, *Acacia colei* and *Melaleuca lasiandra* over low open to sparse shrubland dominated by *Acacia stellaticeps*, *Pluchea tetranthera*, *Sida arenicola* and *Corchorus elachocarpus* over low hummock grassland to open hummock grassland dominated by *Triodia epactia*, *Triodia lanigera* and *Triodia schinzii* on red or red-brown sandy loam on plains

5 Tall open to sparse shrubland dominated by *Acacia trudgeniana* and *Acacia colei* over low open to sparse shrubland dominated by *Acacia stellaticeps*, *Corchorus incanus* subsp. *incanus* and *Pimelea ammocharis* over low hummock grassland of *Triodia epactia* overlow sparse tussock grassland of mixed species including *Aristida holathera* var. *holathera*, *Eragrostis eriopoda*, *Chrysopogon fallax* and *Eriachne obtusa* on red-brown clay or sandy loam on plains

6 Tall sparse shrubland dominated by *Acacia trachycarpa* and *Acacia colei* over low sparse shrubland of mixed species including *Acacia stellaticeps* and *Corchorus incanus* subsp. *incanus* over low hummock grassland dominated by *Triodia lanigera* on red-brown sandy loam on low dunes within river channels

7 Tall sparse shrubland dominated by *Acacia tumida* var. *pilbarensis* over low sparse shrubland dominated by *Corchorus incanus* subsp. *incanus* and *Tephrosia rosea* var. *clementii* over ephemeral low sparse forbland and grassland of mixed species including *Calocephalus beardii*, *Aristida contorta*, *Eragrostis cumingii*, *Indigofera colutea* and *Perotis rara* on brown sandy loam with granite outcropping and stones on and around low granite outcrops

8 Low open woodland to isolated trees dominated by *Corymbia hamersleyana* over tall open to sparse shrubland dominated by *Acacia bivenosa*, *Acacia inaequilatera*, *Grevillea wickhamii* subsp. *aprica* and *Hakea lorea* subsp. *lorea* over low sparse shrubland of mixed species dominated by *Acacia stellaticeps*, *Scaevola amblyanthera* var. *centralis* and *Corchorus elachocarpus* over low hummock grassland dominated by *Triodia epactia* on red or red brown clay or sandy loam with calcrete and silica stones, occasionally with calcrete or silica outcropping, on low rises or plains

9 Tall sparse shrubland of mixed species including *Acacia inaequilatera* and *Grevillea wickhamii* subsp. *aprica* over low sparse shrubland of mixed species dominated by *Corchorus parviflorus* over low hummock grassland dominated by *Triodia wiseana* and *Triodia epactia* on red-brown clay loam with chert stones and often chert outcropping on hills and low rises

10 Tall open to sparse shrubland dominated by *Acacia ancistrocarpa*, *Acacia inaequilatera*, *Acacia sericophylla*, *Acacia acradenia* and occasionally *Melaleuca lasiandra* over low shrubland to sparse shrubland dominated by *Acacia stellaticeps* and occasionally *Sida arenicola*, *Indigofera monophylla*, *Pluchea tetranthera* and *Corchorus parviflorus* over low hummock grassland to open hummock grassland dominated by *Triodia lanigera* and/or *Triodia schinzii* on red or red-brown sandy loam on plains

11 Low open woodland to isolated trees of *Corymbia hamersleyana* over tall open to sparse shrubland dominated by *Acacia orthocarpa*, *Acacia inaequilatera* and *Grevillea wickhamii* subsp. *aprica* over low sparse shrubland dominated by *Acacia stellaticeps* over low hummock grassland dominated by a combination of *Triodia lanigera*, *Triodia angusta*, *Triodia epactia* and *Triodia chichesterensis* on red or red brown sandy or clay loam with primarily quartz and calcrete stones, occasionally with calcrete or quartz outcropping, on low rises and undulating plains

12 Isolated low trees dominated by *Corymbia hamersleyana* over low open to sparse shrubland of mixed species including *Acacia inaequilatera*, *Acacia acradenia*, *Acacia ancistrocarpa* and *Grevillea wickhamii* subsp. *aprica* over low sparse shrubland of mixed species dominated by *Goodenia stobbsiana* over low hummock grassland dominated by *Triodia epactia* and occasionally *Triodia wiseana* on red or red-brown clay loam with silica and chert stones and often silica and chert outcropping on low rises

13 Low open woodland dominated by *Corymbia hamersleyensis* and/or *Corymbia candida* subsp. *candida* over tall open to sparse shrubland dominated by *Acacia ancistrocarpa*, *Acacia tumida* var. *pilbarensis*, *Acacia acradenia* and *Acacia colei* over low hummock grassland of *Triodia epactia* on red or red-brown clay or sandy loam on flats or plains

14 Tall open shrubland to isolated shrubs dominated by *Acacia ancistrocarpa*, *Acacia colei* and *Acacia inaequilatera* over low open shrubland to isolated shrubs dominated by *Acacia stellaticeps* and *Pluchea tetranthera* over low hummock grassland dominated by *Triodia epactia* on red or red brown sandy or clay loam on plains and flats

15 Low open woodland of *Eucalyptus victrix* over tall sparse shrubland dominated by *Acacia colei* over low open hummock grassland of *Triodia epactia* over ephemeral low sparse herbland of mixed species including *Bergia perennis* subsp. *perennis*, *Marsilea hirsuta*, *Cyperus iria* and *Centipeda minima* subsp. *macrocephala* on pale brown sandy clay loam on the margins of clay pans

16 Mid to low open woodland dominated by *Eucalyptus camaldulensis* subsp. *refulgens* and *Melaleuca argentea* over tall sparse shrubland dominated by *Melaleuca glomerata*, *Acacia coriacea* subsp. *pendens* and *Acacia trachycarpa* over mid to low sparse shrubland dominated by *Acacia pyrifolia* var. *pyrifolia*, *Crotalaria cunninghamii* and *Corchorus incanus* subsp. *incanus* over low sparse hummock grassland dominated by *Triodia epactia* over low sparse sedgeland dominated by *Cyperus vaginatus* on pale red or brown sand with patchy mixed stones in river channels

17 Tall open to sparse shrubland dominated by *Acacia sabulosa* over mid open to sparse shrubland of mixed species dominated by *Corchorus incanus* subsp. *incanus*, *Sida arenicola*, *Ptilotus arthrolasius*, *Gyrostemon tepperi* and *Triumfetta deserticola* over low open to sparse hummock grassland dominated by *Triodia lanigera* and *Triodia schinzii* over low sparse tussock grassland dominated by *Aristida holathera* var. *holathera* and *Eragrostis eriopoda* on red sand on dunes

C Cleared land

FIGURE 5.8

LEGEND: Overview of VTs and Other Areas of the Survey Area

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5.2.11 Listed Significant Vegetation

As discussed in **Section 5.1.6**, the desktop assessment identified three DBCA-listed PECs that have records within the Desktop Study Area and/or 40 km of the Ecoscape Study Area. Of these, the 'Gregory Land System' PEC was recorded in the Survey Area. This PEC is not listed under the EPBC Act however is classified by DBCA as a P3 PEC (DBCA, 2023e).

According to DBCA (2023e), the 'Gregory Land System' PEC (P3) consists of linear dunes and restricted sandplains supporting shrubby hard spinifex (and occasionally soft spinifex) grasslands. Little information is available for this PEC, but the Gregory Land System has been mapped by the Department of Agriculture in 2004 (DPIRD, 2022a; van Vreeswyk et al., 2004), and therefore it is assumed that the Gregory Land System as mapped by van Vreeswyk et al. (2004) is analogous to the listed PEC of the same name.

The Gregory Land System comprises two units, the first being relatively obvious in the field and on aerial imagery, while the landform and vegetation of the second is less distinctive:

1. Linear dunes of deep red sands stretching up to 4 km long and 12 m high, with gently to moderately inclined side slopes, and dune crests with moundy, loose surfaces. Vegetation is typically hummock grasslands of *Triodia pungens*, *Triodia schinzii* (soft spinifex) or *Triodia* spp. (hard spinifex) with numerous shrubs or scattered to moderately close shrublands with *Acacia stellaticeps*, *Acacia trachycarpa* and other *Acacia* species. This unit comprises approximately 60 % of the total area of this land system.

2. Swales and sandplains with concave, gently inclined marginal slopes near dunes becoming level elsewhere, up to 2 km in extent between dunes. The soil is deep red sands with minor red sandy earths within swales. Vegetation is typically hummock grasslands of *Triodia* spp. (soft and hard spinifex) with numerous shrubs including *Acacia ancistrocarpa*, *Acacia bivenosa*, *Acacia acradenia*, *Acacia stellaticeps* and occasional *Eucalyptus* trees. This unit comprises approximately 40 % of the total area of this land system.

Following completion of the March 2022 site visit, DBCA was consulted on the definition of this PEC in the Survey Area, as the description of the PEC indicates that sandplains adjacent to dunes could be considered part of the PEC, and the soil landscape unit polygon boundaries used to delineate the occurrences of this PEC have been mapped at a very broad scale, and therefore have captured areas clearly not representative of the PEC (e.g. rocky rises). It was agreed that as the occurrence within the Survey Area consists of a single dune, and that there is a very obvious soil, topographical and taxon compositional change from the dune to the surrounding sandy loam plains (confirmed by field observations in March 2022 and via floristic analysis as part of this assessment), the aforementioned soil, topographical and taxon composition change should be considered to represent the boundary of the PEC.

The 'Gregory Land System' PEC (P3) was recorded on a single linear dune in the Survey Area, stretching approximately 4 km long and 0.5 km wide in the western central part of the Survey Area, outside the Targeted Survey Area. This PEC was sampled by three quadrats established in 2022 for the current survey (HD23, HJ13 and HJ14) as well as five quadrats established in 2021 by Ecoscape (M21002, M21003, M21145, M21166 and M21180). These quadrats were classified into a discrete cluster in the floristic analysis dendrogram; this cluster was subsequently defined as VT 17 (see **Sections 5.2.8** and **5.2.9**). The mapped area of VT 17 is therefore analogous to the boundary of the 'Gregory Land System' PEC (P3) in the Survey Area. The vegetation representing VT 17, and therefore this PEC in the Survey Area, was

characterised by the presence of a tall shrubland dominated by *Acacia sabulosa* (and usually with no other tall shrub taxa), a taxon near-absent from the remainder of the Survey Area, over a low shrubland that included a number of taxa also apparently absent or near-absent from the Survey Area (e.g. *Euphorbia myrtoides*, *Gyrostemon tepperi* and *Triumfetta deserticola*). VT 17 is considered equivalent to VT AsaSaTOS as defined by Ecoscape (2021). The location of the 'Gregory Land System' PEC (P3) in the Survey Area is presented on **Figure 5.9**.

Table 5.13 presents an assessment of the likelihood of the remaining two significant vegetation communities occurring in the Survey Area and Targeted Survey Area. Both communities are not considered to occur in the Survey Area, as the associated land systems (as mapped by van Vreeswyk et al. (2004)) do not intersect the Survey Area. Further, the Eighty Mile Land System is typical of coastal or near coastal dunes and plains, while the Horseflat Land System consists of alluvial coastal and near coastal gilgaied and non- gilgaied clay plains; neither of these communities are considered to occur in the Survey Area or Targeted Survey Area. The 2022 and 2024 surveys did not identify any other vegetation considered to represent any formally listed TECs or any other PECs additional to those assessed in **Table 5.13**.

Table 5.13 Likelihood of Occurrence of Further Significant Vegetation Communities in the Survey Area and Targeted Survey Area

Community	Status (WA)	Description*	Nearest Known Location to Survey Area^	Likelihood of Occurrence
Eighty Mile Land System	PEC (P3)	Beach foredunes, longitudinal coastal dunes and sandy plains with tussock grasslands and spinifex grasslands	Approx. 88.7 km east-northeast	**Survey Area:** Not considered to be present **Targeted Survey Area:** Not considered to be present The Eighty Mile Land System does not occur in the Survey Area (**Section 5.1.2**). This Land System is restricted to coastal areas, while the northern end of the Survey Area occurs approximately 23 km from the coast.
Horseflat Land System of the Roebourne Plains	PEC (P3)	Extensive, weakly gilgaied clay plains dominated by tussock grasslands on mostly alluvial non-gilgaied, red clay loams or heavy clay loams. Perennial tussock grasses include *Eragrostis xerophila* and other *Eragrostis* spp., *Eriachne* spp. and *Dichanthium* spp. The community also supports a suite of annual grasses including *Sorghum* spp. and rare *Astrebla* spp. The community extends from Peedamulla to Balla Balla surrounding the towns of Karratha and Roebourne. This community incorporates Unit 3 (gilgai plains), Unit 5 (alluvial plains) with some Unit 7 (drainage depressions) of the Horseflat land system as described in van Vreeswyk et al. (2004).	Approx. 47.2 km west-northwest	**Survey Area:** Not considered to be present **Targeted Survey Area:** Not considered to be present The Horseflat Land System does not occur in the Survey Area (**Section 5.1.2**), but there are a small number of small occurrences in the wider Desktop Study Area.

** Source: DBCA (2023e).*

^ Source: DBCA (2017), DPIRD (2022a).

5.2.12 Other Vegetation of Significance

Of the VTs described in the Survey Area, only VT 17 is considered to be potentially significant vegetation, as it represents a PEC, and may also have a restricted distribution (as per EPA (2016a, 2016b)). As noted in **Section 5.2.11**, this VT is known from a single linear dune in the Survey Area and is dominated by a number of taxa either absent or rare elsewhere in the Survey Area. VT 17 is considered analogous to the 'Gregory Land System' PEC occurrence in the Survey Area, as well as Ecoscape (2021) VT AsaSaTOS. However, it is unknown whether this VT is analogous to other occurrences of this PEC outside the Survey Area, as there appears to be no publicly available information on the fine-scale vegetation of any occurrences of this PEC. There are a number of occurrences just west of the southern part of the Survey Area, with the nearest being approximately 7 km from the occurrence in the Survey Area (DBCA, 2022a) (**Figure 5.5**). Based on review of aerial photography of these occurrences and given their relatively close geographic proximity and likely similar soil and topographical characteristics, it is considered probable that these occurrences are analogous to VT 17; however, this would require field investigation to confirm.

All other VTs described by this current assessment are not considered to represent potentially significant vegetation under any of the categories outlined by EPA (2016a, 2016b), or for any other reason. Several VTs (VTs 1, 4, 5, 10, and 14) have been mapped over large spatial areas and occur on plains, which are both common landforms in the Survey Area and are considered to be common landforms in the region surrounding the Survey Area. VT 16 was also mapped over a relatively large area, but within a river channel; although this landform was restricted in the Survey Area, similar river channels are relatively common and relatively extensive spatially in the region surrounding the Survey Area, and are known to contain similar vegetation (e.g. the Yule River, as surveyed by Ecoscape (2021)).

The remaining VTs are only known from a relatively small number of spatially small locations and occur on landforms that are generally restricted in the Survey Area; these include VTs that occur on stony or rocky rises and hills (VTs 7, 8, 9, 11 and 12), in clay pans (VTs 2 and 15), in minor flow lines or on low-lying flats (VTs 3 and 13), and on consolidated dunes within river channels (VT 6). Because of their limited local extents, these VTs are considered to be of some local significance. However, their limited extents are considered to be an artefact of the extent of the Survey Area; the landforms that these VTs occur on are not considered to be rare or restricted in the region, and review of aerial photography of surrounding areas indicates that further occurrences of these landforms that likely contain further occurrences of the aforementioned VTs are present within the vicinity of the Survey Area. VT 2 was also observed to extend outside the Survey Area at its northern end (Umwelt field observations).

Further to this, it is considered likely that a number of VTs described by this assessment, including some of those mentioned above that are locally restricted, have been mapped by Ecoscape (2021) within the wider Ecoscape Study Area. However, other than comparison of river channel vegetation definition between this current survey and the Ecoscape survey (as mentioned above), and discussion of significant vegetation identified by Ecoscape in the context of VT definition by this current assessment (see below), no attempt has been made to correlate VTs from this current assessment with the vegetation mapping of Ecoscape (2021), due to differing vegetation definition methods, as well as plant identification issues as discussed in **Section 5.2.1**. Further review of Ecoscape (2021) floristic data, including in the field, would be required to allow for valid comparisons of the vegetation datasets to be made; this is beyond the scope of this assessment.

As no Pilbara-wide vegetation dataset defined at the same scale at which the Survey Area VTs were defined is available, it is not possible to conclusively assess the significance of VTs in a regional context. However, based on the overall floristic composition of the VTs mapped, it is likely that these would be relatively widespread in the general region surrounding the Survey Area; additionally, the landforms and geology with which the VTs are associated are known to occur widely in the region (**Section 2.1**).

None of the VTs defined and mapped in the Survey Area by this current assessment are considered to represent preferred habitat for any significant flora taxa that have especially restricted distributions.

Ecoscape (2021) identified eight VTs as being of potential significance, as they are associated with uncommon landforms, had restricted extents in the Ecoscape Study Area, and/or are historically threatened. These VTs are discussed in **Table 5.14**. Note that VT AsaSaTOS is discussed above and in **Section 5.2.11** with reference to the 'Gregory Land System' PEC (P3) and VT 17, and is therefore not included in **Table 5.14**. Of these eight VTs, five intersect the Survey Area, but none are considered to represent significant vegetation. Four of these VTs are now considered to be part of VTs 2, 9 and 12; as noted above, while these have been mapped over relatively small extents in the Survey Area, this is likely an artefact of the extent of the Survey Area, and they are all known to or are likely to occur outside the Survey Area and are not likely to be regionally rare or restricted. The final potentially significant Ecoscape VT is considered to be a structural variant of the widespread, common VT 10; the single Ecoscape quadrat established in this VT was classified in the dendrogram within the large group of Survey Area quadrats that represent VT 10 (**Appendix I**), and review of this quadrat indicates that it is typical of VT 10 in all respects except for the presence of isolated *Eucalyptus victrix* trees.

The remaining three Ecoscape VTs were not mapped in the Survey Area, and no vegetation considered equivalent to any of these VTs was recorded in the Survey Area by this current survey. They are therefore not considered relevant to this assessment and have not been assessed for significance (**Table 5.14**).

Note that Ecoscape (2021) also described VT EcMaEvMW (river channel vegetation – considered equivalent to VT 16 in this assessment) as being of potential significance due to being groundwater dependent, as well as occupying a small extent, having a degree of historical impact from grazing and representing a refuge habitat for wildlife. This VT is discussed in more detail in **Section 5.2.13**, but it is not considered to represent significant vegetation based on groundwater dependence, and consequently is not included in **Table 5.14**. It is also likely that this VT is widely distributed in the region over relatively large areas based on previous survey experience and is not considered to be a significant refuge for wildlife. It is unclear as to why having a degree of historical impact from grazing was a consideration for determination of this VT as significant, given that this could theoretically be applied to all VTs in the Survey Area (and wider Pilbara region).

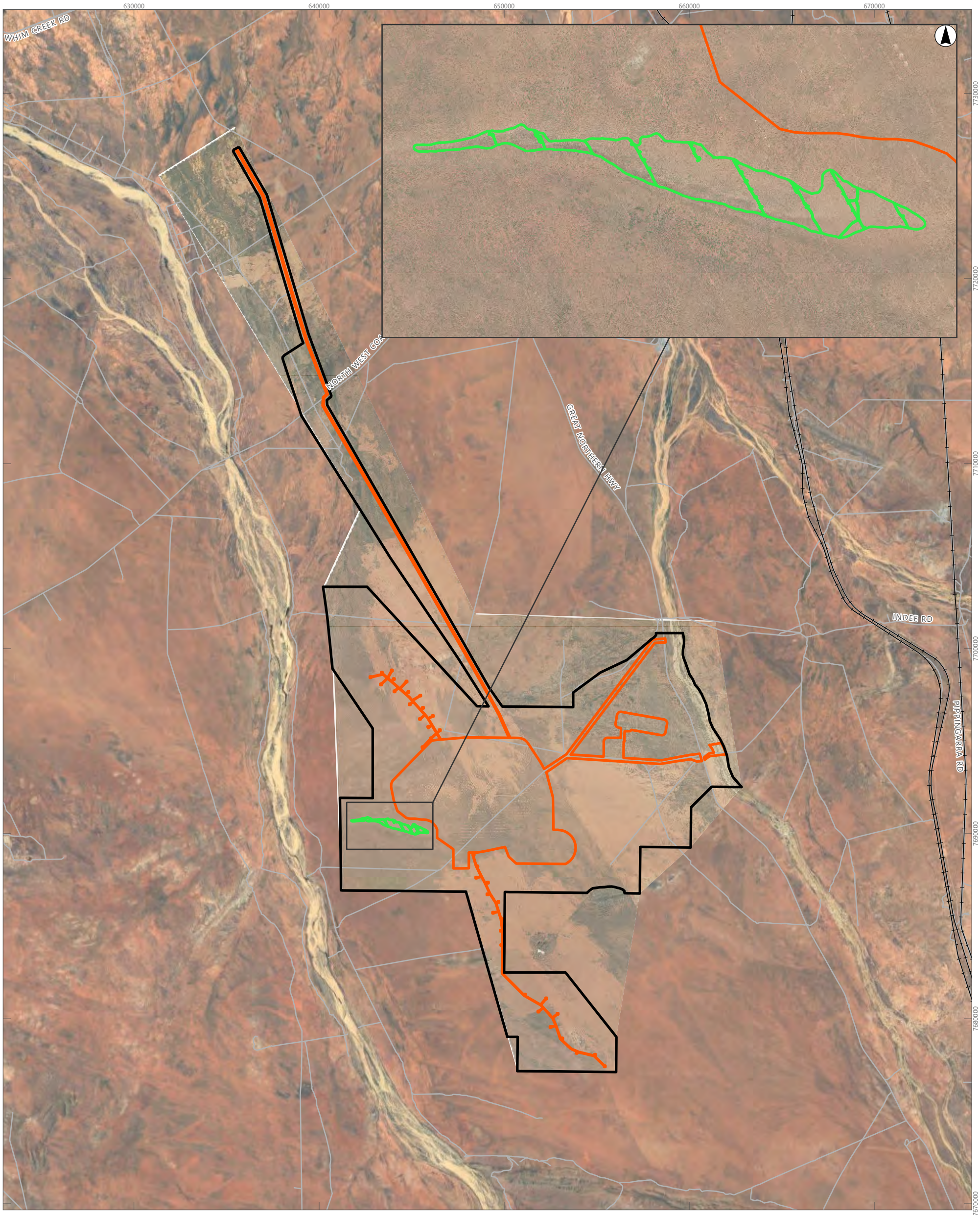
Table 5.14 Potentially Significant Ecoscape VTs and their Current Status

VT	Description*	Location	Ecoscape Comment*	Status In This Current Assessment	Current Significance Status
AiAacAanMSS	*Acacia inaequilatera*, *Acacia acradenia* and *Acacia ancistrocarpa* mid sparse shrubland over *Triodia lanigera*, *Triodia epactia* and *Acacia stellaticeps* low hummock grassland/shrubland	Hemi; within current Survey Area	Locally significant due to restricted extent and occurring on uncommon landform (low quartzite rise). Unlikely to be regionally significant as small rocky outcrops occur widely within the region	All occurrences of this VT defined and mapped as VT 12	**Not Significant Vegetation** While VT 12 occupies a very small proportion of the Survey Area, it is unlikely to be rare or restricted in a regional context based on the landform it occurs on (stony or rocky low rises) and aerial photography interpretation
AiAanGwMSS	*Acacia inaequilatera*, *Acacia ancistrocarpa* and *Grevillea wickhamii* mid sparse shrubland over *Triodia epactia*, *Eriachne mucronata* and *Triodia wiseana* low hummock grassland/tussock grassland	Hemi; within current Survey Area	Locally significant due to restricted extent and occurring on uncommon landform (low quartz hills). Unlikely to be regionally significant as small rocky outcrops occur widely within the region	Occurrence in Survey Area defined and mapped as VT 9	**Not Significant Vegetation** While VT 9 occupies a very small proportion of the Survey Area, it is unlikely to be rare or restricted in a regional context based on the landform on which it occurs (stony or rocky low rises) and aerial photography interpretation
EgMhLTG/F	*Eriachne glauca* and *Marsilea hirsuta* low tussock grassland/fernland	Mt Berghaus; within current Survey Area	Locally significant due to restricted extent and occurring on uncommon landform (clay pan). Unlikely to be regionally significant due to its very small extent	Only occurrence of this VT defined and mapped as VT 2	**Not Significant Vegetation** Although VT 2 occupies a very small proportion of the Survey Area, it is unlikely to be rare or restricted in a regional context based on the landform on which it occurs (clay pans) and aerial photography interpretation. This VT was also observed to extend outside the northern end of the Survey Area

VT	Description*	Location	Ecoscape Comment*	Status In This Current Assessment	Current Significance Status
FbLOW	*Ficus brachypoda* low open woodland over *Ehretia saligna* var. *saligna* and *Acacia inaequilatera* mid sparse shrubland over *Triodia epactia*, *Eriachne mucronata* and *Triodia wiseana* low open hummock grassland/tussock grassland	Wingina; outside current Survey Area	Locally significant due to restricted extent and uncommon landform (the hills and ridges associated with this VT being the largest of the quartzite features within the Ecoscape Study Area, and the vegetation differing from other quartzite features). Potentially regionally significant	No apparently equivalent vegetation considered to occur in Survey Area; all known occurrences outside Survey Area	**Not Assessed – not relevant to Survey Area**
GwAiAanMOS	*Grevillea wickhamii*, *Acacia inaequilatera* and *Acacia ancistrocarpa* mid open shrubland over *Triodia epactia* low tussock grassland	Hemi; within current Survey Area	Locally significant due to restricted extent and occurring on uncommon landform (quartz hills and adjacent plains). Unlikely to be regionally significant as small rocky outcrops occur widely within the region	All occurrences of this VT defined and mapped as VT 12	**Not significant vegetation** While VT 12 occupies a very small proportion of the Survey Area, it is unlikely to be rare or restricted in a regional context based on the landform on which it occurs (stony or rocky low rises) and aerial photography interpretation
MlaAanMOS	*Melaleuca lasiandra* and *Acacia ancistrocarpa* mid open shrubland over *Acacia stellaticeps* and *Triodia lanigera* low shrubland/mid hummock grassland with *Eucalyptus victrix* low scattered trees	Hemi; within current Survey Area	Locally significant due to restricted extent. Unlikely to be regionally significant due to its small extent	Only occurrence of this VT defined and mapped as VT 10	**Not significant vegetation** The results of the floristic classification undertaken by this current assessment indicate that this VT is a structural variant of the widespread VT 10, which is not considered to be significant vegetation. Other than the presence of *Eucalyptus victrix*, the single quadrat established by Ecoscape (2021) in this VT is typical of VT 10 in all other respects

VT	Description*	Location	Ecoscape Comment*	Status In This Current Assessment	Current Significance Status
ExDsXbLTG	*Eragrostis xerophila*, *Dichanthium sericeum* subsp. *humilius* and *Xerochloa barbata* low tussock grassland	Proposed Toweranna haul road; outside current Survey Area	Locally and potentially regionally significant due to restricted extent and occurring on uncommon landform (clay plain). Potentially historically threatened by, and is currently a focus of, cattle grazing	No apparently equivalent vegetation considered to occur in Survey Area; all known occurrences outside Survey Area	**Not Assessed – not relevant to Survey Area**
EvChLOW	*Eucalyptus victrix* and *Corymbia hamersleyana* low open woodland over *Acacia acradenia* and *Acacia ancistrocarpa* mid sparse shrubland over *Triodia epactia*, *Triodia wiseana* and *Corchorus tectus* low open hummock grassland/shrubland	Withnell outside current Survey Area	Historically impacted by discharge drainage from previous mining at Withnell. Locally significant due to restricted extent. Unlikely to be regionally significant as this vegetation is likely to occur sporadically in the region	No apparently equivalent vegetation considered to occur in Survey Area; all known occurrences outside Survey Area	**Not Assessed – not relevant to Survey Area**

** Source: Ecoscape (2021).*



Scale: 1:200,000 at A4, GDA2020 MGA Zone 50

Legend

- Survey Area
- Targeted Survey Area
- Railway
- Road

Significant Vegetation

- Gregory Land System PEC (P3)

FIGURE 5.9

Significant Vegetation of the Survey Area

0 4 8

Kilometres

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Image Source: Landgate (2023) | **Data Source:** Landgate (2024), Umwelt (2022)

5.2.13 Groundwater and Surface Water Dependent Vegetation

Riparian vegetation is defined as plant communities occurring in association with watercourses, both ephemeral and permanent, and is therefore considered to be dependent on surface water flows and/or groundwater. Five VTs mapped in the Survey Area are considered to represent riparian vegetation:

- VT 2 – mapped in clay pans
- VT 3 – mapped on low-lying flats
- VT 4 – the occurrence of this VT immediately south of the 'Gregory Land System' PEC dune only
- VT 15 – mapped in clay pans
- VT 16 – mapped in the Turner River channel.

The above-mentioned VTs (or occurrences of VTs) are considered to be at least partially or totally dependent on surface water flows for survival.

Groundwater dependent vegetation is known to occur in the Pilbara and is generally indicated by the presence of one or several phreatophytic taxa (**Section 5.1.7.2**), and by shallow (no more than 10 m below ground level) depth to groundwater. The obligate phreatophytes *Melaleuca argentea* and *Eucalyptus camaldulensis* subsp. *refulgens*, and the potential facultative phreatophytes *Acacia ampliceps*, *Eucalyptus victrix*, *Melaleuca glomerata* and *Melaleuca linophylla* were recorded in the Survey Area by the 2021 and 2022 surveys in the Turner River, which is a known GDE (BoM, 2024b). As noted in **Section 5.1.7.2**, the depth to groundwater may be as shallow as 2 m in this area. Based on the presence of obligate phreatophytes in the Turner River, particularly *Melaleuca argentea*, and the shallow depth to groundwater, the vegetation of the Turner River is considered to represent GDV. Note that each of the phreatophytic taxa listed above, excluding *Eucalyptus camaldulensis* subsp. *refulgens* and *Eucalyptus victrix*, were only recorded in VT 16 on the Turner River. This vegetation corresponds with the Ecoscape VT EcMaEvMW, which was also identified by Ecoscape as representing GDV.

As noted in **Section 5.1.7.2**, depth to groundwater is relatively shallow across much of the southern and central parts of the Survey Area. Despite this, obligate phreatophytes are absent, and facultative phreatophytes almost so, indicating the vegetation characteristics of these areas is not groundwater dependent. Interestingly, the potentially facultative phreatophyte *Eucalyptus victrix* was recorded within a few hundred metres of the base of the southern side of the Gregory Land System dune, where the slope from the dune crest was very steep (at least in comparison to the northern side); this area has been mapped as an occurrence of VT 4 that is considered to be reliant on surface water flows (as outlined above). Although it is possible that the individuals of *Eucalyptus victrix* here are also reliant on groundwater, which could theoretically be elevated near the southern base of the dune, the presence of this taxon in this area is considered likely to be related to surface water run-off from the dune only, and this taxon is therefore likely a vadophyte in this area. A bore in this area indicates that the depth to groundwater is between 4 m and 8 m below ground level; this is consistent with extensive areas of surrounding vegetation in the Survey Area (Geowater, 2022), where *Eucalyptus victrix* is absent. This occurrence of VT 4 is therefore not considered to be GDV. Furthermore, the *Eucalyptus victrix* trees within this area were relatively short and stunted, potentially indicating that the water availability from the soil profile here is not sufficient or continuous to allow development of larger trees.

Eucalyptus victrix was also recorded in two other VTs that are considered to represent riparian vegetation, being VT 3 and VT 15. The occurrences of this taxon in VT 3 are associated with a minor flow line in an area where the depth to groundwater is between 6 m and 10 m below ground level, while the occurrence of this taxon in VT 15 is associated with a clay pan where the depth to groundwater is between 8 m and 10 m below ground level (Geowater, 2022). There are bores or wells in relatively close proximity to both these areas. As the depth to groundwater in these areas is similar to or greater than that in large areas of other VTs in the Survey Area where this taxon is absent, all occurrences of VT 3 and VT 15 are likewise not considered to be GDV and are reliant on surface water only. The individuals of *Eucalyptus victrix* in these areas are also likely to be vadophytes.

VT 2 was mapped only in clay pans, and is characterised by the presence of a tussock grassland; no taxa considered to be phreatophytic were recorded in this VT. This VT is also not considered to be GDV.

5.2.14 Vegetation Condition

Table 5.15 presents the area (ha) of each VT and corresponding condition rating (as per EPA (2016b); **Appendix A**) mapped in the Survey Area by the 2022 survey. An overview of vegetation condition mapping described by the 2022 survey is presented in **Figure 5.10**, with detailed vegetation condition mapping, including locations of introduced flora taxa recorded in the Survey Area, presented in **Appendix Q**.

Vegetation condition mapping of assessed VTs was performed for 97.6 % (or 28,820 ha) of the Survey Area. Of this mapped area, 76.7 % was rated as being in 'Excellent' condition; these areas had no or little evidence of impact to vegetation composition as a result of human activities, or there were only low levels of introduced (weed) taxa.

Large expanses of the Survey Area were mapped as 'Very Good', including the area generally corresponding to VT 16 along the Turner River (**Figure 5.10**); this condition rating was due to moderate levels of cattle activity in the area, and associated presence of low levels of weed taxa, particularly **Cenchrus ciliaris* and **Cenchrus setiger*. The northwestern part of the proposed borefield area, and the majority of the proposed infrastructure corridors, were also mapped as being in 'Very Good' condition (**Figure 5.10**). There was a general trend observed of declining vegetation condition as proximity to the Yule River increased; this corresponds with the expansive plains in this area becoming more low-lying and water-gaining than the plains further to the south and east in the Survey Area, which likely makes these areas more appealing for grazing. There was more obvious evidence of cattle trampling in these areas, including greater usage of areas that provide shade. Weed taxa, particularly **Cenchrus ciliaris* and **Cenchrus setiger* were also generally more widespread and frequently encountered in these areas; however, these were present at relatively low levels, were generally in shaded areas used by cattle frequently, and were not obviously impacting vegetation structure.

Only very small areas were rated as being in 'Good' or 'Poor' condition (0.04 % and 0.1 %, respectively). These areas occurred in VTs 1, 3, 4, 10, 13 and 14 (**Table 5.15**, **Figure 5.10**). Most such areas generally displayed obvious signs of impacts to vegetation structure and species composition, primarily as a result of cattle trampling (particularly heavy use of areas for shade) and grazing, and the presence of moderate to large infestations of invasive weeds, particularly **Aerva javanica* and **Cenchrus ciliaris*. A number of such areas were around trough sites at wells. Additionally, three small areas along Great Northern Highway formerly used for either gravel extraction or as roadside rest areas were also mapped as 'Poor' (**Figure 5.10**); these areas have historically been partially cleared and have re-grown to various extents, however the vegetation structure has been obviously modified.

Areas that were mapped as 'Cleared Land', or small patches of vegetation isolated within large occurrences of Cleared Land, were all rated as 'Not Assessed' and comprise 2.4 % (or 698 ha) of the entire Survey Area (**Figure 5.10**). It is worthy of note that although there are significant numbers of drill lines and pads in the survey area, all of which have been mapped as 'Cleared Land', the vegetation adjacent to these features has in most instances been unaffected in a condition context.

Table 5.15 Vegetation Condition Ratings for VTs Described in the Survey Area

VT	Area Mapped (ha)				
	Excellent	Very Good	Good	Poor	Total
1		1,191		7	**1,198**
2		40			**40**
3		73	10		**83**
4	150	3,636		2	**3,788**
5		959			**959**
6		2			**2**
7		24			**24**
8	89	116			**205**
9	66				**66**
10	17,211	102		4	**17,317**
11	271				**271**
12	68				**68**
13	117			1	**118**
14	4,016	2		3	**4,021**
15	3				**3**
16		555			**555**
17	101				**101**
Total	**22,092**	**6,700**	**10**	**17**	**28,820**

634500 639000 643500 648000 652500

7731000 7726500 7722000 7717500 7713000 7708500 7704000

MANILINHA DR

GREAT NORTHERN HWY

NORTH WEST COASTAL HWY

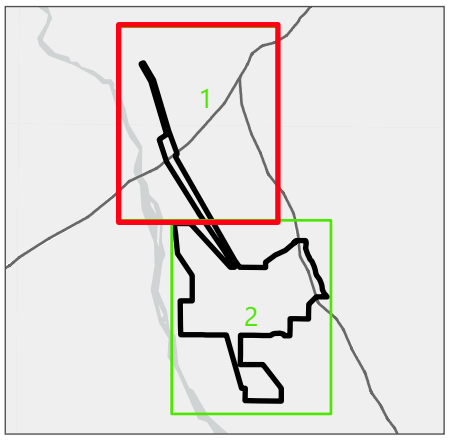
VG P E

Legend

- Survey Area
- Targeted Survey Area
- Road

Vegetation Condition

- Excellent
- Very Good
- Poor
- Not Assessed



Scale: 1:90,000 at A4, GDA2020 MGA Zone 50

FIGURE 5.10

Overview of Vegetation Condition of the Survey Area (Sheet 1)

0 1.8 3.6

Kilometres

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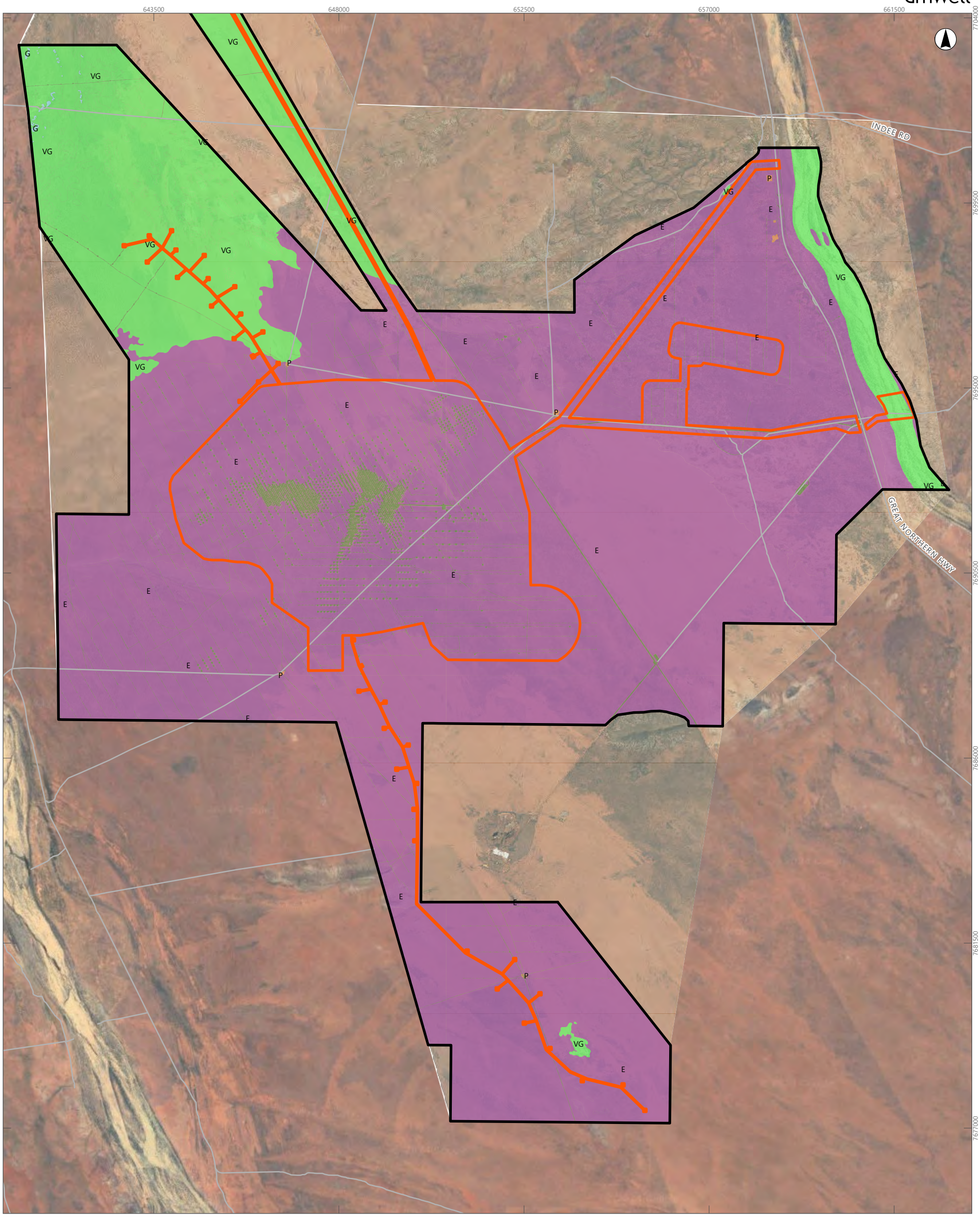

Scale: 1:90,000 at A4, GDA2020 MGA Zone 50

Legend

- Survey Area
- Targeted Survey Area
- Road

Vegetation Condition

- Excellent
- Very Good
- Good
- Poor
- Not Assessed

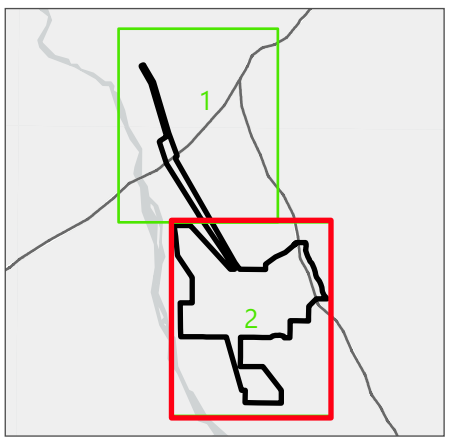

FIGURE 5.10

Overview of Vegetation Condition of the Survey Area (Sheet 2)

0 1.8 3.6

Kilometres

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6.0 Discussion and Conclusions

The Survey Area is considered to have moderate diversity in terms of taxon richness, with 336 discrete vascular flora taxa, three formally-named hybrids (as per WA Herbarium (1998-)) and three putative hybrids recorded in the Survey Area by the Ecoscape (2021), the 2022 survey and the 2024 survey. This was generally expected given its location in the north of the Pilbara region, the topographical and geological features present (see below), and the results of other surveys in the surrounding region. Similar to the flora of the Survey Area, the diversity of VTs within the Survey Area is considered to be moderate, but likely slightly less than surrounding areas due to the Survey Area intersecting an area of relatively low topographic and geologic diversity. Much of the floral diversity of the Pilbara region, particularly taxa with restricted ranges, is associated with areas of ranges and granite outcrops located to the south and east of the survey area (including the Gorge, Chichester and Hamersley Ranges, and the southern Abydos Plain granite fields); such features are rare in the Survey Area and are generally of very small extent and low relief, with much of the survey area dominated by expansive alluvial plains.

A total of seven significant flora taxa were recorded in the Survey Area, including the Threatened flora taxon *Seringia exastia* (listed under the Commonwealth EPBC Act only), five DBCA-listed Priority flora taxa, and one taxon considered significant under the 'new species or species with anomalous features that indicate a potential new species' reason from EPA (2016a, 2016b). According to DBCA and ALA databases, *Gymnanthera cunninghamii* (P3) and *Rothia indica* subsp. *australis* (P3) are known from a large number of records and wide distributions that span across other states in northern Australia, while the distribution of *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3) is relatively wide but is known from WA only. *Euploca mutica* (P3), *Triodia chichesterensis* (P3) and *Polymeria* sp. nov. (potentially undescribed) are all currently known from the northern Pilbara region, but all have relatively wide distributions in this area.

All significant flora taxa recorded in the Survey Area also have records within the Targeted Survey Area. Two listed significant flora taxa were recorded in the Survey Area for the first time by the 2022 survey, being *Rothia indica* subsp. *australis* (P3) and *Triodia chichesterensis* (P3) (however, both taxa have previous known records in close proximity to the Survey Area). Furthermore, the records of *Rothia indica* subsp. *australis* (P3) and *Triodia chichesterensis* (P3) in the Survey Area, as well as a number of other flora taxa that are not of conservation significance, represent range extensions or fill holes in the known distribution of these taxa. This includes *Halgania erecta* and *Paspalidium reflexum*, the northern-most known records of which occur on the southern boundary of the Pilbara region (near Newman and Jigalong) (WA Herbarium, 1998-). The recorded locations of these taxa in the Survey Area represent range extensions of approximately 330 km and 340 km, respectively. This is likely a reflection of the limited historical survey of the particular part of the northern Pilbara intersected by the Survey Area.

Polymeria sp. nov. (potentially undescribed), which is considered significant under the 'new species or species with anomalous features that indicate a potential new species' reason from EPA (2016a, 2016b), was first recorded in the Survey Area in 2022, with further targeted survey for this taxon undertaken in 2024. The WA Herbarium holds five collections of this taxon (WA Herbarium, 1998-), and the Survey Area occurs within the known range of this entity. The WA Herbarium noted that although there are relatively few known collections of this taxon, the relatively wide distribution of the collections means that this taxon would not be given a high conservation priority; this taxon appears to meet the criteria for Priority 3 status, particularly given that there appear to be significant remaining areas of apparently suitable habitat (DBCA, 2020). It was recorded in a total of four VTs, of which VTs 7 and 8 are tentatively considered to represent

the taxon's preferred habitat in the Survey Area. Further field survey would be required to confirm the preferred habitat of this taxon in the Survey Area in a VT context.

Investigation of two historical locations of *Bulbostylis burbidgeae* (P4) recorded by Ecoscape (2021) was conducted during the 2022 field survey; while the species could not be located, the investigation identified that neither locations possessed suitable habitat for this taxon (shaded rock crevices and overhangs within granite outcropping areas, or rarely on dolerite or ironstone ridges). It is almost certain that these records of *Bulbostylis burbidgeae* (P4) represent misidentifications of the common *Bulbostylis barbata*, and it is considered that there are no areas of suitable habitat for *Bulbostylis burbidgeae* (P4) present within the Survey Area. In addition, investigation of a form of *Sida arenicola* with 'anomalous features' (referred to as *Sida arenicola* 'dunes' by Ecoscape (2021)), including consultation with the WA Herbarium, identified that while there is a good deal of variation in the extent of brown hairs in the indumentum of *Sida arenicola*, it is very unusual for the indumentum to be uniformly pale as in the specimens from Hemi. However, in all other respects, including the critical fruit character, the form conforms with *Sida arenicola*, and the single anomalous indumentum feature is not considered to be sufficient reason to treat it as a plant of particular taxonomic interest.

Extensive searching for all significant flora taxa previously recorded in the Survey Area (with the exception of *Bulbostylis burbidgeae* (P4) and *Sida arenicola* 'dunes' as discussed above), or those considered to potentially occur within the Survey Area, was undertaken in the Targeted Survey Area in 2022, with additional searching undertaken in 2024. It is considered possible that three taxa (*Euphorbia inappendiculata* var. *inappendiculata* (P2), *Gomphrena leptophylla* (P3) and *Stylidium weeliwolli* (P3)) could potentially still occur in the Survey Area, despite being identifiable at the time of the 2022 and 2024 surveys, based on suitable habitat occurring or potentially occurring in the Survey Area, and the Survey Area being within the known range of the taxon or generally within close proximity to its known range. However, it is considered unlikely that these three taxa are present within the Targeted Survey Area, given they were not recorded in this area despite intensive survey having been conducted by the 2022 and 2024 surveys, and in the case of *Euphorbia inappendiculata* var. *inappendiculata* (P2) and *Stylidium weeliwolli* (P3), suitable habitat is considered unlikely to be present in the Targeted Survey Area. Furthermore, it is likely that further locations of those significant flora taxa recorded in 2022 and 2024 occur in the wider Survey Area, as not all suitable habitat for all taxa was searched.

A total of 17 VTs were defined and mapped based on the results of floristic classification analysis and subsequent examination of data collected from quadrats in the Survey Area. As noted in **Section 5.2.8**, a number of quadrats were considered to have been misclassified by the classification analysis and were manually re-assigned to what were considered more appropriate VTs. Although this process is arguably subjective, it is considered appropriate when the classification of quadrats does not correlate with ecological observations made in the field. Misclassification of quadrats is a frequent issue with presence/absence analyses of Pilbara floristic datasets (Umwelt observations); a number of factors likely contribute, including quadrats being located in broad transitional zones between VTs, fire history, low taxon diversity of many areas in the northern Pilbara, as well as the absence of geological or topographical preference in the majority of taxa (e.g. *Triodia epactia*, which occurs on almost all geological features in the Survey Area). This results in less than optimal classification results. Failing to identify potential misclassifications can then lead to recognition of ecologically implausible VTs. It is considered that the sampling strategy and field verification work undertaken for this assessment, coupled with thorough review of the floristic classification results and manual re-classification of quadrats, provides confidence that the

VTs and VT mapping polygons defined in this assessment adequately characterise the vegetation of the Survey Area based on available data and are suitable for use in an EIA context.

VT 17 is considered to represent the 'Gregory Land System' PEC (P3) in the Survey Area, which was recorded on a single dune stretching approximately 4 km long and 0.5 km wide in the western central part of the Survey Area, outside the Targeted Survey Area. The vegetation representing VT 17, and therefore this PEC in the Survey Area, was characterised by the presence of a tall shrubland dominated by *Acacia sabulosa* (and usually with no other tall shrub taxa), a taxon near-absent from the remainder of the Survey Area, over a low shrubland that included a number of taxa also apparently absent or near-absent from the Survey Area (e.g. *Euphorbia myrtoides*, *Gyrostemon tepperi* and *Triumfetta deserticola*). VT 17 is considered equivalent to VT AsaSaTOS as defined by Ecoscape (2021). The 2022 survey did not identify any other vegetation considered to represent any formally listed TECs or any other PECs.

With the exception of the 'Gregory Land System' PEC (P3) and VT 17, there was no other vegetation recorded by the 2022 or the 2024 surveys in the Survey Area that is considered to be potentially regionally significant. While a number of VTs appear to be of restricted occurrence (both spatially and in number of occurrences) in the Survey Area, this is considered to be an artefact of the Survey Area extent, with all sampled vegetation either known to or considered likely to occur outside the Survey Area, and likely to be relatively widespread regionally. The absence of a regional dataset also makes assessment of the significance of the vegetation of the Pilbara particularly problematic.

Several VTs or occurrences of VTs (2, 3, 4, 15 and 16) are considered to represent riparian vegetation and are reliant on surface water. Additionally, based on the shallow depth to groundwater and presence of obligate phreatophytes, particularly *Melaleuca argentea*, the vegetation of the Turner River, which has been defined and mapped as VT 16, is considered to represent GDV.

The majority of the vegetation in the Survey Area was rated and mapped as being in 'Excellent' condition, with little to no historical mechanical disturbance and an absence or low levels of introduced flora taxa. Much of the northern part of the Survey Area, and the Turner River channel, were mapped as 'Very Good'; more obvious signs of disturbance associated with cattle, including the presence of several relatively serious weeds (albeit at low levels), were observed in these areas. Several small areas were mapped at lower ratings ('Good' or 'Poor'), primarily around trough sites at wells, and in areas that have historically been partially or wholly cleared and have re-grown.

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 and 2024 field surveys. No constraints prevented appropriate sampling techniques (quadrat/relevé establishment, foot traverses) being employed. Most areas were relatively easy to access using available access tracks/drill lines. Data reliability is therefore considered to be relatively high. All vascular groups that were present in the Survey Area were sampled. At least one reference specimen of all taxa encountered (excluding common, distinctive taxa) was collected for verification and identification purposes during the 2022 and 2024 field surveys. While three VTs were sampled by a single quadrat only, these VTs are mapped in single, small polygons in the Survey Area, and therefore this is not considered a limitation of this assessment. Adequacy of survey measures indicate that the Survey Area was well sampled.

Although not considered to be a significant survey limitation, fire history is considered to have had a degree of effect on the results of the surveys in the Survey Area. Fire is a strong driver of taxon composition in the Pilbara, with many taxa apparently reliant on fire for mass germination and establishment; this effect is considered prominent in the presence of several significant flora taxa, in particular *Euploca mutica* (P3) and *Polymeria* sp. nov. (potentially undescribed), with both taxa absent or almost absent from long-unburnt areas. It is therefore considered likely that survey for such taxa in unburnt areas may not locate these taxa, or will locate only a small percentage of what could theoretically be present in the period immediately following fire and significant rainfall. This issue is not unique to this assessment, as many taxa in WA respond in the same way to fire. Additionally, as noted above, this has potential flow-on effects in terms of floristic classification, and the ability to confidently map vegetation across the Survey Area.

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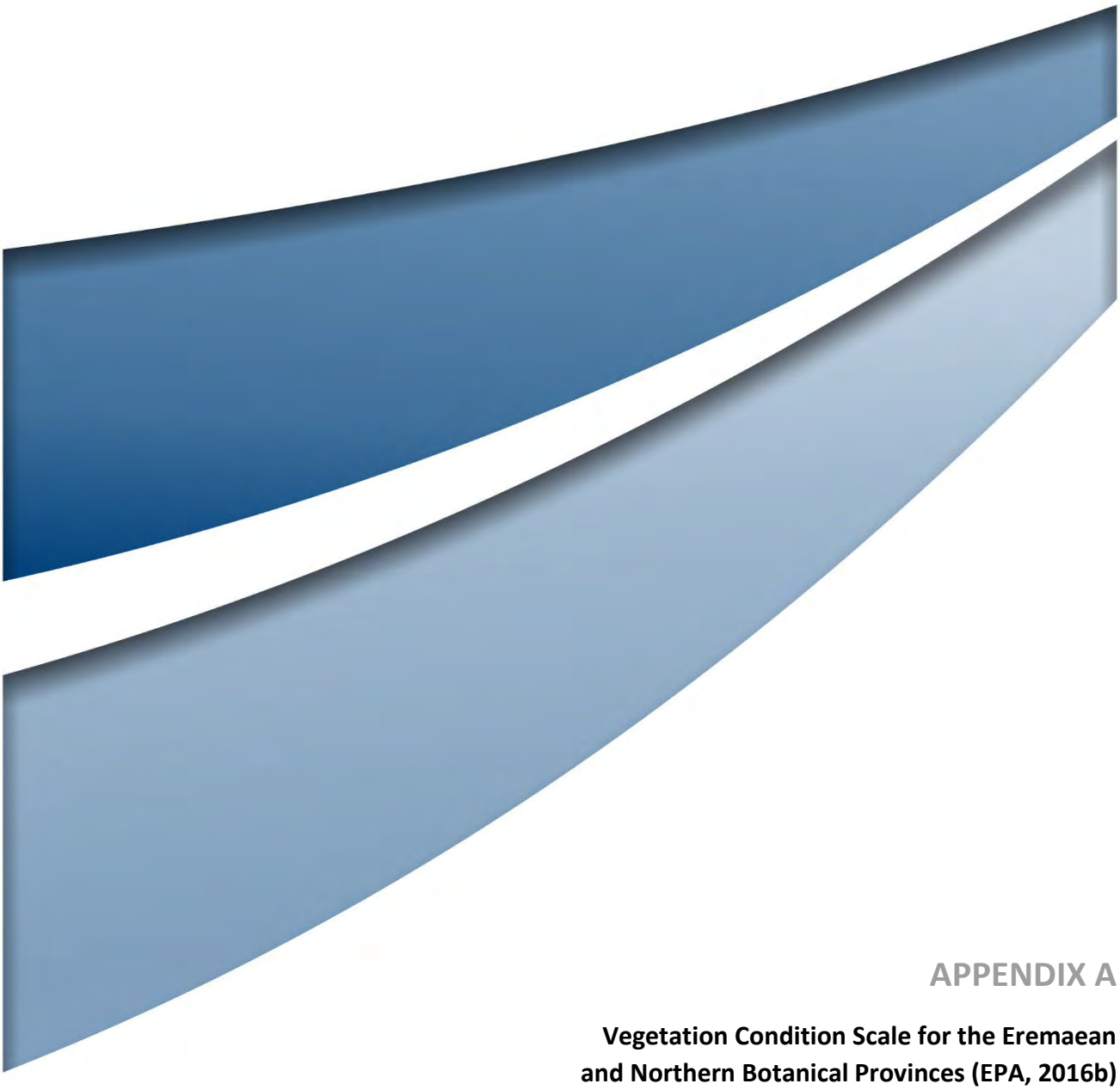
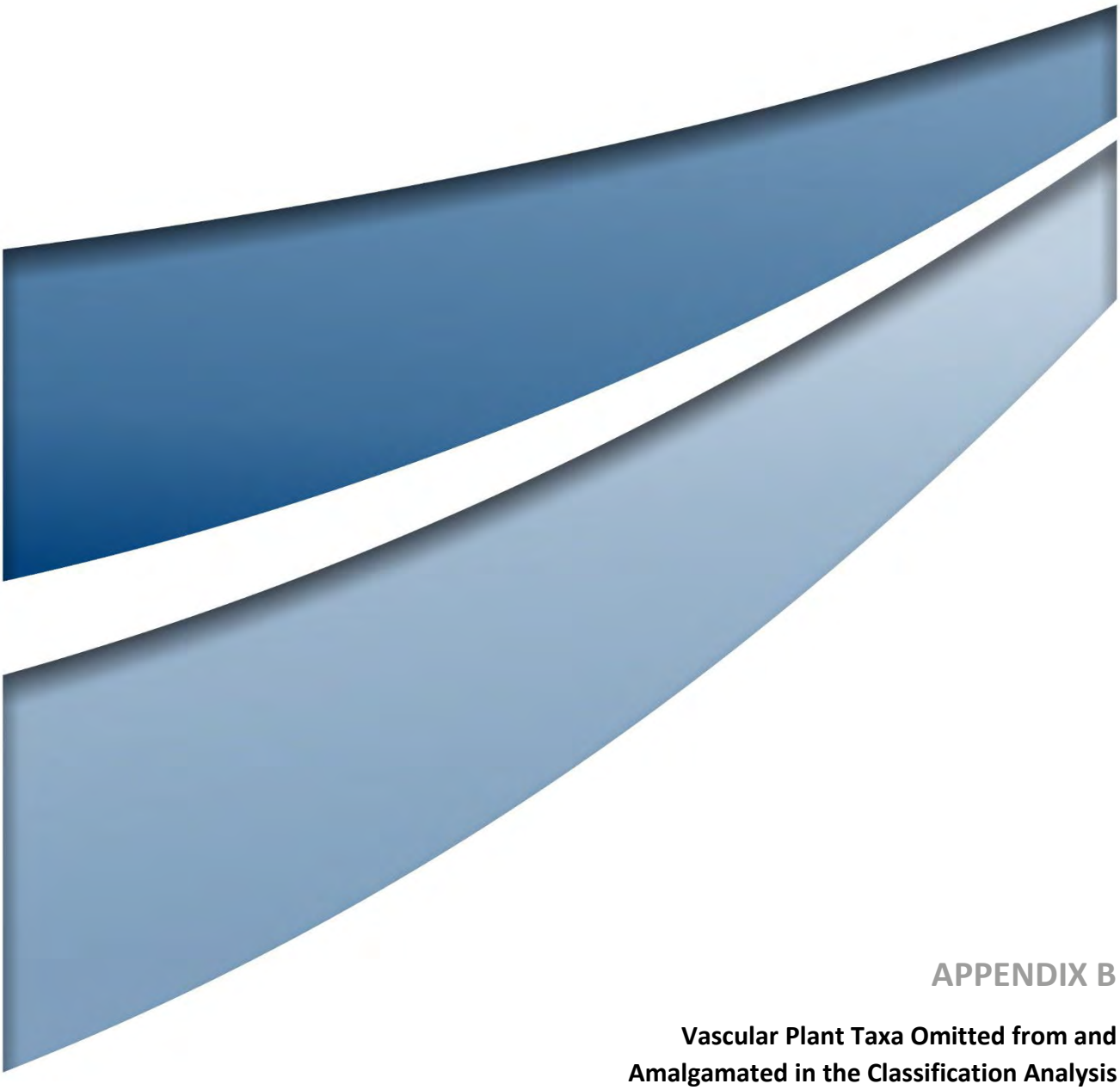


APPENDIX A

Vegetation Condition Scale for the Eremaean and Northern Botanical Provinces (EPA, 2016b)

Condition Ranking	Description
Excellent (E)	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement
Very Good (VG)	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks
Good (G)	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds
Poor (P)	Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds
Degraded (D)	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species
Completely Degraded (CD)	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs



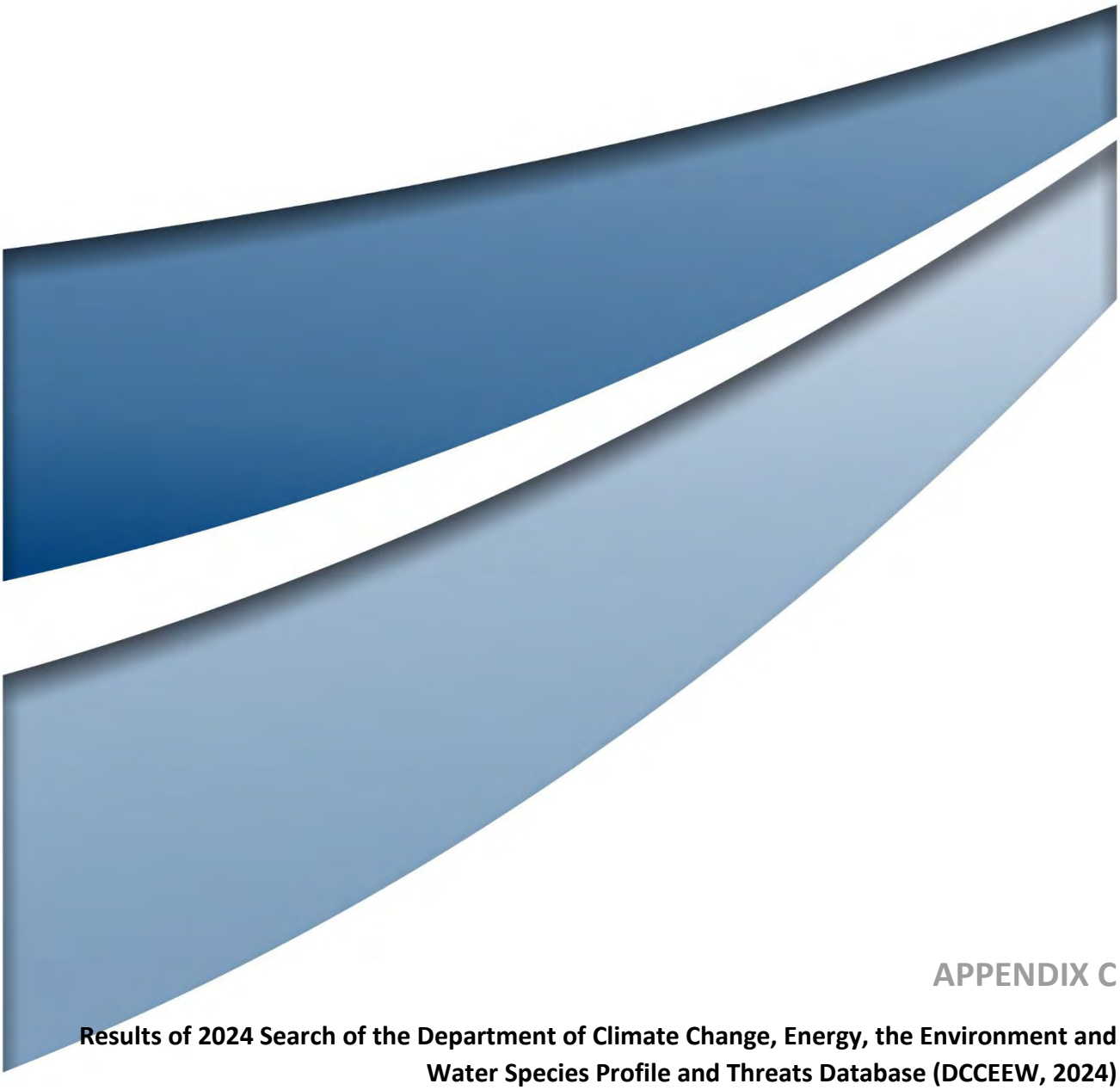
APPENDIX B

Vascular Plant Taxa Omitted from and Amalgamated in the Classification Analysis

Note: this table does not include taxa belonging to the following categories that were removed prior to the classification analysis (as per **Section 3.6**):

- Annual/ephemeral taxa
- Introduced taxa
- Hybrids
- Taxa with incomplete identification
- Singletons.

Action	Taxa	Reasoning
Amalgamated	*Clerodendrum tomentosum* *Clerodendrum tomentosum* var. *tomentosum*	Ecoscape (2021) did not identify this entity to variant level
	Corymbia candida *Corymbia candida* subsp. *candida*	Ecoscape (2021) did not identify this entity to subspecies level
	Eriachne obtusa *Eriachne ?obtusa*	Likely represent the same entity
	Euploca pachyphylla *Euploca ?pachyphylla*	Likely represent the same entity
	Evolvulus alsinoides var. *decumbens* *Evolvulus alsinoides* var. *villosicalyx*	Variants could not be consistently positively identified due to inadequate material
	Grevillea wickhamii *Grevillea wickhamii* subsp. *aprica*	Ecoscape (2021) did not identify this entity to subspecies level
	Marsilea hirsuta *Marsilea ?hirsuta*	Likely represent the same entity
	Sida echinocarpa *Sida ?echinocarpa*	Likely represent the same entity
	Solanum cleistogamum *Solanum ?cleistogamum*	Likely represent the same entity
	Tephrosia rosea var. *clementii* *Tephrosia rosea* var. *rosea*	Variants could not be consistently positively identified due to inadequate material
	Waltheria indica *Waltheria ?indica*	Likely represent the same entity
Omitted	*Indigofera trita* / *Indigofera trita* subsp. *trita*	Short-lived perennial
	Panicum australiense var. *australiense*	Short-lived perennial
	Ptilotus exaltatus	Short-lived perennial



APPENDIX C

Results of 2024 Search of the Department of Climate Change, Energy, the Environment and Water Species Profile and Threats Database (DCCEEW, 2024)

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: 28-Aug-2024

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:	2
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	43
Listed Migratory Species:	64

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	73
Commonwealth Heritage Places:	None
Listed Marine Species:	105
Whales and Other Cetaceans:	13
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	1

Extra Information

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

State and Territory Reserves:	1
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	53
Key Ecological Features (Marine):	None
Biologically Important Areas:	5
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

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
BIRD		
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Pluvialis squatarola		
Grey Plover [865]	Vulnerable	Species or species habitat known to occur within area
Polytelis alexandrae		
Princess Parrot, Alexandra's Parrot [758]	Vulnerable	Species or species habitat may occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Xenus cinereus		
Terek Sandpiper [59300]	Vulnerable	Species or species habitat known to occur within area
MAMMAL		
Balaenoptera musculus		
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Dasyurus hallucatus		
Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat known to occur within area
Macroderma gigas		
Ghost Bat [174]	Vulnerable	Species or species habitat known to occur within area
Macrotis lagotis		
Greater Bilby [282]	Vulnerable	Species or species habitat known to occur within area
Rhinonicteris aurantia (Pilbara form)		
Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat known to occur within area
PLANT		
Quoya zonalis listed as Pityrodia sp. Marble Bar (G.Woodman & D.Coultas GWDC Opp 4)		
Pilbara Foxglove [91588]	Endangered (listed as Pityrodia sp. Marble Bar	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
REPTILE		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Liasis olivaceus barroni Pilbara Olive Python [66699]	Vulnerable	Species or species habitat likely to occur within area
Liopholis kintorei Great Desert Skink, Tjakura, Warrarna, Mulyamiji, Tjalapa, Nampu [83160]	Vulnerable	Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
SHARK		
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Dugong dugon Dugong [28]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Migratory Terrestrial Species		
Hirundo rustica Barn Swallow [662]		Species or species habitat known to occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris alba Sanderling [875]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris subminuta Long-toed Stint [861]		Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat known to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Species or species habitat known to occur within area
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Species or species habitat known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Species or species habitat known to occur within area
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Species or species habitat known to occur within area

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
Unknown	
Commonwealth Land - [51692]	WA
Commonwealth Land - [51693]	WA
Commonwealth Land - [51694]	WA
Commonwealth Land - [51695]	WA
Commonwealth Land - [51697]	WA
Commonwealth Land - [51698]	WA
Commonwealth Land - [51050]	WA
Commonwealth Land - [51699]	WA
Commonwealth Land - [51049]	WA
Commonwealth Land - [51051]	WA
Commonwealth Land - [50326]	WA
Commonwealth Land - [50327]	WA
Commonwealth Land - [51404]	WA
Commonwealth Land - [51403]	WA

Commonwealth Land Name	State
Commonwealth Land - [50324]	WA
Commonwealth Land - [50325]	WA
Commonwealth Land - [51678]	WA
Commonwealth Land - [51668]	WA
Commonwealth Land - [51677]	WA
Commonwealth Land - [51669]	WA
Commonwealth Land - [51674]	WA
Commonwealth Land - [51666]	WA
Commonwealth Land - [51679]	WA
Commonwealth Land - [51667]	WA
Commonwealth Land - [51676]	WA
Commonwealth Land - [51670]	WA
Commonwealth Land - [51673]	WA
Commonwealth Land - [51672]	WA
Commonwealth Land - [51675]	WA
Commonwealth Land - [51671]	WA
Commonwealth Land - [51718]	WA
Commonwealth Land - [51719]	WA
Commonwealth Land - [51690]	WA
Commonwealth Land - [51710]	WA
Commonwealth Land - [51711]	WA
Commonwealth Land - [51712]	WA
Commonwealth Land - [51713]	WA
Commonwealth Land - [51714]	WA
Commonwealth Land - [51696]	WA
Commonwealth Land - [51702]	WA
Commonwealth Land - [51716]	WA

Commonwealth Land Name	State
Commonwealth Land - [51703]	WA
Commonwealth Land - [51717]	WA
Commonwealth Land - [51700]	WA
Commonwealth Land - [51709]	WA
Commonwealth Land - [51708]	WA
Commonwealth Land - [51707]	WA
Commonwealth Land - [51706]	WA
Commonwealth Land - [51705]	WA
Commonwealth Land - [51704]	WA
Commonwealth Land - [51715]	WA
Commonwealth Land - [51720]	WA
Commonwealth Land - [50349]	WA
Commonwealth Land - [51688]	WA
Commonwealth Land - [51691]	WA
Commonwealth Land - [51429]	WA
Commonwealth Land - [51053]	WA
Commonwealth Land - [51055]	WA
Commonwealth Land - [51054]	WA
Commonwealth Land - [51052]	WA
Commonwealth Land - [51947]	WA
Commonwealth Land - [50359]	WA
Commonwealth Land - [51048]	WA
Commonwealth Land - [51680]	WA
Commonwealth Land - [51687]	WA
Commonwealth Land - [51682]	WA
Commonwealth Land - [51681]	WA
Commonwealth Land - [51684]	WA

Commonwealth Land Name	State
Commonwealth Land - [51689]	WA
Commonwealth Land - [51686]	WA
Commonwealth Land - [51685]	WA
Commonwealth Land - [51683]	WA
Commonwealth Land - [50323]	WA

Listed Marine Species

[Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris alba Sanderling [875]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area overfly marine area
Calidris subminuta Long-toed Stint [861]		Species or species habitat known to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area overfly marine area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat known to occur within area overfly marine area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area overfly marine area
Hirundo rustica Barn Swallow [662]		Species or species habitat known to occur within area overfly marine area
Limicola falcinellus Broad-billed Sandpiper [842]		Species or species habitat known to occur within area overfly marine area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat known to occur within area overfly marine area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Species or species habitat known to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Species or species habitat known to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Species or species habitat may occur within area
Stiltia isabella Australian Pratincole [818]		Species or species habitat known to occur within area overfly marine area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Species or species habitat known to occur within area
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur within area overfly marine area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area overfly marine area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Fish		
Acentronura larsonae Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area
Bulbonaricus brauni Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys latispinosus Muiron Island Pipefish [66196]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Doryrhamphus multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris Ladder Pipefish [66216]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Phoxocampus belcheri Black Rock Pipefish [66719]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		

Scientific Name	Threatened Category	Presence Text
Dugong dugon		
Dugong [28]		Species or species habitat known to occur within area
Reptile		
Aipysurus apraefrontalis		
Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
Aipysurus duboisii		
Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus foliosquama		
Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus laevis		
Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii		
Mosaic Sea Snake [87261]		Species or species habitat may occur within area
Aipysurus tenuis		
Brown-lined Sea Snake, Mjoberg's Sea Snake [1121]		Species or species habitat may occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus porosus		
Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area

Whales and Other Cetaceans [Resource Information]

Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Sousa sahulensis Australian Humpback Dolphin [87942]		Species or species habitat likely to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence
Aug - Sep		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Mungaroona Range	Nature Reserve	WA

Nationally Important Wetlands	[Resource Information]
Wetland Name	State
Leslie (Port Hedland) Saltfields System	WA

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
East Pilbara Network Stage 1	2024/09933		Referral Decision
Hemi Gold Project	2023/09556		Referral Decision

Title of referral	Reference	Referral Outcome	Assessment Status
Lynas Find Project	2023/09471		Assessment
Port Hedland Green Steel Project - Stage 1	2023/09764		Assessment
Port Hedland Solar Project	2022/09241		Post-Approval
Ridley Magnetite Project	2023/09477		Referral Decision
Controlled action			
Abydos Direct Shipping Ore Project	2012/6345	Controlled Action	Post-Approval
Additional Rail Infrastructure between Herb Elliott Port Facility and Cloudbreak Mine Site	2010/5513	Controlled Action	Post-Approval
Balla Balla Rail and Conveyor Project, WA	2015/7420	Controlled Action	Post-Approval
Development of a Quarry Operation to extract gravel, sand and pindan material	2012/6636	Controlled Action	Post-Approval
Development of the Wodgina Direct Shipping Ore Project, Stage 2	2011/5975	Controlled Action	Post-Approval
Great Northern Pipeline - 630 km buried gas pipeline	2009/5257	Controlled Action	Completed
Mt Dove Direct Shipping Ore Project	2011/5848	Controlled Action	Post-Approval
North Star Hematite Project	2012/6530	Controlled Action	Post-Approval
North Star Magnetite Project	2012/6689	Controlled Action	Post-Approval
Poondano Iron Ore Project	2010/5759	Controlled Action	Post-Approval
Port Hedland Outer Harbour Development and associated marine and terrestrial in	2008/4159	Controlled Action	Post-Approval
Port Hedland Spoilbank Marina, WA	2019/8520	Controlled Action	Post-Approval
Roy Hill to Port Hedland Rail Line and Associated Infrastructure	2010/5424	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Wodgina Direct Shipping Ore Project	2009/5167	Controlled Action	Post-Approval
Not controlled action			
150m Boodarie Gas Lateral Pipeline	2014/7116	Not Controlled Action	Completed
Construction of a Commodities Berth, Wharf and Associated Infrastructure	2008/4129	Not Controlled Action	Completed
Development of iron ore resources in eastern Pilbara region, including port at P	2004/1562	Not Controlled Action	Completed
Expansion of the Talison Minerals Storage Facility, Wodgina Mine	2008/4675	Not Controlled Action	Completed
Horizon Power South Hedland Transmission Line, WA	2012/6551	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
Iron Bridge Port Facility, Port Hedland, WA	2015/7565	Not Controlled Action	Completed
Pilbara Bulk Ore Transport System Project, WA	2016/7637	Not Controlled Action	Completed
Pilbara Transmission Project, Pilbara, WA	2018/8349	Not Controlled Action	Completed
Pippingarra Quarry Expansion Works	2012/6461	Not Controlled Action	Completed
Port Hedland Channel Risk and Optimisation Project, WA	2017/7915	Not Controlled Action	Completed
Port Hedland Power Station Conversion Project	2011/6080	Not Controlled Action	Completed
Rail and Port Facilities	2001/474	Not Controlled Action	Completed
Relocation of approx. 670m of the Pilbara Energy Pipeline	2013/6756	Not Controlled Action	Completed
South Hedland Power Station WA	2011/5929	Not Controlled Action	Completed
Telfer Gold Mine Project - Mine and Borefield Extensions and Upgrade of Storage	2002/787	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Telfer Gold Mine Project - Power Supply and Infrastructure Corridor	2002/786	Not Controlled Action	Completed
Walkway Lighting Upgrade	2009/4965	Not Controlled Action	Completed
Wodgina Lithium Mine Expansion, Pilbara, NT	2018/8194	Not Controlled Action	Completed
Not controlled action (particular manner)			
Additional Rail Infrastructure	2012/6314	Not Controlled Action (Particular Manner)	Post-Approval
Atlas Boodarie Link Project, WA	2012/6506	Not Controlled Action (Particular Manner)	Post-Approval
Dredging of marine sediment to enable construction of eight berths and a turnin	2010/5678	Not Controlled Action (Particular Manner)	Post-Approval
Marine Geotechnical Drilling Program	2008/4012	Not Controlled Action (Particular Manner)	Post-Approval
Mine the Hercules Deposit under the Wodgina Direct Shipping Ore Project Stage 3	2013/6789	Not Controlled Action (Particular Manner)	Post-Approval
Nelson Point Dredging	2009/4920	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Fibre Optic Cable Network Construction & Operation, Port Hedland WA to Darwin NT	2014/7223	Not Controlled Action (Particular Manner)	Post-Approval
Port Headland Outer Harbour Pre-construction Pilling program	2012/6341	Not Controlled Action (Particular Manner)	Post-Approval
Port of Port Hedland channel marker replacement project, WA	2017/8010	Not Controlled Action (Particular Manner)	Post-Approval
Realignment of the Great Northern Highway	2010/5793	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
upgrade of 3 community recreation sites	2005/2349	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
Mine the Hercules Deposit under the Wodgina Direct Shipping Ore Project ??? Stage 3	2013/6777	Referral Decision	Completed
Outer Harbour Development and associated marine and terrestial infrastructure	2008/4148	Referral Decision	Completed

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Marine Turtles		
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Fregata ariel Lesser Frigatebird [1012]	Breeding	Known to occur
Whales		
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

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

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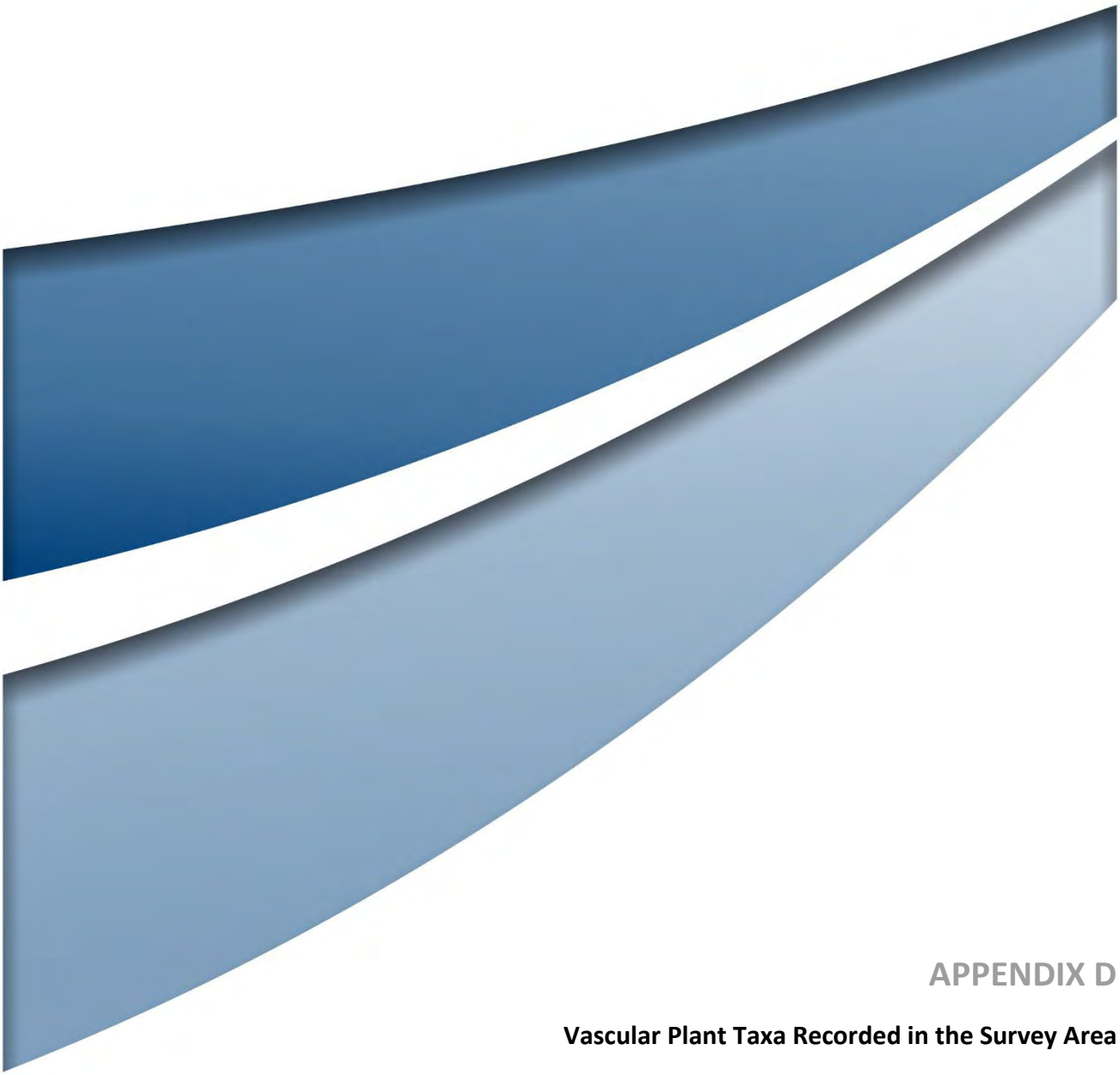


APPENDIX D

Vascular Plant Taxa Recorded in the Survey Area

Family	Taxon	2022 Survey	2024 Survey	Ecoscape Survey
Aizoaceae	*Trianthema pilosum*	x		x
	Trianthema triquetrum	x		
Amaranthaceae	*Achyranthes aspera*	x		
	**Aerva javanica*	x		x
	Alternanthera nana	x		x
	Amaranthus cuspidifolius			x
	Amaranthus undulatus	x		
	Gomphrena affinis subsp. *pilbarensis*	x		
	Gomphrena cunninghamii	x		x
	Ptilotus appendiculatus	x		
	Ptilotus arthrolasius	x		x
	Ptilotus astrolasius	x		x
	Ptilotus auriculifolius	x		
	Ptilotus axillaris	x		x
	Ptilotus calostachyus	x		x
	Ptilotus exaltatus	x		x
	Ptilotus fusiformis	x		x
	Ptilotus murrayi	x		
	Ptilotus obovatus	x		
	Ptilotus polystachyus	x		
Apocynaceae	**Calotropis procera*	x	x	
	Carissa lanceolata	x		x
	Cynanchum floribundum	x		x
	Gymnanthera cunninghamii (P3)	x	x	x
Araliaceae	*Trachymene oleracea* subsp. *oleracea*	x		x
Asteraceae	*Calocephalus beardii*	x		
	Calotis plumulifera	x		
	Centipeda minima subsp. *macrocephala*	x		
	Pluchea dentex	x		
	Pluchea dunlopii	x		x
	Pluchea ferdinandi-muelleri	x		x
	Pluchea rubelliflora	x		
	Pluchea tetranthera	x		x
	Pterocaulon serrulatum var. *velutinum*	x		
	Pterocaulon sphacelatum	x		x
	Streptoglossa decurrens	x		
	Streptoglossa macrocephala	x		x
Bignoniaceae	*Dolichandrone occidentalis*	x		
Boraginaceae	*Ehretia saligna*	x		
	Euploca cunninghamii	x		

Family	Taxon	2022 Survey	2024 Survey	Ecoscape Survey
Boraginaceae cont.	*Euploca diversifolia*	x		
	Euploca foliata	x		
	Euploca mutica (P3)	x	x	x
	Euploca pachyphylla	x		x
	Euploca tenuifolia	x		
	Euploca vestita	x		
	Halgania erecta	x		
	Halgania solanacea var. *solanacea* ms	x		
	Heliotropium crispatum	x		
	Trichodesma zeylanicum var. *zeylanicum*	x		x
Byblidaceae	*Byblis pilbarana*	x		x
Cactaceae	**Opuntia* sp.	x	x	
Campanulaceae	*Wahlenbergia tumidifructa*	x		
Capparaceae	*Capparis spinosa* subsp. *nummularia*	x		
Caryophyllaceae	*Polycarpaea corymbosa* var. *corymbosa*	x		x
	Polycarpaea holtzei	x		
Celastraceae	*Stackhousia intermedia*			x
	Stackhousia sp. swollen gynophore (W.R. Barker 2041)	x		
Chenopodiaceae	*Dysphania plantaginella*	x		
	Dysphania rhadinostachya subsp. *inflata*	x		
	Dysphania rhadinostachya subsp. *rhadinostachya*	x		
Cleomaceae	*Arivela uncifera*	x		x
	Arivela viscosa	x		x
Commelinaceae	*Commelina ensifolia*	x		
Convolvulaceae	*Bonamia alatisemina*	x		x
	Bonamia erecta	x		x
	Bonamia media	x		x
	Bonamia pilbarensis	x		x
	Evolvulus alsinoides var. *decumbens*			x
	Evolvulus alsinoides var. *villosicalyx*	x		x
	Ipomoea coptica	x		
	Ipomoea muelleri	x		x
	Ipomoea polymorpha	x		
	Polymeria mollis	x		
	Polymeria sp. nov	x	x	
Cucurbitaceae	**Citrullus colocynthis*	x		
	**Citrullus amarus*		x	
	Cucumis variabilis	x		x
Cyperaceae	*Bulbostylis barbata*	x		x
	Cyperus blakeanus	x		

Family	Taxon	2022 Survey	2024 Survey	Ecoscape Survey
Cyperaceae cont.	*Cyperus castaneus*	x		
	Cyperus conicus	x		x
	Cyperus difformis	x		
	Cyperus iria	x		
	Cyperus ixiocarpus	x		
	Cyperus leptocarpus	x		x
	Cyperus pulchellus	x		
	Cyperus squarrosus	x		
	Cyperus vaginatus	x		x
	Eleocharis geniculata			x
	Fimbristylis dichotoma	x		x
	Fimbristylis microcarya			x
	Fimbristylis simulans	x		x
	Schoenoplectiella laevis	x		x
Droseraceae	*Drosera finlaysoniana*		x	x
Elatinaceae	*Bergia perennis* subsp. *perennis*	x		
Euphorbiaceae	*Adriana tomentosa* var. *tomentosa*	x		
	Euphorbia australis var. *subtomentosa*	x		x
	Euphorbia myrtoides	x		
	Euphorbia psilosperma	x		
	Euphorbia tannensis subsp. *eremophila*	x		x
	Euphorbia trigonosperma	x		
	Euphorbia vaccaria var. *vaccaria*	x		x
	Microstachys chamaelea	x		
Fabaceae	*Acacia acradenia*	x		x
	Acacia ampliceps			x
	Acacia ancistrocarpa	x		x
	Acacia ancistrocarpa x *orthocarpa*	x		
	Acacia bivenosa	x		x
	Acacia colei	x		x
	Acacia coriacea subsp. *pendens*	x		x
	Acacia inaequilatera	x		x
	Acacia melleodora	x		x
	Acacia orthocarpa	x		x
	Acacia orthocarpa x *stellaticeps*	x		
	Acacia pyrifolia var. *pyrifolia*	x		x
	Acacia sabulosa	x		x
	Acacia sclerosperma subsp. *sclerosperma*	x		x
	Acacia sericophylla	x		x
	Acacia x *sphaerostachya*	x		x

Family	Taxon	2022 Survey	2024 Survey	Ecoscape Survey
Fabaceae cont.	*Acacia stellaticeps*	x		x
	Acacia synchronicia	x		x
	Acacia trachycarpa	x		x
	Acacia trachycarpa x *tumida* var. *pilbarensis*	x		
	Acacia trudgeniana	x		
	Acacia tumida var. *pilbarensis*	x		x
	Acacia victoriae	x		
	Aeschynomene indica	x		
	Cajanus cinereus	x		x
	Cajanus marmoratus	x		
	Crotalaria cunninghamii	x		x
	Crotalaria medicaginea var. *neglecta*	x		
	Crotalaria ramosissima	x		x
	Cullen cinereum	x		
	Cullen lachnostachys	x		x
	Cullen leucanthum	x		
	Cullen martinii	x		
	Cullen stipulaceum	x		
	Glycine tomentella	x		
	Grona filiformis	x		x
	Indigofera colutea	x		x
	Indigofera linifolia	x		x
	Indigofera linnaei	x		
	Indigofera monophylla	x		x
	Indigofera trita subsp. *trita*	x		x
	Isotropis atropurpurea	x		
	Leptosema anomalum	x		
	Neptunia dimorphantha	x		x
	Petalostylis cassioides	x		
	Petalostylis labicheoides	x		x
	Rhynchosia minima	x		x
	Rothia indica subsp. *australis* (P3)	x		
	Senna artemisioides subsp. *helmsii*	x		x
	Senna artemisioides subsp. *oligophylla*	x		x
	Senna artemisioides subsp. *oligophylla* x *glutinosa* subsp. *glutinosa*	x		
	Senna glutinosa subsp. *glutinosa*	x		x
	Senna glutinosa subsp. x *luerssenii*	x		
	Senna glutinosa subsp. *pruinosa*	x		
	Senna notabilis	x		x

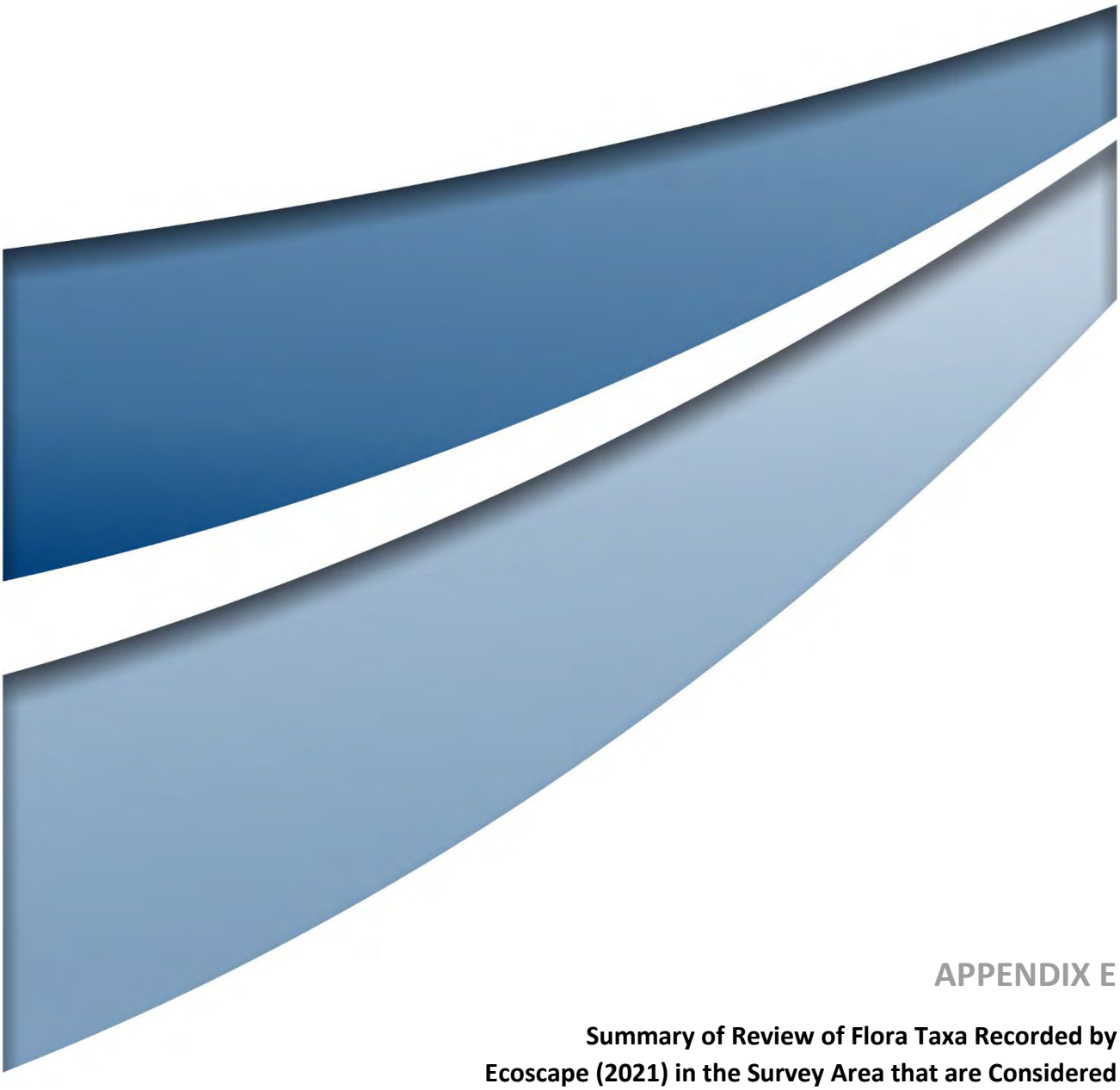
Family	Taxon	2022 Survey	2024 Survey	Ecoscape Survey
Fabaceae cont.	*Senna symonii*	x		x
	Senna venusta	x		
	Sesbania cannabina			x
	Swainsona formosa	x		
	Tephrosia clementii	x		
	Tephrosia densa	x		
	Tephrosia rosea var. *clementii*	x		
	Tephrosia rosea var. *rosea*	x		
	Tephrosia supina	x		
	Tephrosia virens	x		
	Tephrosia sp. B Kimberley Flora (C.A. Gardner 7300)	x		
	Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	x		x
	Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	x		x
	Tephrosia sp. NW Eremaean (S. van Leeuwen et al. PBS 0356)	x		x
	Vigna lanceolata var. *lanceolata*	x		
	Vigna sp. Hamersley Clay (A.A. Mitchell PRP 113)	x		
	Zornia albiflora	x		x
	Zornia muelleriana subsp. *congesta*	x		x
Goodeniaceae	*Dampiera candicans*	x		x
	Goodenia forrestii	x		
	Goodenia lamprosperma	x		x
	Goodenia microptera	x		x
	Goodenia muelleriana	x		x
	Goodenia nuda	x		x
	Goodenia stobbsiana	x		x
	Scaevola amblyanthera var. *centralis*	x		x
	Scaevola browniana subsp. *browniana*	x		
	Scaevola parvifolia subsp. *pilbarae*	x		x
Gyrostemonaceae	*Codonocarpus cotinifolius*	x		x
	Gyrostemon tepperi	x		x
Haloragaceae	*Haloragis ?gossei*	x		
Hemerocallidaceae	*Corynotheca pungens*	x		
Lamiaceae	*Clerodendrum tomentosum* var. *tomentosum*	x		x
Lauraceae	*Cassytha capillaris*	x		x
	Cassytha filiformis	x		x
Loganiaceae	*Mitrasacme connata*	x		x
Malvaceae	*Abutilon amplum*	x		
	Abutilon aff. *hannii*		x	
	Abutilon lepidum	x		x

Family	Taxon	2022 Survey	2024 Survey	Ecoscape Survey
Malvaceae cont.	*Abutilon macrum*	x		
	Abutilon otocarpum	x		x
	Abutilon oxycarpum subsp. Prostrate (A.A. Mitchell PRP 1266)	x		
	Abutilon sp. Pilbara (W.R. Barker 2025)	x		x
	Abutilon sp. Pritzelianum (S. van Leeuwen 5095) (P3)	x	x	x
	Corchorus elachocarpus	x		
	Corchorus incanus subsp. *incanus*	x		x
	Corchorus parviflorus	x		x
	Corchorus tectus	x		x
	Corchorus tridens	x		
	Gossypium australe	x		x
	Hibiscus austrinus var. *austrinus*	x		x
	Hibiscus brachychlaenus	x		x
	Hibiscus coatesii	x		
	Hibiscus leptocladus	x		x
	Hibiscus sturtii var. *campylochlamys*	x		
	**Malvastrum americanum*	x		
	Melhania oblongifolia	x		
	Seringia exastia (T)	x		x
	Seringia nephrosperma	x		
	Sida arenicola	x		x
	Sida arsiniata	x		
	Sida clementii		x	
	Sida echinocarpa	x		x
	Sida fibulifera	x		
	Sida rohlenae subsp. *rohlenae*	x		x
	Sida sp. L (A.M. Ashby 4202)	x		
	Sida sp. Pilbara (A.A. Mitchell PRP 1543)	x	x	x
	Sida sp. Pindan (B.G. Thomson 3398)	x		
	Sida sp. Rabbit Flat (B.J. Carter 626)	x	x	
	Triumfetta clementii	x		
	Triumfetta deserticola	x		
	Triumfetta propinqua	x		
	Triumfetta ramosa	x		
	Waltheria indica	x		x
Marsileaceae	*Marsilea hirsuta*	x		x
Meliaceae	*Owenia reticulata*	x		
Menispermaceae	*Tinospora smilacina*	x		x
Molluginaceae	*Glinus oppositifolius* var. *keenanii*	x		

Family	Taxon	2022 Survey	2024 Survey	Ecoscape Survey
Molluginaceae cont.	*Hypertelis cerviana*	x		
	Trigastrotheca molluginea	x		x
Montiaceae	*Calandrinia pentavalvis*	x		
	Calandrinia ptychosperma	x		
	Calandrinia pumila	x		
	Calandrinia stagnensis	x		x
	Calandrinia tepperiana	x	x	x
Myrtaceae	*Corymbia candida* subsp. *candida*	x		x
	Corymbia candida subsp. x *lautifolia*	x		
	Corymbia hamersleyana	x		x
	Corymbia zygophylla	x		x
	Eucalyptus camaldulensis subsp. *refulgens*	x		x
	Eucalyptus victrix	x		x
	Melaleuca argentea	x		x
	Melaleuca glomerata	x		x
	Melaleuca lasiandra	x		x
	Melaleuca linophylla	x		x
Nyctaginaceae	*Boerhavia coccinea*	x		x
	Boerhavia gardneri	x		x
	Boerhavia schomburgkiana	x		
Passifloraceae	**Passiflora foetida* var. *hispida*	x		
Phrymaceae	*Peplidium muelleri*	x		
Phyllanthaceae	*Nellica maderaspatensis*	x		x
Plantaginaceae	*Stemodia grossa*	x		x
	Stemodia viscosa	x		x
Poaceae	*Aristida contorta*	x		x
	Aristida holathera var. *holathera*	x		x
	Aristida hygrometrica	x		
	Aristida inaequiglumis	x		
	**Cenchrus ciliaris*	x		x
	**Cenchrus setiger*	x		
	Chloris pectinata	x		
	Chloris pumilio	x		
	Chrysopogon fallax	x		x
	Cynodon prostratus	x		
	Dactyloctenium radulans	x		
	Dichanthium sericeum subsp. *humilius*	x		
	**Digitaria ciliaris*	x		
	Digitaria brownii	x		
	**Echinochloa colona*	x		

Family	Taxon	2022 Survey	2024 Survey	Ecoscape Survey
Poaceae cont.	*Enneapogon caerulescens*	x		
	Enneapogon lindleyanus	x		
	Eragrostis crateriformis	x		x
	Eragrostis cumingii	x		x
	Eragrostis dielsii	x		x
	Eragrostis eriopoda	x		x
	Eragrostis speciosa	x		
	Eragrostis xerophila	x		
	Eriachne aristidea	x		x
	Eriachne benthamii	x		
	Eriachne flaccida	x		
	Eriachne glauca var. *glauca*	x		x
	Eriachne helmsii	x		x
	Eriachne mucronata	x		x
	Eriachne obtusa	x		x
	Eriachne pulchella subsp. *dominii*	x		x
	Eulalia aurea	x		x
	Iseilema dolichotrichum	x		
	Panicum australiense var. *australiense*	x		x
	Panicum laevinode	x		
	Paraneurachne muelleri	x		x
	Paspalidium clementii	x		x
	Paspalidium rarum	x		
	Paspalidium reflexum	x		
	Paspalidium tabulatum	x		
	Perotis rara	x		x
	Schizachyrium fragile	x		
	Sporobolus australasicus	x		x
	Themeda triandra	x		
	Triodia angusta	x		
	Triodia chichesterensis (P3)	x		
	Triodia epactia	x		x
	Triodia lanigera	x		x
	Triodia longiceps	x		
	Triodia schinzii	x		x
	Triodia secunda	x		
	Triodia wiseana	x		x
	Urochloa holosericea subsp. *velutina*	x		
	Xerochloa barbata	x		
	Polygala galeocephala	x		

Family	Taxon	2022 Survey	2024 Survey	Ecoscape Survey
Polygalaceae cont.	*Polygala isingii*	x		
Portulacaceae	*Portulaca cyclophylla*	x		
	Portulaca filifolia	x		
	Portulaca oleracea	x		x
Proteaceae	*Grevillea pyramidalis* subsp. *leucadendron*	x		x
	Grevillea wickhamii subsp. *aprica*	x		x
	Hakea lorea subsp. *lorea*	x		x
Rubiaceae	*Dentella asperata*	x		
	Dolichocarpa crouchiana	x		
	Scleromitrion galioides	x		x
	Synaptantha tillaeacea var. *tillaeacea*	x		x
Santalaceae	*Santalum lanceolatum*	x		
Sapindaceae	*Atalaya hemiglauca*	x		
	Dodonaea coriacea	x		x
Solanaceae	*Solanum cleistogamum*	x		x
	Solanum diversiflorum	x		x
	Solanum horridum	x		
	Solanum lasiophyllum	x		x
	Solanum phlomoides	x		x
Thymelaeaceae	*Pimelea ammocharis*	x		x
Violaceae	*Afrohybanthus aurantiacus*	x		x
Zygophyllaceae	*Tribulopis angustifolia*	x		x
	Tribulus hirsutus	x		x
	Tribulus macrocarpus	x		
	Tribulus occidentalis	x		
	Tribulus platypterus	x	x	



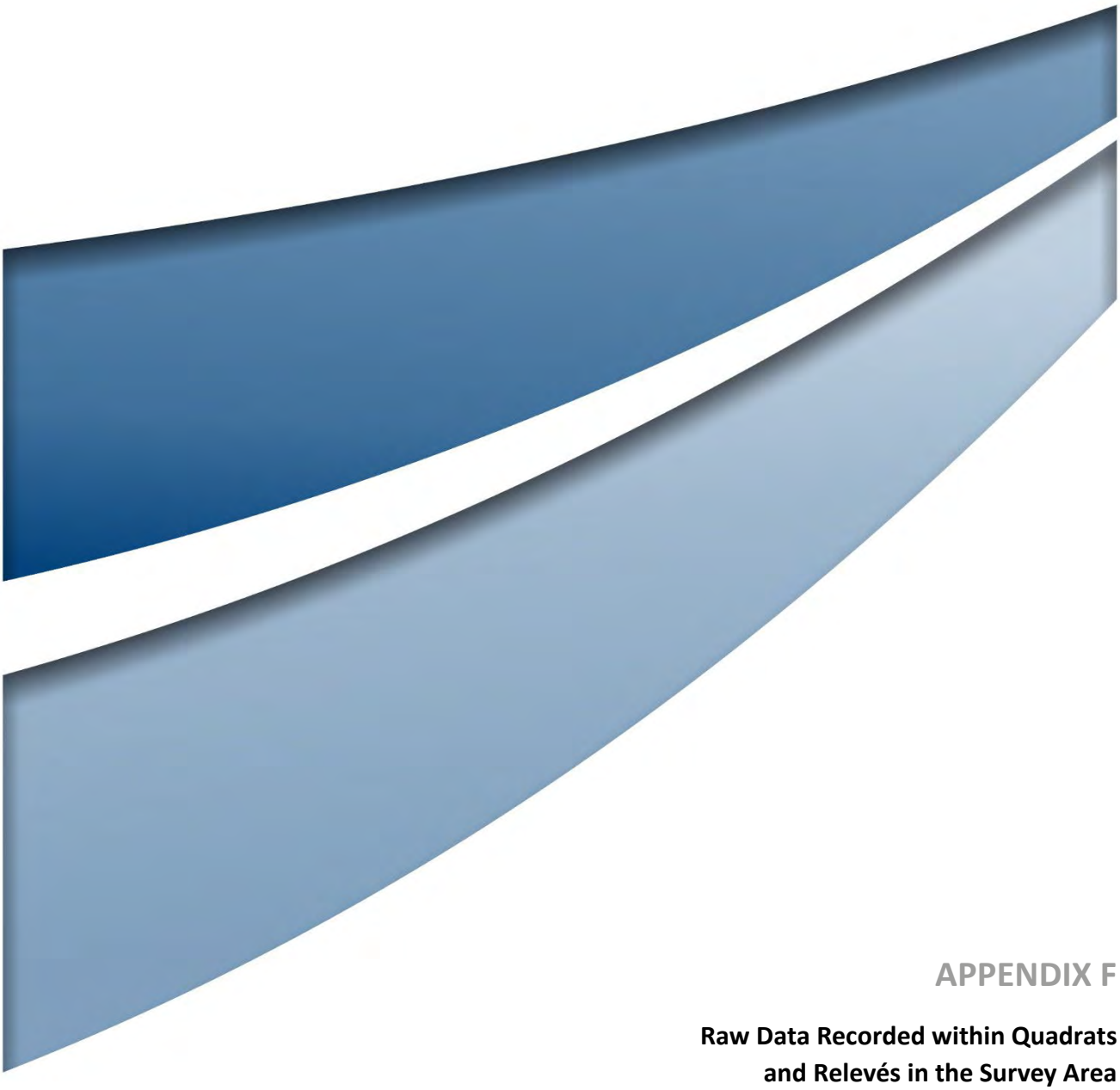
APPENDIX E

Summary of Review of Flora Taxa Recorded by Ecoscape (2021) in the Survey Area that are Considered Additional to those Recorded by the 2022 Survey

Taxon	Verified in Field?	Treated as Additional Taxon?	Reasoning
Acacia ampliceps	Y	Y	Relocated in quadrat, confirmed
***Acacia* sp.**	N	N	Could not be relocated in quadrat; removed from flora census as identity unclear
Amaranthus cuspidifolius	N	Y	Could not be relocated in quadrat, not possible to verify identity, but within known range and potential habitat present at location
Aristida holathera	Y	N	Considered that all records are referrable to *Aristida holathera* var. *holathera*, material collected by Umwelt from representative quadrats
Bonamia linearis	Y	N	Misidentification of *Bonamia alatisemina*, material collected by Umwelt from quadrats
?*Bonamia* sp.	N	N	Could not be relocated in quadrat; removed from flora census as identity unclear
***Bulbostylis burbidgeae* (P4)**	Y	N	Misidentification of *Bulbostylis barbata*, material collected by Umwelt from quadrat
Clerodendrum tomentosum	Y	N	Considered that all records are referrable to *Clerodendrum tomentosum* var. *tomentosum*, material collected by Umwelt from representative quadrats
Corymbia candida	Y	N	Considered that all records are referrable to *Corymbia candida* var. *candida*, material collected by Umwelt from representative quadrats
Cucumis argenteus	Y	N	Misidentification of *Cucumis variabilis*, material collected by Umwelt from quadrat
?Cynodon prostratus	N	N	Could not be relocated in quadrat; removed from flora census as identity unclear
***Cyperus* sp.**	Y	N	Identified as *Cyperus ixiocarpus*, material collected by Umwelt from quadrat
Dentella ?misera	Y	N	Misidentification of *Dentella asperata*, material collected by Umwelt from quadrat
Drosera finlaysoniana	N	Y	Could not be relocated in quadrat, however identification likely correct as taxon is distinctive and taxon recorded during the 2024 survey
Eleocharis geniculata	N	Y	Could not be relocated in quadrat, however identification likely correct as taxon is distinctive
Eriachne festucacea	Y	N	Misidentification of *Eriachne benthamii*, material collected by Umwelt from quadrat

Taxon	Verified in Field?	Treated as Additional Taxon?	Reasoning
Eriachne glauca	Y	N	Considered that all records are referrable to *Eriachne glauca* var. *glauca*, material collected by Umwelt from representative quadrats
***Eriachne* sp.**	N	N	Could not be relocated in quadrat; removed from flora census as identity unclear
Euphorbia australis* var. *hispidula	Y	N	Misidentification of *Euphorbia vaccaria* var. *vaccaria* or *Euphorbia australis* var. *subtomentosa*, material collected by Umwelt from quadrats
Euphorbia coghlanii	Y	N	Misidentification of *Euphorbia psilosperma* and/or *Euphorbia trigonosperma*, material collected by Umwelt from quadrats
***Euphorbia* sp.**	Y	N	Identified as *Euphorbia myrtoides*, material collected by Umwelt from quadrat
Euphorbia vaccaria	Y	N	Considered that all records are referrable to *Euphorbia vaccaria* var. *vaccaria*, material collected by Umwelt from representative quadrats
Evolvulus alsinoides* var. *decumbens	N	Y	Could not be relocated in quadrat, however identification likely correct as taxon is distinctive
Fimbristylis microcarya	N	Y	Could not be relocated in quadrat, however identification likely correct as taxon is distinctive
Grevillea wickhamii	Y	N	Considered that all records are referrable to *Grevillea wickhamii* subsp. *aprica*, material collected by Umwelt from representative quadrats
Indigofera trita	Y	N	Considered that all records are referrable to *Indigofera trita* subsp. *trita*, material collected by Umwelt from representative quadrats
Poaceae sp.	N	N	Could not be relocated in quadrat; removed from flora census as identity unclear
Polygala longifolia	Y	N	Misidentification of *Polygala galeocephala*, material collected by Umwelt from quadrat
Polymeria ambigua	Y	N	Misidentification of *Polymeria mollis*, material collected by Umwelt from quadrat
****Portulaca pilosa***	Y	N	Misidentification of *Portulaca filifolia*, material collected by Umwelt from quadrat
Ptilotus carinatus	Y	N	Misidentification of *Ptilotus exaltatus*, material collected by Umwelt from quadrat

Taxon	Verified in Field?	Treated as Additional Taxon?	Reasoning
Ptilotus incanus	N	N	Misidentification - could not be relocated in quadrat, however known habitat (rocky sites) not present at quadrat locations (both sandy flats)
?*Sclerolaena* sp.	N	N	Could not be relocated in quadrat; removed from flora census as identity unclear
Sesbania cannabina	N	Y	Could not be relocated in quadrat, however identification likely correct as taxon is distinctive
Sida clementii	Y	N	Misidentification of *Sida echinocarpa* or *Sida arenicola*, material collected by Umwelt from quadrats
***Sida* sp.**	N	N	Could not be relocated in quadrat; removed from flora census as identity unclear
Stackhousia intermedia	N	Y	Could not be relocated in quadrat, not possible to verify identity, but within known range and potential habitat present at location
Triumfetta ?appendiculata	Y	N	Misidentification of *Triumfetta deserticola* or *Triumfetta ramosa*, material collected from quadrats
Triumfetta chaetocarpa	Y	N	Misidentification of *Triumfetta deserticola* or *Triumfetta ramosa*, material collected from quadrats
Triumfetta ?ramosa	Y	N	Misidentification of *Triumfetta deserticola*, material collected from quadrats
Yakirra australiensis	Y	N	Considered that all records are referrable to *Panicum australiense* var. *australiense*, material collected by Umwelt from representative quadrats



APPENDIX F

Raw Data Recorded within Quadrats and Relevés in the Survey Area

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

Site Name:	HC01
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	12/07/2022
GPS Location:	GDA94 Zone 50 640916.45E 7709997.98N
Orientation:	90/180
Community:	1
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Loamy sand (other)
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	2-10%
CF Sizes:	2-6mm, 6-20mm, 20-60mm
CF Types:	Quartz
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle, (other) - Track nearby
Fire:	>10 years
Habitat:	Hummock grassland over isolated ephemeral herbs and isolated low shrubs.

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia stellaticeps*, *Commelina ensifolia*, *Euphorbia tannensis* subsp. *eremophila*
Mid Stratum 2:	*Triodia epactia*, *Triodia longiceps*
Lower Stratum 1:	*Aristida hygrometrica*, *Eriachne obtusa*, *Fimbristylis dichotoma*
Lower Stratum 2:	*Calandrinia stagnensis*, *Polycarpaea corymbosa* var. *corymbosa*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia stellaticeps	0.8		0.1
Aristida hygrometrica	0.3		0.1
Bulbostylis barbata	0.3		0.1
Calandrinia pentavalvis	0.3		0.1
Calandrinia stagnensis	0.3		0.1
Commelina ensifolia	0.5		0.1
Eriachne obtusa	0.2		0.1
Euphorbia tannensis subsp. *eremophila*	0.4		0.1
Evolvulus alsinoides var. *villosicalyx*	0.05		0.1
Fimbristylis dichotoma	0.1		0.1

Grona filiformis	0.12		0.1
Polycarpaea corymbosa var. *corymbosa*	0.06		0.1
Portulaca cyclophylla	0.01		0.1
?*Senna notabilis*	0.01		0.1
Sida sp. Rabbit Flat (B.J. Carter 626)	0.2		0.1
Streptoglossa decurrens	0.01		0.1
Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	0.1		0.1
Trianthema triquetrum	0.01		0.1
Triodia epactia	0.4		0.1
Triodia longiceps	0.6		45
Wahlenbergia tumidifructa	0.3		0.1

PHOTOS

Site Name:	HC02
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	12/07/2022
GPS Location:	GDA94 Zone 50 641317.12E 7709259.25N
Orientation:	90/180
Community:	1
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Loamy sand (other)
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	10-20%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	Quartz
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle, (other) - Track nearby
Fire:	>10 years
Habitat:	Isolated clumps of shrubs over hummock grassland over isolated herbs

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia stellaticeps	0.9		0.2
Calandrinia stagnensis	0.05		0.01
Commelina ensifolia	0.5		0.02
Cynodon prostratus	0.05		0.01
Cyperus squarrosus	0.05		0.01
Dactyloctenium radulans	0.05		0.01
Eragrostis crateriformis (P3)	0.12	5	0.01
Eragrostis dielsii	0.1		0.01
Fimbristylis dichotoma	0.25		0.02
Ipomoea coptica	0.1		0.01
Portulaca cyclophylla	0.03		0.02
Portulaca oleracea	0.02		0.01
Rhynchosia minima	0.2		0.01
Streptoglossa decurrens	0.03		0.01
Trianthema triquetrum	0.03		0.01
Triodia longiceps	0.4		30
Wahlenbergia tumidifructa	0.12		0.01

PHOTOS

Site Name:	HC03
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	12/07/2022
GPS Location:	GDA94 Zone 50 641984.74E 7708822.8N
Orientation:	90/180
Community:	3
Landform Type:	Flat
Slope Class:	Level (0 degrees)
Soil Type:	Clay Loam
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>10 years
Habitat:	Low woodland over low open shrubland over sparse herbs and grasses.

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon macrum	0.7		0.1
Abutilon otocarpum	0.5	20	0.5
Acacia colei	7		6
Acacia sphaerostachya	1.5		0.2
Acacia stellaticeps	0.9		0.5
Acacia trachycarpa	7		4
Acacia trachycarpa x tumida var. pilbarensis	4		2
Acacia tumida var. *pilbarensis*	5		8
Afrohybanthus aurantiacus	0.4		0.1
Alternanthera nana	0.2		0.01
Aristida holathera var. *holathera*	0.5		0.5
Bonamia media	0.2		0.2
Bulbostylis barbata	0.03		0.01
Carissa lanceolata	1.2		0.1
Chrysopogon fallax	0.9		2
Corchorus elachocarpus	0.4		0.1
Corchorus incanus subsp. *incanus*	0.4		0.01
Corymbia candida subsp. *candida*	10		25
Dactyloctenium radulans	0.02		0.01
Dysphania rhadinostachya subsp. *rhadinostachya*	0.04		0.01
Eragrostis eriopoda	0.45		0.01

Eriachne obtusa	0.25		0.01
Eucalyptus victrix	10		1
Euphorbia trigonosperma	0.2		0.01
Evolvulus alsinoides var. *villosicalyx*	0.2		0.03
Goodenia lamprosperma	0.4		0.01
Gossypium australe	0.8		0.2
Hibiscus leptocladus	0.4		0.02
Hibiscus sturtii var. *campylochlamys*	0.6		0.1
Indigofera monophylla	1.1		5
Melaleuca lasiandra	1.5		0.5
Paspalidium rarum	0.1		0.01
Pluchea ferdinandi-muelleri	0.15		0.01
Pluchea tetranthera	1.2		2
Polycarpaea corymbosa var. *corymbosa*	0.03		0.01
Portulaca oleracea	0.01		0.01
Rhynchosia minima			0.5
Senna notabilis	0.3		0.1
Sida arenicola	0.9		0.2
Sida fibulifera	0.2		0.1
Sida rohlenae subsp. *rohlenae*	0.8		2
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.6		1
Solanum cleistogamum	0.3		0.01
Solanum phlomoides	1.1		0.1
Streptoglossa decurrens	0.01		0.01
Synaptantha tillaeacea var. *tillaeacea*	0.01		0.01
Tinospora smilacina			0.01
Trichodesma zeylanicum	0.01		0.01
Trigastrotheca molluginea	0.2		1
Triodia epactia	0.6		0.5
Vigna sp. Hamersley Clay (A.A. Mitchell PRP 113)			0.01
Waltheria indica	0.4		0.3

PHOTOS

Site Name:	HC04
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	13/07/2022
GPS Location:	GDA94 Zone 50 641703.75E 7709892.31N
Orientation:	90/180
Community:	3
Landform Type:	Flat
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	>10 years
Habitat:	Low woodland over sparse shrubland over open grassland.

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	1.8		0.1
Acacia ancistrocarpa	5		4.5
Acacia colei	2		1
Acacia sericophylla	3		0.5
Acacia trachycarpa	5		1
Acacia tumida var. *pilbarensis*	4		2
Afrohybanthus aurantiacus	0.6		3
Aristida holathera var. *holathera*	0.6		1
Bonamia erecta			
Bonamia media	0.05		0.01
Carissa lanceolata	1.3		0.1
Cassytha capillaris			0.01
**Cenchrus ciliaris*	0.2		0.01
Chrysopogon fallax	1.1		1
Corchorus elachocarpus	0.4		0.02
Corchorus incanus subsp. *incanus*			
Corymbia candida subsp. *candida*	9		1
Corymbia hamersleyana	8		6
Dysphania rhadinostachya subsp. *rhadinostachya*			
Eriachne obtusa	0.3		0.01

Evolvulus alsinoides var. *villosicalyx*	0.1		0.01
Goodenia lamprosperma	0.4		6
Goodenia nuda	0.4		0.05
Gossypium australe	0.4		0.01
Hibiscus sturtii var. *campylochlamys*	0.3		0.01
Indigofera monophylla	0.9		3
Marsilea hirsuta	0.15		0.01
Pimelea ammocharis	0.8		0.01
Pluchea tetranthera	0.5		0.01
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.4		0.01
Trigastrotheca molluginea			
Triodia epactia	0.4		20
Waltheria indica	0.4		0.01

PHOTOS

Site Name:	HC05
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	13/07/2022
GPS Location:	GDA94 Zone 50 641774.86E 7710482.52N
Orientation:	90/180
Community:	1
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	2-10%
CF Sizes:	2-6mm, 6-20mm, 20-60mm
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>10 years
Habitat:	Open hummock grassland over low shrubs over low herbs

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Triodia epactia*, *Triodia longiceps*
Lower Stratum 1:	*Commelina ensifolia*, *Pluchea tetranthera*
Lower Stratum 2:	*Bulbostylis barbata*, *Portulaca cyclophylla*, *Trianthema triquetrum*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Bulbostylis barbata	0.03		0.01
Calandrinia stagnensis	0.01		0.01
**Cenchrus ciliaris*	0.2		0.01
Commelina ensifolia	0.4		0.02
Corchorus elachocarpus			
Cyperus squarrosus	0.04		0.01
Euphorbia vaccaria var. *vaccaria*	0.01		0.01
Fimbristylis dichotoma	0.15		0.01
Ipomoea coptica	0.07		0.01
Pluchea tetranthera	0.4		0.01
Polycarpaea corymbosa var. *corymbosa*	0.04		0.01
Portulaca cyclophylla	0.01		0.02
Solanum phlomoides			
Sporobolus australasicus	0.15		0.01
Streptoglossa decurrens	0.01		0.01

Trianthema triquetrum	0.05		0.01
Triodia epactia	0.4		0.02
Triodia longiceps	0.7		35

PHOTOS

Site Name:	HC06
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/07/2022
GPS Location:	GDA94 Zone 50 639296.37E 7715120.3N
Orientation:	90/180
Community:	5
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	None
Fire:	>10 years
Habitat:	Low open woodland over open shrubland over closed hummock grassland.

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	4		5
Acacia colei	4		3
Acacia stellaticeps	1.2		10
Acacia trudgeniana	2.5		2
Amaranthus undulatus			
Bonamia alatisemina			
Bonamia media	0.05		0.01
Carissa lanceolata	1.5		1
**Cenchrus ciliaris*	0.3		2
**Cenchrus setiger*	0.5		1
Chrysopogon fallax	1.3		1
Corchorus incanus subsp. *incanus*	0.5		0.1
Corymbia candida subsp. *candida*	5		6
Cucumis variabilis			
Cullen lachnostachys	0.01		0.01
Evolvulus alsinoides var. *villosicalyx*	0.2		0.01
Goodenia nuda	0.4	34	0.2
Gossypium australe	0.01		0.01
Hakea lorea subsp. *lorea*	2.5		0.1
Indigofera colutea	0.01		0.01
Indigofera monophylla	0.4		0.1

Ipomoea polymorpha	0.01		0.01
Rhynchosia minima			0.1
Senna artemisioides subsp. *helmsii*	0.8		0.01
Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	0.1		0.01
Tephrosia supina	0.3		0.01
Tinospora smilacina			0.1
Triodia epactia	0.4		75

PHOTOS

Site Name:	HC07
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/07/2022
GPS Location:	GDA94 Zone 50 643518.7E 7706616.93N
Orientation:	90/180
Community:	4
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	>10 years
Habitat:	Low open woodland over shrubland over hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia trachycarpa*, *Acacia tumida* var. *pilbarensis*, *Corymbia zygophylla*
Mid Stratum 1:	*Acacia stellaticeps*, *Dodonaea coriacea*, *Sida arenicola*
Lower Stratum 1:	*Triodia epactia*
Lower Stratum 2:	*Chrysopogon fallax*, *Eragrostis eriopoda*, *Paraneurachne muelleri*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	4		0.5
Acacia stellaticeps	1.5		30
Acacia trachycarpa	5		1
Acacia trachycarpa x tumida var. pilbarensis	5		0.2
Acacia tumida var. *pilbarensis*	5		3
Aristida holathera var. *holathera*	0.4		0.01
Boerhavia coccinea	0.01		0.01
Bonamia alatisemina	0.2		0.1
Bulbostylis barbata	0.03		0.01
Cassytha capillaris			0.1
Chrysopogon fallax	0.5		0.01
Corymbia zygophylla	7		2
Dodonaea coriacea	0.8		0.5

Dysphania rhadinostachya subsp. *rhadinostachya*	0.02		0.01
Eragrostis eriopoda	0.4		0.1
Euphorbia trigonosperma	0.1		0.01
Goodenia microptera	0.3		0.01
Hakea lorea subsp. *lorea*	3		1
Paraneurachne muelleri	0.4		0.01
Ptilotus astrolasius	0.5		0.02
Sida arenicola	1.3		1
Sida sp. Pindan (B.G. Thomson 3398)	0.6		0.01
Tinospora smilacina			0.01
Trigastrotheca molluginea	0.15		0.05
Triodia epactia	0.4		45

PHOTOS

Site Name:	HC08
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/07/2022
GPS Location:	GDA94 Zone 50 642629.07E 7707005.3N
Orientation:	90/180
Community:	4
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clayey Sand
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Very little cattle disturbance
Fire:	>10 years
Habitat:	Isolated clumps of tall shrubs over open shrubland over hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 2:	*Acacia sphaerostachya*, *Acacia trachycarpa*, *Acacia tumida* var. *pilbarensis*
Mid Stratum 1:	*Acacia stellaticeps*, *Pluchea ferdinandi-muelleri*, *Pluchea tetranthera*
Mid Stratum 2:	*Leptosema anomalum*, *Trigastrotheca molluginea*
Lower Stratum 1:	*Triodia epactia*
Lower Stratum 2:	*Aristida holathera* var. *holathera*, *Eragrostis eriopoda*, *Eriachne obtusa*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia colei	1.2		0.1
Acacia sphaerostachya	2		0.2
Acacia stellaticeps	1.3		1.2
Acacia trachycarpa	2.2		0.2
Acacia tumida var. *pilbarensis*	2		0.3
Aristida holathera var. *holathera*	0.4		0.1
Bonamia alatisemina	0.02		0.01
Cassytha capillaris			0.01
Cyperus blakeanus	0.4		0.01
Eragrostis eriopoda	0.5		0.5
Eriachne obtusa	0.4		1
Leptosema anomalum	0.25		0.01

Pluchea ferdinandi-muelleri	0.9		1
Pluchea tetranthera	1		5
Sida arenicola	1.2		0.1
Trigastrotheca molluginea	0.15		0.1
Triodia epactia	0.7		32
Zornia muelleriana subsp. *congesta*	0.03		0.01

PHOTOS

Site Name:	HC09
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/07/2022
GPS Location:	GDA94 Zone 50 643118.84E 7707186.13N
Orientation:	90/180
Community:	8
Landform Type:	Other, Low Rise (other)
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	SW
Soil Type:	Sandy Clay Loam
Soil Colour:	Orange
Rock Outcrop:	Calcrete, 2-10% bedrock exposed
CF Abundance:	50-90%
CF Sizes:	60-200mm, 200-600mm, 600-2000mm
CF Types:	Calcrete
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	>10 years
Habitat:	Isolated trees over tall open shrubland over sparse shrubland over open hummock grassland

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	2		0.1
Acacia ancistrocarpa	3		0.1
Acacia bivenosa	2.5		3
Acacia colei	3		0.1
Acacia inaequilatera	3		0.5
Acacia sericophylla	0.4		0.01
Acacia stellaticeps	0.8		0.2
Bonamia pilbarensis	0.02		0.01
Carissa lanceolata	0.5		0.01
Cassytha capillaris			0.1
Corymbia hamersleyana	4		0.5
Eriachne mucronata	0.4		1
Goodenia stobbsiana	0.2		0.01
Grevillea wickhamii subsp. *aprica*	2.5		3.5
Hakea lorea subsp. *lorea*	2.5		1
Hibiscus sturtii var. *campylochlamys*	0.3		0.01

Petalostylis labicheoides	1.5		1
Pimelea ammocharis	1.1		0.02
Pluchea tetranthera	0.4		0.01
Ptilotus axillaris	0.05		0.01
Ptilotus calostachyus	1.1		0.5
Scaevola amblyanthera var. *centralis*	0.3		0.1
Senna glutinosa subsp. *glutinosa*	0.4		0.01
Senna symonii	2		0.1
Triodia epactia	0.6		28

PHOTOS

Site Name:	HC10
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/07/2022
GPS Location:	GDA94 Zone 50 639215.67E 7712456.11N
Orientation:	90/180
Community:	5
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	>10 years
Habitat:	Sparse tall shrubland over open shrubland over hummock grassland

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon sp. Pritzelianum (S. van Leeuwen 5095) (P3)	1.8		0.02
Acacia colei	2		0.5
Acacia stellaticeps	1.5		0.1
Acacia trudgeniana	2.5		1
Aristida holathera var. *holathera*	0.5		4
Arivela viscosa	0.4		0.01
Boerhavia coccinea	0.2		0.1
Bonamia alatisemina			0.2
Bonamia erecta	0.2		0.2
Bulbostylis barbata	0.03		0.01
Cajanus marmoratus			0.1
Cassytha capillaris			1
Corchorus incanus subsp. *incanus*	1.1		1
Cucumis variabilis			0.01
Cullen stipulaceum	0.2		0.01
Dolichandrone occidentalis	4		0.5
Dysphania rhadinostachya subsp. *rhadinostachya*	0.05		0.01
Eragrostis eriopoda	0.4		1
Eriachne obtusa	0.3		2

Euphorbia vaccaria var. *vaccaria*	0.01		0.01
Evolvulus alsinoides var. *villosicalyx*	0.2		0.02
Glycine tomentella			0.01
Goodenia microptera	0.5		0.1
Grevillea pyramidalis subsp. *leucadendron*	2		0.5
Hibiscus leptocladus	0.9		0.02
Indigofera monophylla	0.6		0.01
Panicum australiense var. *australiense*	0.05		0.01
Paraneurachne muelleri	0.4		0.5
Perotis rara	0.1		0.01
Pimelea ammocharis	1.5		3
Pluchea tetranthera	0.8		0.01
Polycarpaea corymbosa var. *corymbosa*	0.1		0.01
Ptilotus axillaris	0.2		0.02
Ptilotus fusiformis			
Sida arsiniata	0.8		0.01
Sida sp. Pindan (B.G. Thomson 3398)	0.9		0.1
Streptoglossa decurrens	0.03		0.01
Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	0.4		0.02
Trichodesma zeylanicum	0.5		0.01
Trigastrotheca molluginea	0.2		0.1
Triodia epactia	0.9		25
Zornia muelleriana subsp. *congesta*	0.1		0.01

PHOTOS

Site Name:	HC11
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	16/07/2022
GPS Location:	GDA94 Zone 50 642328.93E 7708102.44N
Orientation:	90/180
Community:	4
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Patches of clayey sand (other)
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle, (other) - Track nearby
Fire:	> 10 years
Habitat:	Isolated trees over isolated clumps of tall shrubs over sparse shrubland over open hummock grassland over sparse tussock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Hakea lorea* subsp. *lorea*, *Melaleuca lasiandra*
Upper Stratum 2:	*Acacia colei*, *Acacia stellaticeps*, *Acacia trachycarpa*
Mid Stratum 1:	*Pluchea tetranthera*, *Sida rohlenae* subsp. *rohlenae*
Lower Stratum 1:	*Triodia epactia*, *Triodia longiceps*
Lower Stratum 2:	*Aristida holathera* var. *holathera*, *Eriachne obtusa*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia colei	2		0.01
Acacia stellaticeps	2		1
Acacia trachycarpa	2.1		0.2
Aristida holathera var. *holathera*	0.5		2
Boerhavia coccinea	0.1		0.01
Bulbostylis barbata	0.05		0.02
Byblis pilbarana	0.05		0.01
Calandrinia stagnensis	0.1		0.05
Cassytha capillaris			3
Chrysopogon fallax	0.6		0.05
Corchorus elachocarpus	0.4		0.01

Crotalaria ramosissima	0.02		0.01
Cucumis variabilis	0.01		0.01
Cyperus castaneus	0.02		0.01
Dysphania rhadinostachya subsp. *rhadinostachya*	0.02		0.01
Eriachne obtusa	0.5		8
Euphorbia trigonosperma	0.01		0.01
Fimbristylis dichotoma	0.15		0.01
Grona filiformis	0.1		0.01
Hakea lorea subsp. *lorea*	4		0.05
Hibiscus brachychlaenus	0.5		0.01
Ipomoea polymorpha	0.03		0.01
Melaleuca lasiandra	2.5		0.5
Mitrasacme connata	0.05		0.01
Panicum australiense var. *australiense*	0.05		0.01
Paspalidium clementii	0.05		0.01
Pluchea tetranthera	1.1		0.5
Polycarpaea corymbosa var. *corymbosa*	0.06		0.01
Ptilotus fusiformis	0.25		0.01
Senna notabilis	0.01		0.01
Sida arenicola	0.7		0.01
Sida rohlenae subsp. *rohlenae*	0.8		0.1
Sida sp. Rabbit Flat (B.J. Carter 626)	0.2		0.02
Solanum cleistogamum	0.4		0.02
Stackhousia sp. swollen gynophore (W.R. Barker 2041)	0.1		0.01
Tinospora smilacina			0.01
Trigastrotheca molluginea	0.15		0.2
Triodia epactia	0.7		28
Triodia longiceps	0.5		1
Zornia muelleriana subsp. *congesta*	0.15		0.02

PHOTOS

Site Name:	HC12
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	16/07/2022
GPS Location:	GDA94 Zone 50 642638.95E 7708430.82N
Orientation:	90/180
Community:	4
Landform Type:	Other, Low rise (other)
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	W
Soil Type:	Sandy Loam
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	None
Fire:	>10 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia hamersleyana*, *Dolichandrone occidentalis*, *Hakea lorea* subsp. *lorea*
Upper Stratum 2:	*Acacia bivenosa*, *Acacia inaequilatera*, *Acacia trachycarpa*
Mid Stratum 1:	*Acacia stellaticeps*, *Indigofera monophylla*, *Tephrosia rosea* var. *rosea*
Lower Stratum 1:	*Triodia epactia*
Lower Stratum 2:	*Cassytha capillaris*, *Euphorbia tannensis* subsp. *eremophila*, *Polymeria mollis*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon otocarpum	0.4		0.03
Acacia ancistrocarpa	0.4		0.01
Acacia bivenosa	2.5		0.05
Acacia inaequilatera	3		0.1
Acacia stellaticeps	1.4		1
Acacia trachycarpa	3		55
**Aerva javanica*	1.2		0.1
Aristida holathera var. *holathera*	0.5		0.1
Boerhavia coccinea	0.15		0.01
Bulbostylis barbata	0.02		0.01
Cajanus marmoratus			
Cassytha capillaris			1

Chrysopogon fallax	0.7		0.02
Codonocarpus cotinifolius	1.7		0.01
Corchorus elachocarpus	0.7		0.05
Corymbia hamersleyana	5		1
Crotalaria ramosissima	0.02		0.01
Cucumis variabilis			0.01
Dolichandrone occidentalis	4		0.2
Dysphania rhadinostachya subsp. *rhadinostachya*	0.02		0.01
Eragrostis eriopoda	0.4		0.01
Euphorbia tannensis subsp. *eremophila*	0.8		0.1
Evolvulus alsinoides var. *villosicalyx*	0.2		0.01
Goodenia microptera	0.4		0.01
Hakea lorea subsp. *lorea*	4		0.5
Hibiscus brachychlaenus	1.3		0.03
Indigofera monophylla	1		0.5
Melaleuca lasiandra	2.2		0.01
Paraneurachne muelleri	0.4		0.05
Polymeria mollis	0.2		0.2
Ptilotus astrolasius	0.8		0.05
Senna artemisioides subsp. *helmsii*			
Senna notabilis	0.4		0.01
Sida arenicola	0.9		0.05
Sida rohlenae subsp. *rohlenae*	0.7		0.1
Sida sp. Pindan (B.G. Thomson 3398)	1.1		0.2
Sida sp. Rabbit Flat (B.J. Carter 626)	0.2		0.02
Solanum cleistogamum	0.4		0.02
Solanum phlomoides	0.5		0.01
Tephrosia rosea var. *rosea*	1.2		0.7
Tinospora smilacina			0.01
Trigastrotheca molluginea	0.2		0.05
Triodia epactia	0.8		75
Triumfetta ramosa	1.1		0.02

PHOTOS

Site Name:	HC13
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	16/07/2022
GPS Location:	GDA94 Zone 50 641493.4E 7710593.81N
Orientation:	90/180
Community:	4
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	>10 years
Habitat:	Closed shrubland over closed grassland with isolated tall shrubs

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia acradenia*, *Acacia ancistrocarpa*, *Acacia sphaerostachya*
Upper Stratum 2:	*Acacia stellaticeps*
Lower Stratum 1:	*Triodia epactia*
Lower Stratum 2:	*Aristida inaequiglumis*, *Chrysopogon fallax*, *Paraneurachne muelleri*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon sp. Pritzelianum (S. van Leeuwen 5095) (P3)	0.6	2	0.01
Acacia acradenia	2.5		0.05
Acacia ancistrocarpa	3		0.2
Acacia sericophylla	2.2		0.01
Acacia sphaerostachya	2.5		0.1
Acacia stellaticeps	1.6		85
Aristida inaequiglumis	0.8		0.02
Bonamia alatisemina	0.2		0.01
Cassytha capillaris			0.5
Chrysopogon fallax	0.8		0.02
Corchorus elachocarpus			
Eragrostis eriopoda	0.4		0.01
Eucalyptus victrix			

Evolvulus alsinoides var. *villosicalyx*	0.25		0.01
Paraneurachne muelleri	0.4		0.2
Pluchea tetranthera	0.6		0.2
Ptilotus astrolasius			
Ptilotus axillaris			
Sida arenicola	0.8		0.1
Solanum lasiophyllum	0.6		0.1
Tinospora smilacina			
Trigastrotheca molluginea			
Triodia epactia	0.5		75

PHOTOS

Site Name:	HC14
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	17/07/2022
GPS Location:	GDA94 Zone 50 640387.76E 7712056.2N
Orientation:	90/180
Community:	5
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	>10 years
Habitat:	Tall open shrubland over open shrubland over hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia ancistrocarpa*, *Acacia melleodora*, *Acacia sphaerostachya*
Mid Stratum 1:	*Abutilon* sp. Pritzelianum (S. van Leeuwen 5095), *Acacia stellaticeps*, *Indigofera monophylla*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon sp. Pritzelianum (S. van Leeuwen 5095) (P3)	1.5	33	0.5
Acacia ancistrocarpa	3.5		1
Acacia colei	0.9		0.01
Acacia melleodora	2.5		0.1
Acacia sphaerostachya	2.5		0.03
Acacia stellaticeps	1.3		2
Acacia trudgeniana	0.9		0.02
Aristida holathera var. *holathera*	0.6		0.02
Boerhavia coccinea	0.2		0.01
Bonamia alatisemina			0.03
Bulbostylis barbata	0.02		0.01
Cajanus marmoratus			0.01
Cassytha capillaris			0.5

Chrysopogon fallax	1.2		0.01
Commelina ensifolia	0.5		0.01
Corchorus incanus subsp. *incanus*	0.8		0.5
Crotalaria medicaginea var. *neglecta*	0.1		0.01
Eragrostis eriopoda	0.4		0.01
Eriachne obtusa	0.4		0.02
Euphorbia vaccaria var. *vaccaria*	0.01		0.01
Evolvulus alsinoides var. *villosicalyx*	0.2		0.01
Goodenia microptera	0.4		0.02
Hibiscus leptocladus	0.9		0.1
Indigofera linifolia	0.2		0.1
Indigofera monophylla	1.2		0.6
Pluchea tetranthera	0.8		0.01
Polycarpaea corymbosa var. *corymbosa*	0.05		0.01
Polymeria mollis	0.1		0.01
Sida arenicola	1.2		0.01
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.6		0.02
Sida sp. Pindan (B.G. Thomson 3398)	0.8		0.1
Trigastrotheca molluginea	0.2		0.02
Triodia epactia	0.4		35

PHOTOS

Site Name:	HC15
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	17/07/2022
GPS Location:	GDA94 Zone 50 638785.12E 7714411.38N
Orientation:	90/180
Community:	1
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	2-10%
CF Sizes:	2-6mm, 6-20mm, 20-60mm
CF Types:	Alluvium deposits (other)
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle
Fire:	>10 years
Habitat:	Isolated shrubs over hummock grassland over sparse grassland

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia synchronicia*
Lower Stratum 1:	*Triodia epactia*, *Triodia longiceps*
Lower Stratum 2:	*Dactyloctenium radulans*, *Eriachne aristidea*, *Fimbristylis dichotoma*, *Iseilema dolichotrichum*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia bivenosa			
Acacia synchronicia	2		0.1
Aristida contorta	0.25		1
Bulbostylis barbata	0.01		0.01
Calandrinia stagnensis	0.01		0.01
Dactyloctenium radulans	0.05		0.05
Eriachne aristidea	0.25		0.02
Fimbristylis dichotoma	0.15		4
Iseilema dolichotrichum	0.1		0.02
Polycarpaea corymbosa var. *corymbosa*	0.05		0.01
Portulaca cyclophylla	0.01		0.01

Streptoglossa decurrens	0.05		0.01
Trianthema triquetrum	0.05		0.01
Triodia epactia	0.8		2
Triodia longiceps	0.5		11

PHOTOS

Site Name:	HC16
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	17/07/2022
GPS Location:	GDA94 Zone 50 638470.73E 7714671.22N
Orientation:	90/180
Community:	5
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm
CF Types:	Quartz
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	>10 years
Habitat:	Tall sparse shrubland over sparse shrubland over hummock grassland over sparse tussock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia colei*, *Acacia sabulosa*, *Grevillea pyramidalis* subsp. *leucadendron*
Mid Stratum 1:	*Acacia stellaticeps*, *Corchorus incanus* subsp. *incanus*, *Pimelea ammocharis*
Lower Stratum 1:	*Triodia epactia*
Lower Stratum 2:	*Aristida holathera* var. *holathera*, *Eragrostis eriopoda*, *Eriachne obtusa*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon sp. Pritzelianum (S. van Leeuwen 5095) (P3)	0.5	2	0.01
Acacia ancistrocarpa	2.5		0.1
Acacia colei	3.5		1
Acacia sabulosa	2.2		0.3
Acacia stellaticeps	1.5		2.5
Aristida holathera var. *holathera*	0.5		4
Aristida inaequiglumis	0.9		0.1
Bonamia alatisemina	0.2		0.01
Bulbostylis barbata	0.05		0.01

Cajanus marmoratus			1
**Cenchrus ciliaris*	0.5		0.1
Chrysopogon fallax	1.2		0.01
Corchorus incanus subsp. *incanus*	0.9		2
Cullen lachnostachys	0.5		0.01
Dysphania rhadinostachya subsp. *rhadinostachya*	0.05		0.01
Eragrostis eriopoda	0.4		2.5
Eriachne obtusa	0.4		2
Euphorbia australis var. *subtomentosa*	0.25		0.01
Evolvulus alsinoides var. *villosicalyx*	0.25		0.02
Goodenia microptera	0.4		0.02
Grevillea pyramidalis subsp. *leucadendron*	4		0.2
Pimelea ammocharis	1.1		1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.7		0.01
Solanum phlomoides	0.4		0.01
Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	0.3		0.01
Trigastrotheca molluginea	0.2		0.01
Triodia epactia	0.9		15

PHOTOS

Site Name:	HC17
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	17/07/2022
GPS Location:	GDA94 Zone 50 639254.48E 7714663.35N
Orientation:	90/180
Community:	2
Landform Type:	Closed Depression
Slope Class:	Level (0 degrees)
Soil Type:	Light Clay
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	6-20mm, 20-60mm
Disturbance:	Animal Disturbance - Cattle
Fire:	>10 years
Habitat:	Open tussock grassland over sparse hummock grassland over isolated clumps of sedges

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Aeschynomene indica	0.7		0.01
Byblis pilbarana	0.01		0.01
Calandrinia pumila	0.01		2
Centipeda minima subsp. *macrocephala*	0.05		
Chrysopogon fallax	1.1		0.1
Cyperus iria	0.3		0.1
Cyperus leptocarpus	0.05		1
Cyperus pulchellus	0.1		0.1
Eriachne benthamii	0.9		12
Eriachne flaccida	0.6		7
Eriachne glauca var. *glauca*	0.4		0.1
Fimbristylis dichotoma	0.15		0.1
Ipomoea coptica	0.01		0.2
Marsilea hirsuta	0.08		1
Neptunia dimorphantha	0.2		0.5
Paspalidium rarum	0.2		0.01
Scleromitrion galioides	0.05		0.01
Triodia epactia	0.5		2

PHOTOS

Site Name:	HC18
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	17/07/2022
GPS Location:	GDA94 Zone 50 639700.26E 7713510.95N
Orientation:	90/180
Community:	2
Landform Type:	Closed Depression
Slope Class:	Level (0 degrees)
Soil Type:	Light Clay
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	20-60mm, 60-200mm
CF Types:	Alluvium (other)
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	>10 years
Habitat:	Isolated clumps of hummock grasses over sparse tussock grassland over isolated clumps of sedges
Comments:	Aspect: depression

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Aeschynomene indica	0.2		0.01
Byblis pilbarana	0.05		0.01
Calandrinia pumila	0.02		0.01
Centipeda minima subsp. *macrocephala*	0.05		0.1
Cyperus iria	0.07		0.5
Cyperus leptocarpus	0.05		0.1
Cyperus pulchellus	0.07		0.01
Eriachne benthamii	1		1
Eriachne glauca var. *glauca*	0.15		0.1
Fimbristylis dichotoma	0.2		1
Ipomoea coptica	0.1		0.1
Marsilea hirsuta	0.05		0.5
Neptunia dimorphantha	0.2		0.1
Triodia epactia	0.6		5
Triodia longiceps	0.4		0.02
Wahlenbergia tumidifructa	0.2		0.01

PHOTOS

Site Name:	HC19
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	18/07/2022
GPS Location:	GDA94 Zone 50 640531.17E 7702124.1N
Orientation:	90/180
Community:	2
Landform Type:	Closed Depression
Slope Class:	Very Gently Inclined (1 degree)
Soil Type:	Sandy Clay
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	2-10%
CF Sizes:	20-60mm
CF Types:	Alluvium (other)
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	>10 years
Comments:	Aspect: depression

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Eriachne benthamii*, *Eriachne glauca* var. *glauca*, *Eriachne obtusa*
Mid Stratum 2:	*Triodia longiceps*
Lower Stratum 1:	*Cyperus squarrosus*, *Fimbristylis dichotoma*, *Goodenia lamprosperma*
Lower Stratum 2:	*Calandrinia pumila*, *Calandrinia stagnensis*, *Marsilea hirsuta*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Calandrinia pumila	0.01		2
Calandrinia stagnensis	0.05		0.1
Cyperus iria	0.3		0.1
Cyperus squarrosus	0.03		1
Eragrostis crateriformis (P3)	0.15	14	0.01
Eragrostis dielsii	0.03		0.01
Eriachne benthamii	0.9		20
Eriachne glauca var. *glauca*	0.4		3
Eriachne obtusa	0.3		0.1
Euphorbia tannensis subsp. *eremophila*	0.4		0.01
Fimbristylis dichotoma	0.15		2

Goodenia lamprosperma	0.4		2
Marsilea hirsuta	0.02		1
Portulaca cyclophylla	0.01		0.01
Trianthema triquetrum	0.1		0.01
Triodia longiceps	0.4		4
Triodia secunda	0.3		0.5
Wahlenbergia tumidifructa	0.15		0.01

PHOTOS

Site Name:	HC20
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	18/07/2022
GPS Location:	GDA94 Zone 50 640917.64E 7701950.6N
Orientation:	90/180
Community:	3
Landform Type:	Flat
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - G - Good
Disturbance:	Animal Disturbance - Trashed from cattle
Fire:	>10 years
Habitat:	Low woodland over tall shrubland over low shrubland over open grassland (climbers very dominant in this plot, not sure how to work that into the description)

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia colei*, *Acacia tumida* var. *pilbarensis*, *Cullen leucanthum*
Upper Stratum 2:	*Carissa lanceolata*, *Melaleuca lasiandra*
Mid Stratum 2:	*Afrohybanthus aurantiacus*, *Cassytha filiformis*, **Passiflora foetida* var. *hispida*, *Tinospora smilacina*
Lower Stratum 1:	**Cenchrus ciliaris*, **Cenchrus setiger*, *Eragrostis cumingii*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon lepidum	0.4		0.1
Abutilon otocarpum	0.5		0.1
Acacia colei	8		20
Acacia tumida var. *pilbarensis*	9		25
Afrohybanthus aurantiacus	1		10
Amaranthus undulatus	0.15		0.01
Aristida holathera var. *holathera*	0.6		0.1
Arivela viscosa	0.5		0.2
Calandrinia stagnensis	0.01		0.1
Carissa lanceolata	3		30
Cassytha filiformis			3

**Cenchrus ciliaris*	0.8		20
**Cenchrus setiger*	0.9		5
Chrysopogon fallax	0.8		0.1
Corchorus elachocarpus	0.7		2
Cucumis variabilis			0.1
Cullen leucanthum	5		18
Dactyloctenium radulans	0.2		0.2
Dysphania rhadinostachya subsp. *rhadinostachya*	0.2		0.1
Eragrostis crateriformis (P3)	0.15	123	0.1
Eragrostis cumingii	0.25		3
Euphorbia australis var. *subtomentosa*	0.25		0.01
Euphorbia trigonosperma	0.2		0.1
Evolvulus alsinoides var. *villosicalyx*	0.2		0.1
Grevillea wickhamii subsp. *aprica*	7		0.1
Hakea lorea subsp. *lorea*	6		0.3
Ipomoea muelleri			1
Melaleuca lasiandra	2.5		0.5
Paspalidium rarum	0.15		0.01
**Passiflora foetida* var. *hispida*			25
Perotis rara	0.1		0.5
Pimelea ammocharis	1.1		0.1
Pluchea tetranthera	0.6		0.1
Polymeria mollis	0.1		1
Portulaca oleracea	0.02		0.1
Pterocaulon sphacelatum	0.7		2
Rhynchosia minima			2
Senna notabilis	0.5		0.2
Sida fibulifera	0.3		0.2
Sida rohlenae subsp. *rohlenae*	1.2		2
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	1		2
Solanum phlomoides	0.5		0.2
Sporobolus australasicus	0.2		0.1
Tinospora smilacina			5
Triodia longiceps	0.4		0.01
Waltheria indica	0.3		0.5

PHOTOS

Site Name:	HC21
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	18/07/2022
GPS Location:	GDA94 Zone 50 640977.87E 7701671.69N
Orientation:	90/180
Community:	1
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Loamy sand (other)
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	>10 years
Habitat:	Isolated clumps of trees over sparse shrubland over open hummock grassland over sparse tussock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia colei*, *Hakea lorea* subsp. *lorea*
Mid Stratum 1:	*Acacia ancistrocarpa*, *Carissa lanceolata*
Mid Stratum 2:	*Acacia stellaticeps*, *Corchorus elachocarpus*, *Sida* sp. Pilbara (A.A. Mitchell PRP 1543)
Lower Stratum 1:	*Triodia epactia*, *Triodia longiceps*, *Triodia secunda*
Lower Stratum 2:	**Cenchrus ciliaris*, *Eragrostis eriopoda*, *Eriachne obtusa*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon lepidum	0.4		0.01
Abutilon sp. Pritzelianum (S. van Leeuwen 5095) (P3)	1.2	17	0.1
Acacia ancistrocarpa	2		0.1
Acacia colei	4		5
Acacia stellaticeps	1.1		1
Achyranthes aspera	0.7		0.01
Amaranthus undulatus	0.1		0.01
Boerhavia coccinea	0.2		0.01
Bulbostylis barbata	0.05		0.01

Byblis pilbarana	0.05		0.01
Calandrinia stagnensis	0.01		0.1
Calandrinia tepperiana	0.07		0.01
Carissa lanceolata	2		0.2
Cassytha filiformis			0.1
**Cenchrus ciliaris*	0.6		0.5
Corchorus elachocarpus	0.9		0.7
Cyperus castaneus	0.03		0.01
Dactyloctenium radulans	0.1		0.01
Dysphania rhadinostachya subsp. *rhadinostachya*	0.1		0.01
Eragrostis cumingii	0.1		0.01
Eragrostis eriopoda	0.4		5
Eriachne aristidea	0.2		0.01
Eriachne obtusa	0.3		1
Euphorbia tannensis subsp. *eremophila*	0.3		0.01
Euphorbia trigonosperma	0.1		0.01
Euphorbia vaccaria var. *vaccaria*	0.01		0.01
Evolvulus alsinoides var. *villosicalyx*	0.2		0.01
Fimbristylis dichotoma	0.1		0.5
Grona filiformis	0.05		0.01
Hakea lorea subsp. *lorea*	5		1
Hibiscus brachychlaenus	0.6		0.01
Indigofera linifolia	0.1		0.01
Panicum australiense var. *australiense*	0.05		0.01
Perotis rara	0.1		0.1
Pimelea ammocharis	1.1		0.2
Pluchea tetranthera	0.9		0.5
Polygala galeocephala	0.07		0.01
Polymeria mollis	0.1		0.01
Portulaca oleracea	0.01		0.01
Pterocaulon sphacelatum	0.01		0.01
Rhynchosia minima			0.1
Senna notabilis	0.3		0.01
Sida arenicola	0.9		0.01
Sida rohlenae subsp. *rohlenae*	0.9		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	1.1		1
Solanum phlomoides	0.8		0.01
Tribulus macrocarpus	0.15		0.01
Triodia epactia	0.4		1
Triodia longiceps	0.5		0.1
Triodia secunda	0.3		20
Wahlenbergia tumidifructa	0.2		0.01

PHOTOS

Site Name:	HC22
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	18/07/2022
GPS Location:	GDA94 Zone 50 642212.87E 7701528.99N
Orientation:	90/180
Community:	4
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	>10 years
Habitat:	Isolated low trees over open shrubland over open hummock grassland over open tussock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia ancistrocarpa*, *Hakea lorea* subsp. *lorea*
Mid Stratum 1:	*Acacia stellaticeps*, *Pluchea tetranthera*
Mid Stratum 2:	*Goodenia lamprosperma*, *Melaleuca lasiandra*
Lower Stratum 1:	*Triodia epactia*, *Triodia schinzii*
Lower Stratum 2:	*Chrysopogon fallax*, *Eragrostis eriopoda*, *Eriachne obtusa*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	3		0.5
Acacia colei	0.5		0.01
Acacia stellaticeps	1.2		15
Bonamia alatisemina	0.2		0.01
Chrysopogon fallax	1.6		0.1
Dodonaea coriacea	1.4		0.01
Eragrostis eriopoda	0.4		10
Eriachne obtusa	0.4		12
Goodenia lamprosperma	0.3		3
Goodenia microptera	0.05		0.01
Hakea lorea subsp. *lorea*	3		0.1

Melaleuca lasiandra	1.1		0.5
Pluchea ferdinandi-muelleri	0.9		0.1
Pluchea tetranthera	0.9		14
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.4		0.1
Solanum phlomoides	0.4		0.01
Stemodia grossa	0.9		0.2
Trigastrotheca molluginea	0.2		0.1
Triodia epactia	0.6		6
Triodia schinzii	0.6		12

PHOTOS

Site Name:	HC23
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	19/07/2022
GPS Location:	GDA94 Zone 50 640262.9E 7703275.74N
Orientation:	90/180
Community:	1
Landform Type:	Other, Undulating plain (other)
Slope Class:	Level (0 degrees)
Soil Type:	Loamy sand (other)
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	>10 years
Habitat:	Hummock grassland over sparse tussock grassland over sparse herbs and sedges

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Triodia epactia*, *Triodia longiceps*, *Triodia secunda*
Mid Stratum 2:	*Aristida holathera* var. *holathera*, *Eriachne obtusa*
Lower Stratum 1:	*Byblis pilbarana*, *Calandrinia stagnensis*, *Calandrinia tepperiana*, *Polycarpaea corymbosa* var. *corymbosa*, *Wahlenbergia tumidifructa*
Lower Stratum 2:	*Bulbostylis barbata*, *Cyperus squarrosus*, *Fimbristylis dichotoma*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Aristida holathera var. *holathera*	0.6		0.05
Bulbostylis barbata	0.03		0.01
Byblis pilbarana	0.06		0.02
Calandrinia stagnensis	0.02		0.05
Calandrinia tepperiana	0.05		0.02
Cassytha capillaris			0.5
Commelina ensifolia	0.4		0.01
Cyperus squarrosus	0.03		0.01
Dysphania rhadinostachya subsp. *rhadinostachya*	0.05		0.01
Eriachne obtusa	0.25		0.5
Fimbristylis dichotoma	0.2		0.02

Indigofera colutea	0.02		0.01
Polycarpaea corymbosa var. *corymbosa*	0.07		0.02
Polygala galeocephala	0.1		0.01
Stackhousia sp. swollen gynophore (W.R. Barker 2041)	0.12		0.01
Synaptantha tillaeacea var. *tillaeacea*	0.03		0.01
Triodia epactia	0.4		1
Triodia longiceps	0.5		10
Triodia secunda	0.25		15
Wahlenbergia tumidifructa	0.2		0.02

PHOTOS

Site Name:	HC24
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	19/07/2022
GPS Location:	GDA94 Zone 50 640385.44E 7703075.68N
Orientation:	90/180
Community:	3
Landform Type:	Other, Low rise (other)
Slope Class:	Very Gently Inclined (1 degree)
Soil Type:	Sandy Loam
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - G - Good
Disturbance:	Exotic Weeds - Large amount of disturbance, Animal Disturbance - Large amount of cattle disturbance
Fire:	>10 years
Habitat:	Low woodland over sparse shrubland over sparse hummock grassland over tussock grassland
Comments:	Aspect: rise

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia colei*, *Acacia sericophylla*
Mid Stratum 1:	*Abutilon* sp. Pritzelianum (S. van Leeuwen 5095), *Acacia stellaticeps*, *Senna venusta*
Lower Stratum 1:	*Acacia trudgeniana*, *Triodia epactia*, *Triodia longiceps*
Lower Stratum 2:	**Cenchrus ciliaris*, **Cenchrus setiger*, *Eragrostis eriopoda*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon sp. Pritzelianum (S. van Leeuwen 5095) (P3)	1.6	31	2
Acacia colei	5		14
Acacia sericophylla	8		1
Acacia stellaticeps	1.2		1
Acacia trudgeniana			
Bulbostylis barbata	0.02		0.01
Byblis pilbarana	0.05		0.01
Calandrinia tepperiana	0.01		0.01

**Calotropis procera*	0.9		0.1
Carissa lanceolata	1.5		0.05
**Cenchrus ciliaris*	0.3		5
**Cenchrus setiger*	0.5		6
Chrysopogon fallax	1.2		0.5
Cucumis variabilis			0.01
Cyperus castaneus	0.03		0.01
Dysphania rhadinostachya subsp. *rhadinostachya*	0.02		0.01
Eragrostis eriopoda	0.4		12
Eriachne helmsii	0.6		0.1
Eriachne obtusa	0.4		1
Euphorbia tannensis subsp. *eremophila*	0.9		0.1
Evolvulus alsinoides var. *villosicalyx*	0.2		0.01
Fimbristylis dichotoma	0.1		0.1
Hakea lorea subsp. *lorea*			
Pluchea tetranthera	0.9		0.1
Senna notabilis	0.6		0.2
Senna venusta	2.2		0.2
Sida rohlenae subsp. *rohlenae*	0.9		1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.6		0.1
Sida sp. Rabbit Flat (B.J. Carter 626)	0.2		0.01
Triodia epactia	0.5		5
Triodia longiceps	0.4		0.1
Triumfetta ramosa	0.6		0.5

PHOTOS

Site Name:	HC25
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	19/07/2022
GPS Location:	GDA94 Zone 50 641053.45E 7703197.73N
Orientation:	90/180
Community:	3
Landform Type:	Flat
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm, 6-20mm, 20-60mm
CF Types:	Alluvium (other)
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Exotic Weeds - High level of disturbance, Animal Disturbance - Medium level of disturbance
Fire:	>10 years
Habitat:	Low open woodland over open shrubland over open hummock grassland over open tussock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia colei*, *Acacia tumida* var. *pilbarensis*, *Cullen leucanthum*
Mid Stratum 1:	*Acacia stellaticeps*, *Pluchea tetranthera*, *Sida rohlenae* subsp. *rohlenae*
Lower Stratum 1:	*Triodia epactia*, *Triodia longiceps*
Lower Stratum 2:	*Eragrostis eriopoda*, *Eriachne obtusa*, *Eulalia aurea*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon otocarpum	0.5		0.01
Abutilon sp. Pritzelianum (S. van Leeuwen 5095) (P3)	1.7	2	0.02
Acacia ancistrocarpa	4.5		1
Acacia colei	5		30
Acacia stellaticeps	1.3		2
Acacia tumida var. *pilbarensis*	4		2
Afrohybanthus aurantiacus	0.6		1
Aristida holathera var. *holathera*	0.7		0.2

Boerhavia coccinea	0.2		0.1
Bulbostylis barbata	0.03		0.01
Byblis pilbarana	0.05		0.01
Calandrinia stagnensis	0.01		0.02
Calandrinia tepperiana	0.02		0.01
Carissa lanceolata	1.2		0.02
Cassytha capillaris	0.5		
**Cenchrus ciliaris*	0.3		20
Chrysopogon fallax	1		0.5
Corchorus elachocarpus	0.6		0.2
Cucumis variabilis			0.01
Cullen leucanthum	4		25
Cyperus squarrosus	0.03		0.01
Eragrostis eriopoda	0.4		8
Eriachne obtusa	0.35		4
Eulalia aurea	0.7		2
Euphorbia australis var. *subtomentosa*	0.2		0.01
Evolvulus alsinoides var. *villosicalyx*	0.2		0.1
Fimbristylis dichotoma	0.2		0.1
Goodenia microptera	0.4		0.01
Gossypium australe	1.2		0.03
Ipomoea muelleri			0.02
Pluchea tetranthera	1.1		6
Polycarpaea corymbosa var. *corymbosa*	0.06		0.01
Polymeria mollis	0.2		0.02
Ptilotus fusiformis	0.3		0.07
Senna notabilis	0.6		0.1
Sida rohlenae subsp. *rohlenae*	1		2
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.8		0.5
Tephrosia rosea var. *rosea*	1.1		0.02
Trichodesma zeylanicum var. *zeylanicum*	0.6		0.01
Triodia epactia	0.5		12
Triodia longiceps	0.4		4
Wahlenbergia tumidifructa	0.05		0.01
Waltheria indica	0.6		0.02

PHOTOS

Site Name:	HC26
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	19/07/2022
GPS Location:	GDA94 Zone 50 641804.4812E 7702964.918N
Orientation:	90/180
Community:	4
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Loamy sand (other)
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>10 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia colei*, *Hakea lorea* subsp. *lorea*
Mid Stratum 1:	*Acacia stellaticeps*, *Pluchea tetranthera*, *Triumfetta ramosa*
Lower Stratum 1:	*Triodia epactia*, *Triodia schinzii*
Lower Stratum 2:	**Cenchrus ciliaris*, *Eragrostis eriopoda*, *Eriachne obtusa*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon otocarpum	0.4		0.02
Acacia colei	3.5		0.2
Acacia stellaticeps	1.3		7
Aristida holathera var. *holathera*	0.4		0.1
Boerhavia coccinea	0.1		0.01
Bonamia alatisemina			0.02
Bonamia erecta	0.3		0.2
Bulbostylis barbata	0.03		0.01
Byblis pilbarana	0.03		0.01
Calandrinia stagnensis	0.01		0.01
Calandrinia tepperiana	0.03		0.01
Cassytha capillaris			0.5
**Cenchrus ciliaris*	0.4		2
Chrysopogon fallax	1.6		0.5
Corchorus elachocarpus	0.4		0.05
Cucumis variabilis			0.01

Cyperus blakeanus	0.3		0.01
Digitaria brownii	0.7		0.1
Dodonaea coriacea	1.1		0.5
Eragrostis eriopoda	0.4		7
Eriachne obtusa	0.3		8
Euphorbia australis var. *subtomentosa*	0.05		0.01
Evolvulus alsinoides var. *villosicalyx*	0.2		0.01
Goodenia microptera	0.4		0.1
Hakea lorea subsp. *lorea*	4		2
Hibiscus leptocladus	0.9		0.01
Paraneurachne muelleri	0.4		0.1
Paspalidium clementii	0.1		0.01
Pimelea ammocharis	1.1		0.05
Pluchea tetranthera	0.9		6
Sida rohlenae subsp. *rohlenae*	0.9		0.5
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.9		0.4
Tinospora smilacina			0.1
Trigastrotheca molluginea	0.2		0.01
Triodia epactia	0.5		4
Triodia schinzii	0.5		10
Triumfetta ramosa	1.1		0.5

PHOTOS

Site Name:	HC27
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	19/07/2022
GPS Location:	GDA94 Zone 50 642750.0272E 7702357.027N
Orientation:	90/180
Community:	1
Landform Type:	Other, Undulating plain (other)
Slope Class:	Level (0 degrees)
Soil Type:	Clayey Sand
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Low level of cattle disturbance
Fire:	>10 years
Habitat:	Isolated shrubs over open hummock grassland over sparse tussock grassland
Comments:	Aspect: undulating

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia stellaticeps*, *Pluchea tetranthera*
Lower Stratum 1:	*Eriachne obtusa*, *Triodia longiceps*
Lower Stratum 2:	*Chrysopogon fallax*, *Fimbristylis dichotoma*, *Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia stellaticeps	1.1		1
Bulbostylis barbata	0.05		0.02
Byblis pilbarana	0.05		0.01
Calandrinia stagnensis	0.01		0.01
Calandrinia tepperiana	0.05		0.01
Cassytha capillaris			0.5
Chrysopogon fallax	0.7		0.1
Cyperus castaneus	0.02		0.01
Cyperus squarrosus	0.02		0.01
Dysphania rhadinostachya subsp. *rhadinostachya*	0.05		0.01
Eriachne obtusa	0.3		3
Fimbristylis dichotoma	0.25		2
Pluchea tetranthera	0.4		0.2

Triodia epactia	0.6		10
Triodia longiceps	0.7		15
Wahlenbergia tumidifructa	0.15		0.01

PHOTOS

Site Name:	HC28
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	20/07/2022
GPS Location:	GDA94 Zone 50 643577.4985E 7700074.276N
Orientation:	90/180
Community:	4
Landform Type:	Flat
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Low level of cattle disturbance
Fire:	Approx. 1 year
Habitat:	Low open woodland over sparse shrubland over sparse hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia colei*, *Corymbia hamersleyana*, *Grevillea wickhamii* subsp. *aprica*
Mid Stratum 1:	*Acacia inaequilatera*, *Carissa lanceolata*, *Melaleuca lasiandra*
Mid Stratum 2:	*Indigofera monophylla*, *Pluchea tetranthera*, *Sida* sp. Pilbara (A.A. Mitchell PRP 1543)
Lower Stratum 1:	*Triodia epactia*, *Triodia longiceps*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon lepidum	0.4		0.02
Abutilon macrum	0.5		0.02
Abutilon otocarpum	0.4		0.01
Acacia ancistrocarpa	4.5		0.1
Acacia colei	4		4
Acacia inaequilatera	1.2		0.2
Acacia sericophylla	1.5		0.1
Acacia stellaticeps	1.2		0.05
Acacia tumida var. *pilbarensis*	0.2		0.01
Aristida holathera var. *holathera*	0.4		0.2
Arivela viscosa	0.1		0.01
Boerhavia coccinea	0.1		0.01
Bonamia alatisemina	0.2		0.01

Bulbostylis barbata	0.02		0.02
Calandrinia stagnensis	0.01		0.01
Carissa lanceolata	1.3		2
Chrysopogon fallax	0.5		0.02
Corchorus elachocarpus	0.4		0.05
Corymbia hamersleyana	5		1
Dysphania rhadinostachya subsp. *rhadinostachya*	0.1		0.02
Eragrostis crateriformis (P3)	0.15	102	0.02
Eragrostis cumingii	0.2		0.01
Eragrostis eriopoda	0.3		0.02
Eriachne obtusa	0.2		0.01
Eulalia aurea	0.6		0.1
Euphorbia australis var. *subtomentosa*	0.2		0.02
Euphorbia trigonosperma	0.2		0.01
Euphorbia vaccaria var. *vaccaria*	0.01		0.01
Evolvulus alsinoides var. *villosicalyx*	0.2		0.01
Goodenia lamprosperma	0.4		0.05
Goodenia microptera	0.3		0.01
Grevillea wickhamii subsp. *aprica*	4.5		1
Hibiscus leptocladus	0.3		0.1
Indigofera monophylla	0.4		0.3
Marsilea hirsuta	0.1		0.01
Melaleuca lasiandra	1.4		0.5
Panicum australiense var. *australiense*	0.1		0.01
Perotis rara	0.1		0.01
Pluchea tetranthera	0.4		0.5
Polycarpaea corymbosa var. *corymbosa*	0.1		0.01
Polymeria mollis	0.1		0.01
Portulaca oleracea	0.03		0.01
Ptilotus appendiculatus	0.1		0.01
Ptilotus axillaris	0.1		0.01
Ptilotus fusiformis	0.3		0.01
Rhynchosia minima			0.5
Senna notabilis	0.2		0.02
Sida arenicola	0.3		0.01
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.4		1
Solanum phlomoides	0.4		0.05
Sporobolus australasicus	0.1		0.01
Synaptantha tillaeacea var. *tillaeacea*	0.02		0.01
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.1		0.01
Tribulus hirsutus	0.2		0.02
Trigastrotheca molluginea	0.1		0.01
Triodia epactia	0.4		4
Triodia longiceps	0.4		0.02

Waltheria indica	0.4		0.01

PHOTOS

Site Name:	HC29
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	20/07/2022
GPS Location:	GDA94 Zone 50 644619.9014E 7699981.53N
Orientation:	90/180
Community:	8
Landform Type:	Other, Low rise (other)
Slope Class:	Gently Inclined (3 degrees)
Aspect:	SW
Soil Type:	Sandy Loam
Soil Colour:	Orange
Rock Outcrop:	Calcrete, 2-10% bedrock exposed
CF Abundance:	20-50%
CF Sizes:	20-60mm, 60-200mm, 200-600mm, 600-2000mm
CF Types:	Alluvium (other), Calcrete
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Low level of cattle disturbance
Fire:	Approx. 1 year
Habitat:	Isolated tall shrubs over sparse low shrubland over sparse hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia bivenosa*, *Acacia inaequilatera*, *Hakea lorea* subsp. *lorea*
Mid Stratum 2:	*Corchorus elachocarpus*, *Pluchea rubelliflora*, *Scaevola amblyanthera* var. *centralis*
Lower Stratum 1:	*Triodia epactia*
Lower Stratum 2:	*Aristida holathera* var. *holathera*, *Eragrostis eriopoda*, *Eriachne mucronata*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia bivenosa	2.5		0.1
Acacia inaequilatera	2		0.2
Acacia stellaticeps	0.8		0.05
Aristida holathera var. *holathera*	0.4		0.01
Arivela uncifera	0.3		0.02
Arivela viscosa	0.1		0.01
Bonamia pilbarensis	0.2		0.5
Bulbostylis barbata	0.03		0.01
Calandrinia stagnensis	0.1		0.01

Cassytha capillaris			0.05
Corchorus elachocarpus	0.3		2
Dysphania ?plantaginella	0.03		0.01
Dysphania rhadinostachya subsp. *rhadinostachya*	0.05		0.1
Eragrostis eriopoda	0.3		0.01
Eriachne mucronata	0.3		1
Euphorbia australis var. *subtomentosa*	0.15		0.02
Euploca pachyphylla	0.1		0.01
Goodenia lamprosperma	0.2		0.01
Goodenia microptera	0.4		0.5
Hakea lorea subsp. *lorea*	2.5		0.3
Hibiscus leptocladus	0.2		0.05
Hibiscus sturtii var. *campylochlamys*	0.2		0.01
Indigofera monophylla	0.4		0.02
Panicum australiense var. *australiense*	0.1		0.01
Pluchea rubelliflora	0.3		2
Polycarpaea corymbosa var. *corymbosa*	0.05		0.01
Portulaca oleracea	0.02		0.02
Ptilotus astrolasius	0.1		0.01
Ptilotus axillaris	0.1		0.5
Scaevola amblyanthera var. *centralis*	0.3		1
Senna artemisioides subsp. *oligophylla*	0.5		0.01
Senna artemisioides subsp. oligophylla x glutinosa subsp. glutinosa	0.6		0.1
Senna notabilis	0.2		0.5
Senna symonii	1.2		0.02
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.2		0.01
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.2		0.5
Tribulus hirsutus	0.1		1.2
Trigastrotheca molluginea	0.2		0.2
Triodia epactia	0.3		2

PHOTOS

Site Name:	HC30
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	20/07/2022
GPS Location:	GDA94 Zone 50 644455.9923E 7701016.35N
Orientation:	90/180
Community:	4
Landform Type:	Flat
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Low level of cattle disturbance
Fire:	Approx. 1 year
Habitat:	Low open woodland over sparse shrubland over sparse hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia candida* subsp. *candida*, *Corymbia hamersleyana*
Mid Stratum 1:	*Acacia ancistrocarpa*, *Acacia inaequilatera*, *Acacia sericophylla*, *Melaleuca lasiandra*, *Sida rohlenae* subsp. *rohlenae*
Mid Stratum 2:	*Abutilon otocarpum*, *Goodenia microptera*, *Indigofera monophylla*
Lower Stratum 1:	*Triodia epactia*, *Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon otocarpum	0.2		0.05
Acacia ancistrocarpa	2		0.02
Acacia inaequilatera	1		0.02
Acacia sericophylla	1.1		0.03
Acacia stellaticeps	1.1		0.5
Acacia tumida var. *pilbarensis*	0.1		0.01
Amaranthus undulatus	0.2		0.1
Aristida holathera var. *holathera*	0.4		0.01
Arivela viscosa	0.1		0.01
Boerhavia coccinea	0.2		0.01
Bonamia erecta	0.2		0.01
Bulbostylis barbata	0.03		0.01
Calandrinia stagnensis	0.01		0.01

Carissa lanceolata	1.5		0.01
Corchorus elachocarpus	0.1		0.01
Corymbia candida subsp. *candida*	10		1.5
Corymbia hamersleyana	2		0.05
Cucumis variabilis			0.01
Dysphania rhadinostachya subsp. *rhadinostachya*	0.05		0.01
Eragrostis cumingii	0.05		0.01
Eragrostis eriopoda	0.3		0.01
Euphorbia australis var. *subtomentosa*	0.1		0.01
Euphorbia tannensis subsp. *eremophila*	0.2		0.01
Euphorbia trigonosperma	0.2		0.02
Euphorbia vaccaria var. *vaccaria*	0.01		0.01
Evolvulus alsinoides var. *villosicalyx*	0.2		0.01
Goodenia lamprosperma	0.1		0.01
Goodenia microptera	0.05		0.5
Hibiscus leptocladus	0.2		0.01
Indigofera monophylla	0.3		0.5
Melaleuca lasiandra	1.5		0.02
Panicum australiense var. *australiense*	0.05		0.01
Paspalidium clementii	0.2		0.01
Paspalidium rarum	0.1		0.01
Perotis rara	0.1		0.01
Polycarpaea corymbosa var. *corymbosa*	0.1		0.01
Polygala galeocephala	0.1		0.01
Polymeria mollis	0.2		0.02
Portulaca oleracea	0.02		0.01
Ptilotus axillaris	0.05		0.01
Rhynchosia minima			0.01
Senna notabilis	0.2		0.01
Sida arenicola	0.2		0.01
Sida rohlenae subsp. *rohlenae*	0.4		0.05
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.2		0.01
Solanum phlomoides	0.2		0.1
Sporobolus australasicus	0.05		0.01
Streptoglossa decurrens	0.1		0.01
Tinospora smilacina			0.01
Tribulus hirsutus	0.1		0.01
Trigastrotheca molluginea	0.2		0.01
Triodia epactia	0.4		0.2
Triodia lanigera	0.4		0.5

PHOTOS

Site Name:	HC31
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	20/07/2022
GPS Location:	GDA94 Zone 50 641464.5014E 7700808.445N
Orientation:	90/180
Community:	1
Landform Type:	Other, Undulating plain (other)
Soil Type:	Sandy Clay
Soil Colour:	Orange
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Low level of cattle disturbance
Fire:	>10 years
Habitat:	Isolated tall shrubs over open hummock grassland over sparse herbs
Comments:	Aspect: undulating

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia inaequilatera*, *Hakea lorea* subsp. *lorea*
Lower Stratum 1:	*Triodia epactia*, *Triodia longiceps*, *Triodia secunda*
Lower Stratum 2:	*Calandrinia stagnensis*, *Fimbristylis dichotoma*, *Stackhousia* sp. swollen gynophore (W.R. Barker 2041)

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia inaequilatera	2		0.02
Aristida holathera var. *holathera*	0.4		0.01
Bulbostylis barbata	0.05		0.02
Byblis pilbarana	0.05		0.01
Calandrinia stagnensis	0.02		0.03
Calandrinia tepperiana	0.07		0.01
Cassytha capillaris			0.03
Cyperus squarrosus	0.03		0.01
Eriachne obtusa	0.25		0.02
Euphorbia vaccaria var. *vaccaria*	0.01		0.01
Fimbristylis dichotoma	0.15		0.1
Hakea lorea subsp. *lorea*	1.5		0.1
Mitrasacme connata	0.02		0.01
Panicum australiense var. *australiense*	0.1		0.01

Pluchea tetranthera	0.6		0.02
Stackhousia sp. swollen gynophore (W.R. Barker 2041)	0.15		0.02
Streptoglossa decurrens	0.02		0.01
Synaptantha tillaeacea var. *tillaeacea*	0.02		0.01
Triodia epactia	0.4		5
Triodia longiceps	0.6		4
Triodia secunda	0.3		12
Wahlenbergia tumidifructa	0.1		0.01

PHOTOS

Site Name:	HC32
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	21/07/2022
GPS Location:	GDA94 Zone 50 645973.159E 7699100.246N
Orientation:	90/180
Community:	8
Landform Type:	Other, Low rise (other)
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	SSW
Soil Type:	Sandy Loam
Soil Colour:	Orange
Rock Outcrop:	Calcrete, <2% bedrock exposed
CF Abundance:	20-50%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm, 200-600mm, 600-2000mm, >2000mm
CF Types:	Alluvium (other), Calcrete
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	Approx. 1 year (hot)
Habitat:	Isolated trees over isolated shrubs over sparse hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia sericophylla*, *Corymbia hamersleyana*, *Hakea lorea* subsp. *lorea*
Mid Stratum 1:	*Codonocarpus cotinifolius*, *Grevillea wickhamii* subsp. *aprica*, *Senna artemisioides* subsp. *oligophylla*
Lower Stratum 1:	*Triodia chichesterensis*, *Triodia epactia*
Lower Stratum 2:	*Polymeria mollis*, *Tephrosia* sp. Bungaroo Creek (M.E. Trudgen 11601)

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia bivenosa	0.03		0.01
Acacia inaequilatera	1.8		0.02
Acacia sericophylla	1.3		0.15
Aristida holathera var. *holathera*	0.3		0.01
Arivela uncifera	0.3		0.02
Bonamia pilbarensis	0.1		0.05
Codonocarpus cotinifolius	0.6		0.2
Corchorus elachocarpus	0.2		0.1
Corymbia hamersleyana	2.5		0.1

Dysphania ?plantaginella	0.02		0.01
Dysphania rhadinostachya subsp. *rhadinostachya*	0.05		0.01
Eriachne mucronata	0.3		0.02
Euploca cunninghamii	0.1		0.01
Euploca pachyphylla	0.01		0.01
Goodenia microptera	0.05		0.01
Goodenia muelleriana	0.07		0.01
Grevillea wickhamii subsp. *aprica*	0.6		0.1
Hakea lorea subsp. *lorea*	1.1		0.03
Hibiscus leptocladus	0.3		0.02
Pluchea rubelliflora	0.1		0.02
Polymeria mollis	0.1		2
Ptilotus axillaris	0.1		0.02
Scaevola amblyanthera var. *centralis*	0.2		0.05
Senna artemisioides subsp. *oligophylla*	0.6		0.01
Senna notabilis	0.15		0.01
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.1		1
Tephrosia sp. NW Eremaean (S. van Leeuwen et al. PBS 0356)	0.2		0.02
Tribulus hirsutus	0.1		0.03
Trigastrotheca molluginea	0.2		0.01
Triodia chichesterensis (P3)	0.3	40	0.2
Triodia epactia	0.3		0.5

PHOTOS

Site Name:	HD01
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	09/03/2022
GPS Location:	GDA94 Zone 50 662391.69E 7692557.83N
Orientation:	225/135
Community:	6
Landform Type:	Other, Low rise within river channel (other)
Slope Class:	Very Gently Inclined (1 degree)
Soil Type:	Sandy Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm
CF Types:	Mixed colluvium (other)
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Grazing, Exotic Weeds, Animal Disturbance
Fire:	>5 years
Habitat:	Tall sparse shrubland over low sparse shrubland over low hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia trachycarpa*
Lower Stratum 1:	*Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2		0.2
Acacia colei	3		0.3
Acacia inaequilatera	2		0.2
Acacia stellaticeps	1		0.2
Acacia trachycarpa	3.5		4
**Aerva javanica*	0.4		0.1
Afrohybanthus aurantiacus	0.3		0.1
Arivela viscosa	0.2		0.1
Bonamia alatisemina			0.1
Cassytha capillaris			0.1
**Cenchrus ciliaris*	0.3		0.2
Corchorus incanus subsp. *incanus*	0.7		0.2
Crotalaria cunninghamii	0.4		0.1

Eragrostis eriopoda	0.3		0.1
Goodenia microptera	0.2		0.1
Hakea lorea subsp. *lorea*	1		0.1
Paraneurachne muelleri	0.3		0.1
Pluchea ferdinandi-muelleri	0.3		0.1
Pluchea tetranthera	0.3		0.1
Pterocaulon sphacelatum	0.5		0.1
Rhynchosia minima			0.1
Sida ?echinocarpa	0.5		0.1
Sida fibulifera	0.1		0.1
Sida rohlenae subsp. *rohlenae*			
Tephrosia sp. B Kimberley Flora (C.A. Gardner 7300)	0.4		0.1
Tribulus hirsutus	0.1		0.1
Triodia epactia	0.5		1
Triodia lanigera	0.5		40
Waltheria indica	0.4		0.1

PHOTOS

Site Name:	HD02
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	09/03/2022
GPS Location:	GDA94 Zone 50 661570.66E 7692744.8N
Orientation:	70/160
Community:	11
Landform Type:	Other, Undulating plain (+minor flowline?) (other)
Slope Class:	Gently Inclined (3 degrees)
Soil Type:	Clay Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	>90%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	Mixed colluvium (other)
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	>5 years
Habitat:	Tall sparse shrubland over low sparse shrubland over low hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia stellaticeps*
Lower Stratum 1:	*Triodia angusta*, *Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia inaequilatera	1.5		0.1
Acacia orthocarpa	2		0.2
Acacia stellaticeps	0.6		6
Dampiera candicans	1		0.1
Ptilotus calostachyus	0.6		0.1
Triodia angusta	0.3		10
Triodia lanigera	0.3		10

PHOTOS

Site Name:	HD03
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	09/03/2022
GPS Location:	GDA94 Zone 50 661767.21E 7693538.25N
Orientation:	90/0
Community:	16
Landform Type:	Drainage Line
Slope Class:	Very Gently Inclined (1 degree)
Soil Type:	Sand
Soil Colour:	Pale brown (other)
Rock Outcrop:	No bedrock exposed
CF Abundance:	2-10%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	Mixed colluvium (other)
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Grazing, Exotic Weeds, Animal Disturbance
Fire:	>5 years
Habitat:	Mid open woodland over tall sparse shrubland over low sparse shrubland over low sparse hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: *Eucalyptus camaldulensis* subsp. *refulgens*, *Melaleuca argentea*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon amplum	0.2		0.1
Acacia coriacea subsp. *pendens*	5		1
Acacia pyrifolia var. *pyrifolia*	1.2		0.2
Acacia trachycarpa	2		1
Acacia trachycarpa x tumida var. pilbarensis	3		0.3
Acacia tumida var. *pilbarensis*	3		1
**Aerva javanica*	0.3		0.1
Afrohybanthus aurantiacus	0.4		0.1
Arivela viscosa	0.1		0.1
Cassytha filiformis			0.1
**Cenchrus ciliaris*	0.3		0.1
**Cenchrus setiger*	0.4		0.1
**Citrullus colocynthis*	0.1		0.1
Corchorus incanus subsp. *incanus*	1		0.2

Corynotheca pungens	0.6		0.1
Crotalaria cunninghamii	1.5		0.3
Cynanchum floribundum			0.1
Cyperus ixiocarpus	0.3		0.1
Cyperus vaginatus	0.6		0.1
Dentella asperata	0.1		0.1
Eragrostis speciosa	0.8		0.1
Eucalyptus camaldulensis subsp. *refulgens*	12		5
Eulalia aurea	1		0.1
Euphorbia australis var. *subtomentosa*	0.2		0.1
Euphorbia trigonosperma	0.3		0.1
Glinus oppositifolius var. *keenanii*	0.2		0.1
Goodenia lamprosperma	0.3		0.1
Gymnanthera cunninghamii (P3)	1.5	1	0.1
Melaleuca argentea	10		10
Melaleuca glomerata	3		3
Melaleuca linophylla	2		0.2
Paspalidium reflexum	0.4		0.1
**Passiflora foetida* var. *hispida*			0.1
Pluchea rubelliflora	0.2		0.1
Ptilotus fusiformis	0.3		0.1
Rhynchosia minima			0.1
Sida rohlenae subsp. *rohlenae*	0.2		0.1
Stemodia grossa	0.1		0.1
Stemodia viscosa	0.3		0.1
Tinospora smilacina			0.1
Triodia angusta	0.4		0.1
Triodia epactia	0.6		1
Wahlenbergia tumidifructa	0.3		0.1
Waltheria indica	0.3		0.1

PHOTOS

Site Name:	HD04
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	09/03/2022
GPS Location:	GDA94 Zone 50 653031.22E 7696099.11N
Orientation:	270/0
Community:	14
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Grazing, Animal Disturbance
Fire:	5 years
Habitat:	Isolated tall shrubs over low open shrubland over low open hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1:	*Acacia stellaticeps*
Lower Stratum 2:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1.2		0.1
Acacia inaequilatera	1.5		0.1
Acacia stellaticeps	0.4		10
Acacia tumida var. *pilbarensis*	2		0.1
Aristida holathera var. *holathera*	0.4		0.1
Bonamia erecta	0.3		0.1
Corchorus elachocarpus	0.6		0.2
Dodonaea coriacea	0.6		0.1
Eragrostis eriopoda	0.2		0.1
Gossypium australe	0.3		0.1
Paraneurachne muelleri	0.3		0.1
Pluchea tetranthera	0.4		1
Ptilotus astrolasius	0.3		0.1
Sida arenicola	0.8		0.1
Triodia epactia	0.4		12

PHOTOS

Site Name:	HD05
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	10/03/2022
GPS Location:	GDA94 Zone 50 657502.92E 7695889.42N
Orientation:	200/290
Community:	14
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Grazing, Animal Disturbance
Fire:	>5 years
Habitat:	Tall open shrubland over low sparse shrubland over low open hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia ancistrocarpa*
Lower Stratum 1:	*Triodia epactia*
Lower Stratum 2:	*Acacia stellaticeps*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia			
Acacia ancistrocarpa	3		15
Acacia ancistrocarpa x orthocarpa	3		0.1
Acacia colei	3		2
Acacia inaequilatera	3		1
Acacia orthocarpa			
Acacia sphaerostachya	1.5		0.2
Acacia stellaticeps	1		6
Acacia tumida var. *pilbarensis*	3		1.5
Eragrostis eriopoda	0.2		0.1
Grevillea wickhamii subsp. *aprica*	3		0.1
Pluchea tetranthera	0.5		0.1
Triodia epactia	0.4		25

PHOTOS

Site Name:	HD06
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	10/03/2022
GPS Location:	GDA94 Zone 50 657912.47E 7697213.85N
Orientation:	20/290
Community:	14
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>5 years
Habitat:	Tall open shrubland over isolated low shrubland over low hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia acradenia*, *Acacia ancistrocarpa*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	3		10
Acacia ancistrocarpa	3		10
Acacia colei	3		3
Acacia inaequilatera	3		0.5
Acacia orthocarpa	3		0.3
Acacia stellaticeps	1		0.3
Acacia tumida var. *pilbarensis*			
Chrysopogon fallax	0.3		0.1
Eragrostis eriopoda	0.3		0.1
Paraneurachne muelleri	0.3		0.1
Triodia epactia	0.4		35

PHOTOS

Site Name:	HD07
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	10/03/2022
GPS Location:	GDA94 Zone 50 656799.5E 7697388.37N
Orientation:	100/190
Community:	13
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clay Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>5 years
Habitat:	Low open woodland over tall open shrubland over low hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia candida* subsp. *candida*
Mid Stratum 1:	*Acacia ancistrocarpa*, *Acacia colei*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	3		12
Acacia colei	3		12
Acacia stellaticeps	0.6		0.1
Acacia tumida var. *pilbarensis*	3		3
Cajanus cinereus			
Chrysopogon fallax	0.3		0.1
Corymbia candida subsp. *candida*	5		4
Corymbia hamersleyana			
Rhynchosia minima	0.1		0.1
Triodia epactia	0.3		35

PHOTOS

Site Name:	HD08
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	10/03/2022
GPS Location:	GDA94 Zone 50 655860.31E 7697435.43N
Orientation:	325/235
Community:	14
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	2-10%
CF Sizes:	2-6mm, 6-20mm
CF Types:	Mixed colluvium (other)
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>5 years
Habitat:	Isolated low shrubs over low open hummock grasslands.

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1: *Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia stellaticeps	0.5		0.3
Fimbristylis dichotoma	0.1		0.1
Pluchea tetranthera	0.4		0.1
Triodia epactia	0.4		27

PHOTOS

Site Name:	HD09
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	10/03/2022
GPS Location:	GDA94 Zone 50 655862.77E 7697263.03N
Orientation:	140/50
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>5 years
Habitat:	Tall sparse shrubland over low open shrubland over low open hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia inaequilatera*
Mid Stratum 1:	*Acacia stellaticeps*
Lower Stratum 1:	*Triodia epactia*, *Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	3		0.3
Acacia colei	3		0.3
Acacia inaequilatera	3		1.5
Acacia stellaticeps	0.8		12
Acacia tumida var. *pilbarensis*	3		0.3
Bonamia erecta	0.2		0.1
Cassytha capillaris			0.1
Corymbia zygophylla			
Dodonaea coriacea	0.1		0.1
Hakea lorea subsp. *lorea*	1.5		0.3
Ptilotus astrolasius	0.2		0.1
Triodia epactia	0.3		10
Triodia lanigera	0.3		15

PHOTOS

Site Name:	HD10
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	10/03/2022
GPS Location:	GDA94 Zone 50 654221.15E 7697216.1N
Orientation:	10/100
Community:	15
Landform Type:	Closed Depression
Slope Class:	Very Gently Inclined (1 degree)
Soil Type:	Sandy Clay Loam
Soil Colour:	Pale brown (other)
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>5 years
Habitat:	Low open woodland over tall sparse shrubland over low open hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Eucalyptus victrix*
Mid Stratum 1:	*Acacia colei*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia colei	2.5		3
Bergia perennis subsp. *perennis*	0.1		0.1
Chrysopogon fallax	0.2		0.1
Eucalyptus victrix	8		8
Marsilea ?hirsuta	0.1		0.1
Triodia epactia	0.4		15

PHOTOS

Site Name:	HD11
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	11/03/2022
GPS Location:	GDA94 Zone 50 654975.15E 7692712.73N
Orientation:	270/0
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Grazing, Animal Disturbance
Fire:	<2 years
Habitat:	Tall sparse shrubland over low sparse shrubland over low hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia sericophylla*
Lower Stratum 1:	*Triodia schinzii*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	0.1		0.1
Acacia inaequilatera	3		1
Acacia sericophylla	3		2
Acacia stellaticeps	1		0.3
Aristida holathera var. *holathera*	0.3		0.1
Arivela uncifera	0.2		0.1
Boerhavia coccinea			0.1
Bonamia alatisemina			0.1
Bonamia erecta	0.2		0.1
Cassytha capillaris			0.1
Chrysopogon fallax	0.3		0.1
Eriachne obtusa	0.3		0.1
Euphorbia australis var. *subtomentosa*	0.1		0.1
Euploca mutica (P3)	0.1	4	0.1
Goodenia microptera	0.1		0.1
Gossypium australe	0.2		0.1

Indigofera monophylla	0.2		0.1
Melaleuca lasiandra			
Panicum australiense var. *australiense*	0.1		0.1
Paraneurachne muelleri	0.2		0.1
Pluchea tetranthera	0.3		0.2
Ptilotus astrolasius	0.2		0.1
Senna notabilis	0.1		0.1
Sida arenicola	0.3		0.1
Solanum phlomoides	0.3		0.1
Tribulopis angustifolia	0.1		0.1
Tribulus hirsutus	0.2		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia schinzii	0.4		25

PHOTOS

Site Name:	HD12
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	11/03/2022
GPS Location:	GDA94 Zone 50 651108.97E 7696678.5N
Orientation:	90/0
Community:	14
Landform Type:	Other, Flow line (other)
Slope Class:	Very Gently Inclined (1 degree)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Grazing, Animal Disturbance
Fire:	5 years
Habitat:	Tall sparse shrubland over low open shrubland over low open hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia stellaticeps*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia colei	2		0.5
Acacia inaequilatera	2.5		0.3
Acacia sclerosperma subsp. *sclerosperma*	1.5		0.3
Acacia stellaticeps	0.5		12
Aristida holathera var. *holathera*	0.3		0.1
Cassytha capillaris			0.1
Corchorus incanus subsp. *incanus*	0.6		0.1
Eragrostis eriopoda	0.2		0.1
Hakea lorea subsp. *lorea*	0.8		0.1
Pluchea tetranthera	0.4		1
Ptilotus astrolasius	0.2		0.1
Sida arenicola	1.8		0.1
Triodia epactia	0.3		15

PHOTOS

Site Name:	HD13
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	11/03/2022
GPS Location:	GDA94 Zone 50 646954.53E 7696776.75N
Orientation:	100/190
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Grazing, Animal Disturbance
Fire:	>5 years
Habitat:	Low isolated trees over tall open shrubland over low sparse shrubland over low open hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia zygophylla*
Mid Stratum 1:	*Acacia ancistrocarpa*, *Acacia sericophylla*
Lower Stratum 1:	*Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon otocarpum	0.1		0.1
Acacia ancistrocarpa	3		10
Acacia colei	1		0.1
Acacia inaequilatera	3		1
Acacia sericophylla	3		3
Acacia stellaticeps	0.8		2
Aristida holathera var. *holathera*	0.3		0.1
Arivela viscosa	0.1		0.1
Boerhavia coccinea			0.1
Bonamia alatisemina			0.1
Bulbostylis barbata	0.1		0.1
Carissa lanceolata	0.2		0.1
Cassytha capillaris			0.1
Corchorus elachocarpus	0.3		0.1

Corymbia hamersleyana	4		0.5
Corymbia zygophylla	4.5		1
Dodonaea coriacea	0.8		0.1
Eragrostis eriopoda	0.2		0.1
Eriachne pulchella subsp. *dominii*	0.1		0.1
Euphorbia tannensis subsp. *eremophila*	0.2		0.1
Euploca foliata	0.1		0.1
Evolvulus alsinoides var. *villosicalyx*	0.1		0.1
Indigofera monophylla	0.4		0.1
Ptilotus astrolasius	0.2		0.1
Ptilotus calostachyus	0.8		0.1
Ptilotus exaltatus	0.2		0.1
Senna artemisioides subsp. *oligophylla*	0.6		0.1
Senna notabilis	0.1		0.1
Sida arenicola	0.3		0.1
Sida sp. Pindan (B.G. Thomson 3398)	0.3		0.1
Solanum cleistogamum	0.1		0.1
Tinospora smilacina			0.1
Trigastrotheca molluginea	0.1		0.1
Triodia lanigera	0.4		17

PHOTOS

Site Name:	HD14
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	11/03/2022
GPS Location:	GDA94 Zone 50 648559.99E 7696457.39N
Orientation:	285/195
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>5 years
Habitat:	Tall sparse shrubland over low sparse shrubland over low open hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia ancistrocarpa*, *Acacia inaequilatera*
Lower Stratum 1:	*Triodia epactia*, *Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	3		3
Acacia colei	2.5		0.2
Acacia inaequilatera	3		4
Acacia sericophylla	2		0.1
Acacia sphaerostachya	1.8		0.1
Acacia stellaticeps	0.8		0.4
Bonamia alatisemina			0.1
Cassytha capillaris			0.1
Corchorus elachocarpus	0.3		0.1
Dodonaea coriacea	0.2		0.1
Eriachne pulchella subsp. *dominii*	0.1		0.1
Euphorbia tannensis subsp. *eremophila*	0.3		0.1
Goodenia microptera	0.1		0.1
Hakea lorea subsp. *lorea*	2.5		0.3
Hibiscus brachychlaenus	0.1		0.1
Indigofera monophylla	0.2		0.1

Ptilotus calostachyus	0.6		0.1
Senna symonii	0.6		0.1
Sida arenicola	1.5		0.1
Sida sp. Pindan (B.G. Thomson 3398)	0.2		0.1
Tribulus hirsutus	0.1		0.1
Trigastrotheca molluginea	0.2		0.1
Triodia epactia	0.3		2
Triodia lanigera	0.3		18
Triodia schinzii	0.3		0.2

PHOTOS

Site Name:	HD15
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	11/03/2022
GPS Location:	GDA94 Zone 50 648820.87E 7696686.78N
Orientation:	315/225
Community:	14
Landform Type:	Open Depression
Slope Class:	Very Gently Inclined (1 degree)
Soil Type:	Clay Loam
Soil Colour:	Pale red (other)
Rock Outcrop:	No bedrock exposed
CF Abundance:	2-10%
CF Sizes:	2-6mm, 6-20mm
CF Types:	Mixed colluvium (other)
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Grazing, Animal Disturbance
Fire:	>5 years
Habitat:	Tall isolated shrubs over low sparse shrubland over low open hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia synchronicia*
Lower Stratum 1:	*Pluchea tetranthera*, *Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia colei	0.5		0.1
Acacia stellaticeps	1		0.2
Acacia synchronicia	3		1
Cyperus iria	0.1		0.1
Cyperus squarrosus	0.1		0.1
Eragrostis dielsii	0.1		0.1
Eriachne benthamii	0.4		0.1
Marsilea ?hirsuta	0.1		0.1
Paspalidium rarum	0.1		0.1
Pluchea tetranthera	0.4		2
Solanum cleistogamum	0.1		0.1
Triodia epactia	0.4		15

PHOTOS

Site Name:	HD16
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	12/03/2022
GPS Location:	GDA94 Zone 50 643983.56E 7694795.15N
Orientation:	220/130
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>5 years
Habitat:	Tall isolated shrubs over low shrubland over low sparse hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia ancistrocarpa*, *Melaleuca lasiandra*
Lower Stratum 1:	*Acacia stellaticeps*
Lower Stratum 2:	*Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	3		1.5
Acacia sphaerostachya	1.3		0.2
Acacia stellaticeps	0.8		35
Aristida holathera var. *holathera*	0.3		0.1
Bonamia alatisemina	0.1		0.1
Chrysopogon fallax	0.2		0.1
Corchorus parviflorus	0.8		0.1
Eragrostis eriopoda	0.2		0.1
Melaleuca lasiandra	1.8		1
Ptilotus astrolasius	0.4		0.1
Ptilotus calostachyus	0.5		0.1
Triodia lanigera	0.4		7
Triumfetta ramosa	0.8		0.1

PHOTOS

Site Name:	HD17
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	12/03/2022
GPS Location:	GDA94 Zone 50 643678.91E 7693820.14N
Orientation:	300/210
Community:	10
Landform Type:	Plain
Slope Class:	Very Gently Inclined (1 degree)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Grazing, Exotic Weeds, Animal Disturbance
Fire:	>5 years
Habitat:	Isolated low trees over tall open shrubland over low sparse shrubland over low open hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia zygophylla*
Mid Stratum 1:	*Acacia ancistrocarpa*, *Acacia tumida* var. *pilbarensis*
Lower Stratum 1:	*Triodia lanigera*
Lower Stratum 2:	*Corchorus incanus* subsp. *incanus*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon otocarpum	0.1		0.1
Abutilon sp. Pritzelianum (S. van Leeuwen 5095) (P3)	0.5	1	0.1
Acacia ancistrocarpa	3		6
Acacia inaequilatera	3		1
Acacia sericophylla	3		1
Acacia stellaticeps	0.5		0.1
Acacia trachycarpa	3		1
Acacia tumida var. *pilbarensis*	3		3
**Aerva javanica*	0.2		0.1
Aristida holathera var. *holathera*	0.3		0.1
Arivela viscosa	0.1		0.1
Boerhavia coccinea	0.1		0.1

Bonamia alatisemina			0.1
Bonamia erecta	0.1		0.1
Corchorus incanus subsp. *incanus*	0.8		2
Corchorus parviflorus	0.5		0.1
Corymbia zygophylla	5		2
Cucumis variabilis			0.1
Dodonaea coriacea	0.5		0.1
Eragrostis eriopoda	0.3		0.4
Euphorbia tannensis subsp. *eremophila*	0.4		0.1
Euphorbia vaccaria var. *vaccaria*	0.1		0.1
Evolvulus alsinoides var. *villosicalyx*	0.2		0.1
Hibiscus brachychlaenus	1.3		0.1
Hypertelis cerviana	0.1		0.1
Indigofera monophylla	0.3		0.1
Ipomoea polymorpha	0.1		0.1
Melhania oblongifolia	0.2		0.1
Ptilotus arthrolasius	0.3		0.1
Ptilotus astrolasius	0.2		0.1
Ptilotus calostachyus	1		0.1
Rhynchosia minima			0.1
Scaevola parvifolia subsp. *pilbarae*	0.2		0.1
Senna artemisioides subsp. *oligophylla*	1.5		0.3
Senna symonii	1.5		0.2
Sida arenicola	0.5		0.1
Sida rohlenae subsp. *rohlenae*	0.3		0.1
Solanum phlomoides	0.3		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia lanigera	0.4		17

PHOTOS

Site Name:	HD18
Site Type:	QUADRAT
Dimensions:	25m x 100m
Survey Date:	13/03/2022
GPS Location:	GDA94 Zone 50 644813.85E 7692956.95N
Orientation:	240/150
Community:	12
Landform Type:	Other, Low rise (other)
Slope Class:	Gently Inclined (3 degrees)
Soil Type:	Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	Dolomite? (other), 2-10% bedrock exposed
CF Abundance:	50-90%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	Dolomite shale (other)
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>5 years
Habitat:	Tall sparse shrubland over low hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia inaequilatera*
Lower Stratum 1:	*Triodia wiseana*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia inaequilatera	2.5		4
Acacia stellaticeps	0.3		0.1
Dodonaea coriacea	1		0.1
Hakea lorea subsp. *lorea*	1.8		0.2
Pimelea ammocharis	0.1		0.1
Ptilotus astrolasius	0.3		0.1
Ptilotus calostachyus	0.4		0.1
Sida arenicola	0.3		0.1
Streptoglossa macrocephala	0.5		0.1
Triodia wiseana	2.4		30

PHOTOS

Site Name:	HD19
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	13/03/2022
GPS Location:	GDA94 Zone 50 643719.12E 7692636.82N
Orientation:	280/190
Community:	10
Landform Type:	Other, Undulating plain (other)
Slope Class:	Very Gently Inclined (1 degree)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm
CF Types:	Colluvium (other)
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Grazing, Animal Disturbance
Fire:	>5 years
Habitat:	Low isolated trees over tall sparse shrubland over low sparse shrubland over low open hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia zygophylla*
Mid Stratum 1:	*Acacia ancistrocarpa*
Lower Stratum 1:	*Corchorus incanus* subsp. *incanus*
Lower Stratum 2:	*Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon lepidum	0.3		0.1
Abutilon sp. Pritzelianum (S. van Leeuwen 5095) (P3)	0.1	1	0.1
Acacia ancistrocarpa	2.5		7
Acacia inaequilatera	2		0.2
Acacia sericophylla	2		0.2
Acacia stellaticeps	0.5		0.1
Acacia trachycarpa	2		0.3
Acacia tumida var. *pilbarensis*	3		0.4
Aristida holathera var. *holathera*	0.3		0.1

Arivela uncifera	0.3		0.1
Arivela viscosa	0.1		0.1
Boerhavia coccinea	0.1		0.1
Bonamia alatisemina			0.1
Corchorus incanus subsp. *incanus*	1		1
Corchorus parviflorus	1		3
Corymbia zygophylla	5		2
Cucumis variabilis			0.1
Dodonaea coriacea	0.3		0.1
Eragrostis eriopoda	0.3		0.1
Evolvulus alsinoides var. *villosicalyx*	0.2		0.1
Hibiscus brachychlaenus	0.8		0.1
Indigofera monophylla	0.4		0.1
Ipomoea polymorpha	0.1		0.1
Melhania oblongifolia	0.4		0.1
Paraneurachne muelleri	0.3		0.1
Paspalidium clementii	0.1		0.1
Pimelea ammocharis	0.4		0.1
Polymeria mollis	0.1		0.1
Ptilotus axillaris	0.1		0.1
Ptilotus calostachyus	0.6		0.1
Senna artemisioides subsp. *oligophylla*	2		0.5
Sida arenicola	1.7		0.2
Sida rohlenae subsp. *rohlenae*	0.4		0.1
Solanum phlomoides	0.2		0.1
Tinospora smilacina	0.1		0.1
Trianthema pilosum	0.1		0.1
Tribulopis angustifolia	0.1		0.1
Tribulus hirsutus	0.2		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia lanigera	0.4		15

PHOTOS

Site Name:	HD20
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	13/03/2022
GPS Location:	GDA94 Zone 50 643683.66E 7692276.57N
Orientation:	315/225
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>5 years
Habitat:	Isolated low trees over tall sparse shrubland over low shrubland over low sparse hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia zygophylla*
Mid Stratum 1:	*Acacia ancistrocarpa*, *Melaleuca lasiandra*
Lower Stratum 1:	*Acacia stellaticeps*
Lower Stratum 2:	*Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon lepidum	0.2		0.1
Acacia ancistrocarpa	3		3
Acacia sericophylla	1.5		0.1
Acacia sphaerostachya	1.2		0.2
Acacia stellaticeps	0.8		30
Aristida holathera var. *holathera*	0.4		0.1
Bonamia alatisemina			0.1
Corchorus parviflorus	0.8		0.1
Corymbia zygophylla	4		1.5
Cucumis variabilis			0.1
Dodonaea coriacea	0.5		0.1
Eragrostis eriopoda	0.3		0.1
Evolvulus alsinoides var. *villosicalyx*	0.2		0.1
Goodenia microptera	0.1		0.1

Hibiscus leptocladus	0.3		0.1
Melaleuca lasiandra	3		4
Paraneurachne muelleri	0.3		0.1
Ptilotus astrolasius	0.3		0.1
Ptilotus calostachyus	0.4		0.1
Senna artemisioides subsp. *helmsii*	0.3		0.1
Sida arenicola	1.8		0.1
Solanum phlomoides	0.1		0.1
Tribulus hirsutus	0.1		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia lanigera	0.4		8

PHOTOS

Site Name:	HD21
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	13/03/2022
GPS Location:	GDA94 Zone 50 644126.58E 7691741.38N
Orientation:	315/225
Community:	10
Landform Type:	Other, Undulating plain (other)
Slope Class:	Very Gently Inclined (1 degree)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	Quartz/Silica Cap (other), <2% bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm, 6-20mm
CF Types:	Shale? (other)
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>5 years
Habitat:	Low isolates trees over tall shrubland over low sparse hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia zygophylla*
Mid Stratum 1:	*Acacia acradenia*
Lower Stratum 1:	*Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon lepidum			
Acacia acradenia	2.5		35
Acacia ancistrocarpa	2		0.1
Acacia inaequilatera	4		0.3
Acacia stellaticeps	0.4		0.1
Aristida holathera var. *holathera*	0.3		0.1
Bonamia alatisemina			0.1
Bulbostylis barbata	0.1		0.1
Clerodendrum tomentosum var. *tomentosum*			
Corchorus parviflorus	0.6		0.1
Corymbia hamersleyana			
Corymbia zygophylla	4		1
Dodonaea coriacea	1.3		0.1

Eragrostis eriopoda	0.3		0.1
Evolvulus alsinoides var. *villosicalyx*	0.2		0.1
Goodenia stobbsiana	0.3		0.1
Grevillea wickhamii subsp. *aprica*	1.5		0.1
Hakea lorea subsp. *lorea*	4		0.3
Paraneurachne muelleri	0.3		0.1
Ptilotus astrolasius	0.4		0.1
Ptilotus calostachyus	0.3		0.1
Sida arenicola	0.4		0.1
Solanum phlomoides	0.1		0.1
Triodia lanigera	0.4		8

PHOTOS

Site Name:	HD22
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	13/03/2022
GPS Location:	GDA94 Zone 50 643547.68E 7691296.46N
Orientation:	40/310
Community:	12
Landform Type:	Other, Low rise (other)
Slope Class:	Gently Inclined (3 degrees)
Soil Type:	Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	Quartz/Silica Cap (other), 2-10% bedrock exposed
CF Abundance:	50-90%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	quartz/silica cap (other)
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>5 years
Habitat:	Low isolated trees over small sparse shrubland over low sparse shrubland over low hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia hamersleyana*
Mid Stratum 1:	*Acacia inaequilatera*, *Grevillea wickhamii* subsp. *aprica*
Lower Stratum 1:	*Goodenia stobbsiana*
Lower Stratum 2:	*Triodia epactia*, *Triodia wiseana*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	2.5		0.5
Acacia ancistrocarpa	0.8		0.1
Acacia inaequilatera	2.5		1.5
Afrohybanthus aurantiacus	0.4		0.1
Bonamia pilbarensis	0.1		0.1
Corymbia hamersleyana	4		0.4
Dampiera candicans	0.5		0.2
Eriachne mucronata	0.3		1
Goodenia stobbsiana	0.6		1
Grevillea wickhamii subsp. *aprica*	2.5		3
Hakea lorea subsp. *lorea*	1.5		0.2

Petalostylis labicheoides			
Ptilotus calostachyus	0.4		0.1
Senna artemisioides subsp. oligophylla x glutinosa subsp. glutinosa	1.3		0.2
Seringia nephrosperma	0.7		0.1
Solanum phlomoides	0.3		0.1
Triodia epactia	0.3		18
Triodia wiseana	0.3		6

PHOTOS

Site Name:	HD23
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/03/2022
GPS Location:	GDA94 Zone 50 644292.71E 7690289.29N
Orientation:	300/210
Community:	17
Landform Type:	Other, Dune crest (other)
Slope Class:	Moderately Inclined (10 degrees)
Soil Type:	Sand
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>20 years
Habitat:	Tall open shrubland over low open shrubland over low sparse tussock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia sabulosa*
Mid Stratum 1:	*Corchorus incanus* subsp. *incanus*
Lower Stratum 1:	*Aristida holathera* var. *holathera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia sabulosa	5		17
Afrohybanthus aurantiacus	0.4		0.1
Aristida holathera var. *holathera*	0.5		5
Bonamia erecta	0.3		0.1
Bonamia media			0.2
Corchorus incanus subsp. *incanus*	0.8		10
Crotalaria cunninghamii	2.5		0.5
Dodonaea coriacea	1.3		0.1
Eragrostis eriopoda	0.4		0.1
Eriachne helmsii	0.4		0.2
Eriachne obtusa	0.3		0.1
Euphorbia myrtoides	0.3		0.1
Gyrostemon tepperi	1.5		0.2
Indigofera monophylla	0.5		0.2
Panicum australiense var. *australiense*	0.1		0.1

Ptilotus arthrolasius	0.5		0.5
Sida arenicola	2		1
Trianthema pilosum	0.1		0.1
Tribulopis angustifolia	0.2		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia lanigera	0.5		0.1
Triodia schinzii	0.5		0.2

PHOTOS

Site Name:	HD24
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/03/2022
GPS Location:	GDA94 Zone 50 644462.14E 7689861.72N
Orientation:	345/255
Community:	4
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>5 years
Habitat:	Low isolated trees over tall sparse shrubland over low open shrubland over low open hummock/tussock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Eucalyptus victrix*
Mid Stratum 1:	*Acacia ancistrocarpa*
Lower Stratum 1:	*Acacia stellaticeps*, *Pluchea tetranthera*
Lower Stratum 2:	*Aristida holathera* var. *holathera*, *Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	3		5
Acacia sphaerostachya	1.5		0.1
Acacia stellaticeps	0.8		10
Aristida holathera var. *holathera*	0.4		3
Bonamia alatisemina	0.1		0.1
Chrysopogon fallax	0.3		0.4
Corchorus parviflorus	0.5		0.1
Eragrostis eriopoda	0.4		0.3
Eriachne obtusa	0.3		0.1
Eriachne pulchella subsp. *dominii*	0.1		0.1
Eucalyptus victrix	5		1.5
Euphorbia australis var. *subtomentosa*	0.1		0.1
Goodenia lamprosperma	0.2		0.1
Hibiscus brachychlaenus	1		0.1

Indigofera monophylla	0.5		0.1
Panicum australiense var. *australiense*	0.1		0.1
Pluchea tetranthera	0.5		3
Ptilotus astrolasius	0.3		0.1
Sida arenicola	0.2		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.1		0.1
Tribulus hirsutus	0.1		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.4		8

PHOTOS

Site Name:	HD40
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	02/05/2022
GPS Location:	GDA94 Zone 50 654082.53E 7697717.55N
Orientation:	45/315
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>5 years
Habitat:	Isolated low trees over tall open shrubland over mid hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia hamersleyana*, *Corymbia zygophylla*
Upper Stratum 2:	*Acacia tumida* var. *pilbarensis*
Lower Stratum 1:	*Triodia epactia*, *Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2.2		0.1
Acacia inaequilatera	0.9		0.1
Acacia sericophylla	2.1		0.1
Acacia stellaticeps	0.8		0.1
Acacia tumida var. *pilbarensis*	4		15
Aristida inaequiglumis	0.5		0.1
Bonamia erecta	0.2		0.1
Chrysopogon fallax	0.2		0.1
Corchorus elachocarpus	0.3		0.1
Corymbia hamersleyana	5		0.5
Corymbia zygophylla	5		0.5
Dolichandrone occidentalis	1.6		0.1
Eragrostis eriopoda	0.3		0.1
Grevillea wickhamii subsp. *aprica*	1.6		0.1
Hibiscus sturtii var. *campylochlamys*	0.5		0.1
Paraneurachne muelleri	0.2		0.1

Ptilotus astrolasius	0.2		0.1
Ptilotus calostachyus	1.2		0.1
Tinospora smilacina	0.3		0.1
Triodia epactia	0.6		30
Triodia lanigera	0.7		1

PHOTOS

Site Name:	HD41
Site Type:	QUADRAT
Dimensions:	25m x 100m
Survey Date:	02/05/2022
GPS Location:	GDA94 Zone 50 654614.7E 7697734.35N
Orientation:	75/345
Community:	14
Landform Type:	Flat
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>5 years
Habitat:	Isolated tall shrubs over low hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia inaequilatera*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia inaequilatera	2.2		0.1
Aristida contorta	0.2		0.1
Fimbristylis dichotoma	0.1		0.1
Pluchea tetranthera	0.4		0.1
Triodia epactia	0.4		30

PHOTOS

Site Name:	HD42
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	02/05/2022
GPS Location:	GDA94 Zone 50 655507.1E 7698308.21N
Orientation:	245/335
Community:	12
Landform Type:	Hillock
Slope Class:	Moderately Inclined (10 degrees)
Soil Type:	Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	Shale (other), 10-20% bedrock exposed
CF Abundance:	>90%
CF Sizes:	60-200mm
CF Types:	Shale (other)
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>5 years
Habitat:	Isolated tall shrubs over low hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia inaequilatera*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2.1		0.1
Acacia colei	1.6		0.1
Acacia inaequilatera	2.3		0.8
Bonamia pilbarensis	0.1		0.1
Hakea lorea subsp. *lorea*	0.6		0.1
Ptilotus calostachyus	0.2		0.1
Senna artemisioides subsp. *oligophylla*	0.6		0.1
Senna glutinosa subsp. *glutinosa*	1.8		0.1
Senna glutinosa subsp. *x luerssenii*	1		0.1
Senna symonii	0.8		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.5		0.1
Solanum phlomoides	0.2		0.1
Tephrosia sp. NW Eremaean (S. van Leeuwen et al. PBS 0356)	0.1		0.1
Triodia epactia	0.3		30

PHOTOS

Site Name:	HD43
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	02/05/2022
GPS Location:	GDA94 Zone 50 655945.89E 7698546.14N
Orientation:	250/340
Community:	11
Landform Type:	Plain
Slope Class:	Very Gently Inclined (1 degree)
Soil Type:	Clay Loam
Soil Colour:	Yellow-brown (other)
Rock Outcrop:	No bedrock exposed
CF Abundance:	20-50%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	Ironstone, Quartz, Calcrete
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>5 years
Habitat:	Tall open shrubland over mid isolated shrubs over low hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia inaequilatera*, *Acacia orthocarpa*
Mid Stratum 1:	*Acacia stellaticeps*
Lower Stratum 1:	*Triodia chichesterensis*, *Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	4		0.1
Acacia inaequilatera	4		0.5
Acacia orthocarpa	3		25
Acacia stellaticeps	1.1		0.5
Bonamia pilbarensis	0.1		0.1
Cassytha capillaris	0		0.1
Corymbia hamersleyana	4		0.1
Eriachne mucronata	0.4		0.1
Grevillea wickhamii subsp. *aprica*	1.2		0.1
Hakea lorea subsp. *lorea*	1		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.4		0.1
Triodia chichesterensis (P3)	0.3		5
Triodia epactia	0.4		25

Triodia lanigera	0.4		0.1

PHOTOS

Site Name:	HD44
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	02/05/2022
GPS Location:	GDA94 Zone 50 656241.3E 7698097.13N
Orientation:	290/20
Community:	13
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>5 years
Habitat:	Isolated low clumps of trees over tall open shrubland over mid hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia zygophylla*
Upper Stratum 2:	*Acacia acradenia*, *Acacia ancistrocarpa*, *Acacia tumida* var. *pilbarensis*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	3		20
Acacia ancistrocarpa	2.5		1
Acacia colei	3.5		0.1
Acacia inaequilatera	2.5		0.1
Acacia orthocarpa	1.8		0.1
Acacia trachycarpa x tumida var. pilbarensis	4		0.1
Acacia tumida var. *pilbarensis*	4		1
Aristida holathera var. *holathera*	0.2		0.1
Cassytha filiformis	0		0.1
Chrysopogon fallax	0.3		0.1
Corymbia hamersleyana	3		0.5
Corymbia zygophylla	4		1
Eragrostis eriopoda	0.3		0.1
Sida arenicola	0.7		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.8		0.1

Tinospora smilacina	0		0.1
Trigastrotheca molluginea	0.2		0.1
Triodia epactia	0.6		45

PHOTOS

Site Name:	HD45
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	02/05/2022
GPS Location:	GDA94 Zone 50 655585.98E 7697889.88N
Orientation:	0/270
Community:	14
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Habitat:	Tall sparse shrubland over mid hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia ancistrocarpa*, *Acacia colei*, *Acacia inaequilatera*
Lower Stratum 1:	*Triodia epactia*, *Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	3.5		2
Acacia colei	4		3
Acacia inaequilatera	3.5		1
Acacia tumida var. *pilbarensis*	4.5		0.1
Arivela uncifera	0.1		0.1
Bonamia alatisemina	0		0.1
Cassytha capillaris	0		0.1
Cassytha filiformis	0		0.1
Corchorus incanus subsp. *incanus*	1		0.1
Corymbia candida subsp. *candida*	0		0
Corymbia hamersleyana	2		0.1
Dodonaea coriacea	1.4		0.1
Eragrostis eriopoda	0.3		0.1
Eriachne ?obtusa	0.4		0.1
Pimelea ammocharis	0.7		0.1
Pluchea tetranthera	0.4		0.1
Sida rohlenae subsp. *rohlenae*	0.2		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.6		0.1
Tinospora smilacina	0		0.1

Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.6		40
Triodia lanigera	0.4		1

PHOTOS

Site Name:	HD46
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	02/05/2022
GPS Location:	GDA94 Zone 50 656663.97E 7698860.18N
Orientation:	200/110
Community:	11
Landform Type:	Other, Low rise (other)
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	WNW
Soil Type:	Clay Loam
Soil Colour:	Brown
Rock Outcrop:	Calcrete, <2% bedrock exposed
CF Abundance:	20-50%
CF Sizes:	2-6mm, 6-20mm, 20-60mm
CF Types:	Quartz, Calcrete
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Habitat:	Isolated low trees over tall open shrubland over mid isolated clumps of shrubs over low hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia hamersleyana*
Upper Stratum 2:	*Acacia orthocarpa*
Mid Stratum 1:	*Acacia stellaticeps*
Lower Stratum 1:	*Triodia chichesterensis*, *Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	2.1		0.1
Acacia colei	2		0.1
Acacia inaequilatera	3		0.1
Acacia orthocarpa	2.2		10
Acacia stellaticeps	1.1		1
Bonamia pilbarensis	0.1		0.1
Cassytha filiformis	0		0.1
Corymbia hamersleyana	4.5		0.5
Grevillea wickhamii subsp. *aprica*	2.5		0.1
Hakea lorea subsp. *lorea*	2.5		0.1
Senna symonii	0.9		0.1

Solanum phlomoides	0.4		0.1
Triodia chichesterensis (P3)	0.3		35
Triodia epactia	0.4		2

PHOTOS

Site Name:	HD47
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	03/05/2022
GPS Location:	GDA94 Zone 50 657187.55E 7698421.64N
Orientation:	180/270
Community:	13
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clay Loam
Soil Colour:	Red (other)
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>5 years
Habitat:	Low isolated tress over tall open shrubland over low hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia candida* subsp. *candida*
Upper Stratum 2:	*Acacia tumida* var. *pilbarensis*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	2.5		0.1
Acacia ancistrocarpa	2.5		0.1
Acacia colei	2.5		0.1
Acacia inaequilatera	1.2		0.3
Acacia tumida var. *pilbarensis*	3		12
Bonamia alatisemina	0.1		0.1
Cajanus cinereus	1.2		0.1
Chrysopogon fallax	0.3		0.1
Corymbia candida subsp. *candida*	7		2
Corymbia hamersleyana	3		0.5
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.4		0.1
Tinospora smilacina	0		0.1
Triodia epactia	0.4		50

PHOTOS

Site Name:	HD48
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	03/05/2022
GPS Location:	GDA94 Zone 50 657240.61E 7698639.9N
Orientation:	0/270
Community:	12
Landform Type:	Crest
Slope Class:	Gently Inclined (3 degrees)
Soil Type:	Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	? Chert (other), <2% bedrock exposed
CF Abundance:	50-90%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	? Chert (other)
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>5 years
Habitat:	Isolated low trees over tall sparse shrubland over low hummock grassland.
Comments:	*Triodia chichesterensis* (P3) surrounding lower slopes either side of quadrat.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia hamersleyana*
Mid Stratum 1:	*Acacia inaequilatera*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	2.5		0.5
Acacia ancistrocarpa	2.5		0.5
Acacia colei	2.5		0.1
Acacia inaequilatera	3		3
Acacia tumida var. *pilbarensis*	3		0.5
Afrohybanthus aurantiacus	0.2		0.1
Aristida holathera var. *holathera*	0.3		0.1
Bonamia pilbarensis	0.1		0.1
Corymbia hamersleyana	3		1
Eriachne mucronata	0.3		0.1
Goodenia stobbsiana	0.4		0.1
Grevillea wickhamii subsp. *aprica*	2.5		0.1

Hakea lorea subsp. *lorea*	0.8		0.1
Paraneurachne muelleri	0.3		0.1
Pluchea ferdinandi-muelleri	0.5		0.1
Ptilotus astrolasius	0.2		0.1
Ptilotus calostachyus	1		0.1
Solanum phlomoides	0.1		0.1
Tephrosia sp. NW Eremaean (S. van Leeuwen et al. PBS 0356)	0.1		0.1
Tinospora smilacina			0.1
Triodia epactia	0.4		30

PHOTOS

Site Name:	HD49
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	03/05/2022
GPS Location:	GDA94 Zone 50 657652.13E 7699085.85N
Orientation:	0/270
Community:	14
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>5 years
Habitat:	Tall shrubland over low open hummock grassland.

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	3		15
Acacia ancistrocarpa	3		15
Acacia ancistrocarpa x orthocarpa	3		0.5
Acacia colei	2.5		0.1
Acacia inaequilatera	3		1
Acacia orthocarpa	3		2
Acacia tumida var. *pilbarensis*	3		3
Grevillea wickhamii subsp. *aprica*	0.7		0.1
Hakea lorea subsp. *lorea*	2		0.2
Solanum phlomoides	0.5		0.1
Triodia epactia	0.5		25

PHOTOS

Site Name:	HD50
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	03/05/2022
GPS Location:	GDA94 Zone 50 657027.82E 7698984.31N
Orientation:	80/170
Community:	14
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia hamersleyana*
Mid Stratum 1:	*Acacia ancistrocarpa*, *Acacia inaequilatera*
Lower Stratum 1:	*Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	3		3
Acacia colei	2.5		0.1
Acacia inaequilatera	4		3
Bonamia alatisemina	0.2		0.1
Cassytha capillaris			0.1
Chrysopogon fallax	0.2		0.1
Corymbia hamersleyana	3		1
Corymbia zygophylla	4		0.5
Hakea lorea subsp. *lorea*	1.8		0.1
Indigofera monophylla	0.4		0.1
Pluchea tetranthera	0.5		0.1
Ptilotus astrolasius	0.4		0.1
Sida rohlenae subsp. *rohlenae*	0.4		0.1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.4		0.1
Tinospora smilacina			0.1
Triodia epactia	0.4		7
Triodia lanigera	0.4		25

PHOTOS

Site Name:	HD51
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	03/05/2022
GPS Location:	GDA94 Zone 50 657304.53E 7699540.14N
Orientation:	170/80
Community:	14
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm
CF Types:	Ironstone, Colluvium (other)
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Evidence of cattle disturbance.
Fire:	>5 years
Habitat:	Isolated tall shrubs over low open hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia colei*, *Acacia inaequilatera*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia colei	2		0.1
Acacia inaequilatera	2		0.1
Aristida holathera var. *holathera*	0.3		0.1
Aristida hygrometrica	0.3		0.1
Fimbristylis dichotoma	0.1		0.1
Hibiscus brachychlaenus	0.4		0.1
Panicum australiense var. *australiense*	0.1		0.1
Pluchea tetranthera	0.5		0.1
Pterocaulon sphacelatum	0.2		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.5		25

PHOTOS

Site Name:	HD52
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	03/05/2022
GPS Location:	GDA94 Zone 50 657645.44E 7699881.14N
Orientation:	60/330
Community:	13
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>5 years
Habitat:	Low woodland over tall sparse shrubland over low hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia hamersleyana*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	2.5		0.2
Acacia ancistrocarpa	3		0.1
Acacia colei	3		0.2
Acacia inaequilatera	0.8		0.1
Acacia tumida var. *pilbarensis*	4		3
Bonamia alatisemina	0.1		0.1
Cajanus cinereus	0.8		0.2
Cassytha filiformis			0.1
Chrysopogon fallax	0.2		0.1
Corchorus incanus subsp. *incanus*	0.4		0.1
Corymbia candida subsp. *candida*	2		0.2
Corymbia hamersleyana	5		17
Cucumis variabilis			0.1
Grevillea wickhamii subsp. *aprica*	3		0.1
Tinospora smilacina			0.1
Triodia epactia	0.4		50

PHOTOS

Site Name:	HD53
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	03/05/2022
GPS Location:	GDA94 Zone 50 658079.82E 7700006.8N
Orientation:	185/95
Community:	13
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Habitat:	Low open woodland over tall sparse shrubland over low hummock grasslands.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia hamersleyana*
Mid Stratum 1:	*Acacia acradenia*, *Acacia tumida* var. *pilbarensis*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	3		3
Acacia ancistrocarpa	2		0.1
Acacia inaequilatera	0.8		0.1
Acacia tumida var. *pilbarensis*	3		3
Bonamia alatisemina	0.1		0.1
Cajanus cinereus	1		0.1
Cassytha filiformis			0.1
Chrysopogon fallax	0.2		0.1
Corymbia hamersleyana	4		8
Tinospora smilacina			0.1
Triodia epactia	0.4		40

PHOTOS

Site Name:	HD54
Site Type:	QUADRAT
Dimensions:	25m x 100m
Survey Date:	03/05/2022
GPS Location:	GDA94 Zone 50 654047E 7697860.35N
Orientation:	245/155
Community:	12
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	Calcrete, <2% bedrock exposed
CF Abundance:	50-90%
CF Sizes:	2-6mm, 6-20mm, 20-60mm
CF Types:	Ironstone, Colluvium (other), Quartz, Calcrete
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>5 years
Habitat:	Isolated low trees over tall sparse shrubland over low hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia hamersleyana*
Mid Stratum 1:	*Acacia bivenosa*, *Acacia inaequilatera*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia bivenosa	2.5		3
Acacia inaequilatera	3		3
Acacia tumida var. *pilbarensis*	2.5		0.1
Bonamia pilbarensis	0.2		0.1
Corymbia hamersleyana	5		1
Dampiera candicans	0.5		0.1
Gossypium australe	0.2		0.1
Grevillea wickhamii subsp. *aprica*	2.5		7
Hakea lorea subsp. *lorea*	0.4		0.1
Ptilotus astrolasius	0.3		0.1
Ptilotus calostachyus	0.3		0.1
Senna glutinosa subsp. *glutinosa*	2.5		0.1
Triodia epactia	0.3		40

PHOTOS

Site Name:	HD55
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	04/05/2022
GPS Location:	GDA94 Zone 50 655050.21E 7698205.6N
Orientation:	270/180
Community:	11
Landform Type:	Plain
Slope Class:	Very Gently Inclined (1 degree)
Soil Type:	Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	Calcrete, 2-10% bedrock exposed
CF Abundance:	20-50%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	Ironstone, Chert (other), Calcrete
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>5 years
Habitat:	Low isolated trees over tall open shrubland over low hummock grassland.

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia hamersleyana*
Mid Stratum 1:	*Acacia orthocarpa*
Lower Stratum 1:	*Triodia chichesterensis*, *Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa x orthocarpa	2		0.1
Acacia inaequilatera	3		1.5
Acacia orthocarpa	2.5		15
Acacia orthocarpa x stellaticeps	1		0.1
Acacia stellaticeps	0.6		0.2
Acacia tumida var. *pilbarensis*	2.5		0.1
Corymbia hamersleyana	4.5		1.5
Eriachne mucronata	0.3		0.1
Grevillea wickhamii subsp. *aprica*	2		0.2
Hakea lorea subsp. *lorea*	1.5		0.1
Ptilotus astrolasius	0.3		0.1
Ptilotus calostachyus	0.6		0.1
Senna symonii	1		0.1

Triodia chichesterensis (P3)	0.2		17
Triodia epactia	0.3		17

PHOTOS

Site Name:	HD56
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/07/2022
GPS Location:	GDA94 Zone 50 639342.3006E 7717180.354N
Orientation:	180/270
Community:	5
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	>5 years
Habitat:	Tall open shrubland over low hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia trudgeniana*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia trudgeniana	3		12
Aristida holathera var. *holathera*	0.4		0.2
Boerhavia coccinea			0.1
Bonamia alatisemina			0.1
Bonamia erecta	0.4		0.1
Bulbostylis barbata	0.1		0.1
Cajanus marmoratus			
**Cenchrus ciliaris*	0.5		0.2
Chrysopogon fallax	0.4		0.1
Corchorus incanus subsp. *incanus*	0.5		0.1
Crotalaria ramosissima	0.1		0.1
Cullen lachnostachys	0.1		0.1
Eragrostis eriopoda	0.4		0.2
Euploca foliata	0.1		0.1
Evolvulus alsinoides var. *villosicalyx*	0.2		0.1
Goodenia microptera	0.2		0.1

Grona filiformis	0.1		0.1
Hypertelis cerviana	0.1		0.1
Indigofera colutea	0.1		0.1
Indigofera linifolia	0.1		0.1
Indigofera linnaei	0.1		0.1
Indigofera monophylla	0.3		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Polymeria mollis			0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.5		0.1
Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	0.2		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.5		65

PHOTOS

Site Name:	HD57
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/07/2022
GPS Location:	GDA94 Zone 50 638287.037E 7715932.472N
Orientation:	225/135
Community:	1
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm
CF Types:	Colluvium (other)
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	>5 years
Habitat:	Low hummock sedgeland

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1:	*Triodia epactia*, *Triodia longiceps*
Lower Stratum 2:	*Fimbristylis dichotoma*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Aristida contorta	0.2		0.1
Aristida hygrometrica	0.2		0.1
Bulbostylis barbata	0.1		0.1
Calandrinia stagnensis	0.1		0.1
Dactyloctenium radulans	0.1		0.1
Eragrostis dielsii	0.1		0.1
Eriachne aristidea	0.1		0.1
Eriachne pulchella subsp. *dominii*	0.1		0.1
Fimbristylis dichotoma	0.1		1
Ipomoea coptica	0.1		0.1
Iseilema dolichotrichum	0.1		0.1
Paspalidium rarum	0.1		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1

Streptoglossa decurrens	0.1		0.1
Synaptantha tillaeacea var. *tillaeacea*	0.1		0.1
Triodia epactia	0.4		10
Triodia longiceps	0.4		30

PHOTOS

Site Name:	HD58
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/07/2022
GPS Location:	GDA94 Zone 50 635649.8035E 7726552.107N
Orientation:	225/135
Community:	5
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	< 1 year
Habitat:	Tall sparse shrubland over low sparse shrubland over low hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia colei, Acacia trudgeniana*
Lower Stratum 1:	*Acacia stellaticeps*
Lower Stratum 2:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia colei	2.5		1
Acacia stellaticeps	1.5		1
Acacia trudgeniana	2.5		3
Aristida hygrometrica	0.2		0.2
Arivela viscosa	0.1		0.1
Bonamia alatisemina	0.1		0.1
Bonamia media	0.1		0.1
Bulbostylis barbata	0.1		0.1
Calandrinia pentavalvis	0.1		0.1
Calandrinia stagnensis	0.1		0.1
Chrysopogon fallax	0.3		0.1
Corchorus incanus subsp. *incanus*	0.4		0.1
Crotalaria medicaginea var. *neglecta*	0.1		0.1
Cucumis variabilis			0.1
Cullen martinii	0.1		0.1

Dactyloctenium radulans	0.1		0.1
Dysphania rhadinostachya subsp. *rhadinostachya*	0.1		0.1
Eragrostis cumingii	0.1		0.1
Eragrostis eriopoda	0.3		0.1
Eriachne aristidea	0.1		0.1
Eriachne obtusa	0.3		0.1
Euphorbia vaccaria var. *vaccaria*	0.1		0.1
Evolvulus alsinoides var. *villosicalyx*	0.2		0.1
Fimbristylis dichotoma	0.1		0.1
Goodenia microptera	0.1		0.1
Grona filiformis	0.1		0.1
Hibiscus sturtii var. *campylochlamys*	0.1		0.1
Indigofera colutea	0.1		0.1
Indigofera linifolia	0.1		0.1
Indigofera monophylla	0.2		0.1
Panicum australiense var. *australiense*	0.1		0.1
Paraneurachne muelleri	0.3		0.1
Paspalidium rarum	0.1		0.1
Pimelea ammocharis	0.1		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Polygala galeocephala	0.1		0.1
Portulaca oleracea	0.1		0.1
Rhynchosia minima			0.1
Rothia indica subsp. *australis* (P3)	0.1		0.1
Senna notabilis	0.1		0.1
Sida echinocarpa	0.3		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.4		0.1
Solanum cleistogamum	0.1		0.1
Stackhousia sp. swollen gynophore (W.R. Barker 2041)			
Streptoglossa decurrens	0.1		0.1
Synaptantha tillaeacea var. *tillaeacea*	0.1		0.1
Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	0.1		0.1
Trianthema pilosum	0.1		0.1
Tribulopis angustifolia	0.1		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.5		40
Zornia muelleriana subsp. *congesta*	0.1		0.1

PHOTOS

Site Name:	HD59
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/07/2022
GPS Location:	GDA94 Zone 50 635665.83E 7727032.067N
Orientation:	135/45
Community:	1
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	>5 years
Habitat:	Low hummock grassland dominated by *T. longiceps* with scattered *T. epactia*

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1: *Triodia epactia*, *Triodia longiceps*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Bulbostylis barbata	0.1		0.1
Byblis pilbarana	0.1		0.1
Calandrinia pentavalvis	0.2		0.1
Calandrinia stagnensis	0.1		0.1
Calotis plumulifera	0.1		0.1
Cyperus squarrosus	0.1		0.1
Dactyloctenium radulans	0.1		0.1
Eragrostis cumingii	0.1		0.1
Eragrostis dielsii	0.1		0.1
Eriachne aristidea	0.1		0.1
Eriachne obtusa	0.3		0.1
Evolvulus alsinoides var. *villosicalyx*	0.2		0.1
Fimbristylis dichotoma	0.2		0.2
Paspalidium rarum	0.1		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Polygala galeocephala	0.1		0.1
Rothia indica subsp. *australis* (P3)	0.1	200	0.1

Solanum cleistogamum	0.3		0.1
Synaptantha tillaeacea var. *tillaeacea*	0.1		0.1
Triodia epactia	0.5		1
Triodia longiceps	0.5		40
Wahlenbergia tumidifructa	0.3		0.1

PHOTOS

Site Name:	HD60
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/07/2022
GPS Location:	GDA94 Zone 50 636050.0302E 7726470.095N
Orientation:	230/140
Community:	2
Landform Type:	Closed Depression
Slope Class:	Level (0 degrees)
Soil Type:	Light Clay
Soil Colour:	Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm, 6-20mm, 20-60mm
CF Types:	Colluvium (other)
Disturbance:	Animal Disturbance - Cattle
Fire:	>5 years
Habitat:	Low open hummock grassland over low sparse forbland

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1:	*Eragrostis xerophila*, *Triodia longiceps*
Lower Stratum 2:	*Ptilotus murrayi*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon otocarpum	0.1		0.1
Abutilon oxycarpum subsp. Prostrate (A.A. Mitchell PRP 1266)	0.2		0.1
Aristida contorta	0.1		0.1
Boerhavia coccinea			0.1
Bulbostylis barbata	0.1		0.1
Calandrinia pentavalvis	0.1		0.1
Calandrinia stagnensis	0.1		0.1
Calotis plumulifera	0.1		0.1
**Cenchrus setiger*	0.2		0.1
Chloris pectinata	0.1		0.1
Corchorus tridens	0.1		0.1
Cyperus iria	0.1		0.1
Cyperus squarrosus	0.1		0.1
Dactyloctenium radulans	0.1		0.2

Dichanthium sericeum subsp. *humilius*	0.2		0.2
Dysphania rhadinostachya subsp. *inflata*	0.1		0.1
Eragrostis crateriformis (P3)	0.2		0.1
Eragrostis dielsii	0.1		0.1
Eragrostis xerophila	0.3		2
Eriachne aristidea	0.1		0.1
Eriachne glauca var. *glauca*	0.2		0.1
Euphorbia trigonosperma	0.1		0.1
Fimbristylis dichotoma	0.1		0.1
Gomphrena affinis subsp. *pilbarensis*	0.1		0.1
Goodenia microptera	0.1		0.1
Ipomoea coptica	0.2		0.1
Iseilema dolichotrichum	0.1		0.1
Nellica maderaspatensis	0.1		0.1
Neptunia dimorphantha	0.1		0.1
Paspalidium clementii	0.1		0.1
Paspalidium rarum	0.1		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Polygala isingii	0.1		0.1
Portulaca cyclophylla	0.1		0.1
Portulaca oleracea	0.1		0.1
Ptilotus murrayi	0.1		0.5
Rhynchosia minima	0.1		0.1
Rothia indica subsp. *australis* (P3)	0.1		0.1
Sida fibulifera	0.1		0.1
Sporobolus australasicus	0.1		0.1
Streptoglossa decurrens	0.1		0.1
Synaptantha tillaeacea var. *tillaeacea*	0.1		0.1
Trianthema triquetrum	0.1		0.1
Triodia epactia	0.5		0.3
Triodia longiceps	0.5		5

PHOTOS

Site Name:	HD61
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/07/2022
GPS Location:	GDA94 Zone 50 636133.5914E 7726059.409N
Orientation:	90/180
Community:	1
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	6-20mm
CF Types:	Colluvium (other)
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	>5 years
Habitat:	Low hummock grassland over low sparse sedgeland

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1:	*Triodia epactia*, *Triodia longiceps*
Lower Stratum 2:	*Fimbristylis dichotoma*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Aristida contorta	0.1		0.1
Aristida hygrometrica	0.2		0.1
Bulbostylis barbata	0.1		0.1
Calandrinia stagnensis	0.1		0.1
Carissa lanceolata	2		0.2
Dactyloctenium radulans	0.1		0.1
Eragrostis crateriformis (P3)	0.1		0.1
Eragrostis dielsii	0.1		0.1
Eriachne aristidea	0.1		0.1
Eriachne pulchella subsp. *dominii*	0.1		0.1
Euphorbia vaccaria var. *vaccaria*	0.1		0.1
Fimbristylis dichotoma	0.2		1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1

Polygala isingii	0.1		0.1
Ptilotus murrayi	0.1		0.1
Senna notabilis	0.1		0.1
Sporobolus australasicus	0.1		0.1
Streptoglossa decurrens	0.1		0.1
Synaptantha tillaeacea var. *tillaeacea*	0.1		0.1
Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	0.1		0.1
Triodia epactia	0.5		15
Triodia longiceps	0.5		15

PHOTOS

Site Name:	HD62
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	16/07/2022
GPS Location:	GDA94 Zone 50 636589.6925E 7725173.613N
Orientation:	180/270
Community:	5
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	< 1 year
Habitat:	Tall open shrubland over a low sparse shrubland over low hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia colei, Acacia trudgeniana*
Mid Stratum 1:	*Pimelea ammocharis*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia colei	3		5
Acacia trudgeniana	3		5
Aristida holathera var. *holathera*	0.1		0.1
Aristida hygrometrica	0.2		0.1
Arivela viscosa	0.3		0.1
Boerhavia coccinea			0.1
Bonamia alatisemina	0.1		0.1
Bonamia media	0.1		0.1
Bulbostylis barbata	0.1		0.1
Carissa lanceolata	1.5		0.1
**Cenchrus ciliaris*	0.2		0.1
**Cenchrus setiger*	0.4		0.1
Corchorus incanus subsp. *incanus*	0.1		0.1
Crotalaria ramosissima	0.1		0.1
Cullen lachnostachys	0.1		0.1

Dolichandrone occidentalis	1		0.2
Dysphania rhadinostachya subsp. *rhadinostachya*	0.1		0.1
Eragrostis eriopoda	0.3		0.1
Eriachne aristidea	0.2		0.1
Eriachne obtusa	0.3		0.1
Euphorbia trigonosperma	0.1		0.1
Euphorbia vaccaria var. *vaccaria*	0.1		0.1
Euploca foliata	0.1		0.1
Evolvulus alsinoides var. *villosicalyx*	0.2		0.1
Goodenia microptera	0.3		0.1
Grona filiformis			0.1
Hibiscus leptocladus	0.1		0.1
Hypertelis cerviana	0.1		0.1
Indigofera colutea	0.1		0.1
Indigofera linifolia	0.1		0.1
Indigofera monophylla	0.3		0.1
Ipomoea polymorpha	0.1		0.1
Melhania oblongifolia	0.1		0.1
Panicum australiense var. *australiense*	0.1		0.1
Paraneurachne muelleri	0.2		0.1
Paspalidium rarum	0.1		0.1
Pimelea ammocharis	0.5		0.2
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Senna notabilis	0.1		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.3		0.1
Sida sp. Pindan (B.G. Thomson 3398)	0.2		0.1
Solanum lasiophyllum	0.3		0.1
Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	0.1		0.1
Tinospora smilacina			0.1
Trianthema pilosum	0.1		0.1
Tribulopis angustifolia	0.1		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.5		
Urochloa holosericea subsp. *velutina*	0.4		0.1

PHOTOS

Site Name:	HD63
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	16/07/2022
GPS Location:	GDA94 Zone 50 637258.7381E 7724186.676N
Orientation:	135/45
Community:	2
Landform Type:	Closed Depression
Slope Class:	Level (0 degrees)
Soil Type:	Light Clay
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Fire:	>5 years
Habitat:	Isolated low trees over low tussock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia candida* subsp. *candida*
Lower Stratum 1:	*Eriachne flaccida*, *Eulalia aurea*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Bulbostylis barbata	0.1		0.1
Calandrinia pumila	0.1		0.1
Calandrinia stagnensis	0.1		0.1
Chrysopogon fallax	0.3		0.1
Corymbia candida subsp. *candida*	3		3
Cucumis variabilis			0.1
Cyperus iria	0.1		0.1
Cyperus squarrosus	0.1		0.1
Dichanthium sericeum subsp. *humilius*	0.1		0.1
Eragrostis crateriformis (P3)	0.1	3	0.1
Eriachne flaccida	0.4		35
Eriachne glauca var. *glauca*	0.1		0.1
Eulalia aurea	0.6		7
Goodenia lamprosperma	0.2		0.1
Goodenia microptera	0.3		0.1
Hakea lorea subsp. *lorea*			
Ipomoea coptica	0.1		0.1

Marsilea hirsuta	0.1		0.1
Neptunia dimorphantha	0.2		0.1
Schoenoplectiella laevis	0.1		0.1
Synaptantha tillaeacea var. *tillaeacea*	0.1		0.1
Triodia epactia	0.5		1

PHOTOS

Site Name:	HD64
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	16/07/2022
GPS Location:	GDA94 Zone 50 636963.3361E 7724488.273N
Orientation:	0/270
Community:	5
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	>5 years
Habitat:	Tall sparse shrubland over low sparse shrubland over low hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia trudgeniana*
Lower Stratum 1:	*Acacia stellaticeps*, *Carissa lanceolata*, *Pimelea ammocharis*
Lower Stratum 2:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon sp. Pritzelianum (S. van Leeuwen 5095) (P3)	0.4		0.1
Acacia colei	3		0.1
Acacia stellaticeps	1		0.3
Acacia trudgeniana	3		7
Aristida holathera var. *holathera*	0.3		0.1
Arivela viscosa	0.4		0.1
Boerhavia coccinea			0.1
Bonamia alatisemina			0.1
Bonamia media	0.1		0.1
Bulbostylis barbata	0.1		0.1
Carissa lanceolata	1.2		0.3
**Cenchrus ciliaris*	0.5		0.1
**Cenchrus setiger*	0.4		0.1
Chrysopogon fallax	0.5		0.1

Corchorus incanus subsp. *incanus*	0.5		0.1
Crotalaria ramosissima	0.2		0.1
Cucumis variabilis			0.1
Dysphania rhadinostachya subsp. *rhadinostachya*	0.1		0.1
Eragrostis eriopoda	0.2		0.1
Eriachne obtusa	0.3		0.1
Euphorbia vaccaria var. *vaccaria*	0.1		0.1
Evolvulus alsinoides var. *villosicalyx*	0.2		0.1
Goodenia microptera	0.3		0.1
Grona filiformis	0.1		0.1
Indigofera linifolia	0.1		0.1
Ipomoea polymorpha	0.1		0.1
Owenia reticulata			
Panicum australiense var. *australiense*	0.1		0.1
Paraneurachne muelleri	0.4		0.1
Pimelea ammocharis	0.8		0.5
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.6		0.1
Solanum lasiophyllum	0.3		0.1
Tephrosia sp. B Kimberley Flora (C.A. Gardner 7300)	0.6		0.1
Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	0.1		0.1
Tinospora smilacina			0.1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.5		50

PHOTOS

Site Name:	HD65
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	17/07/2022
GPS Location:	GDA94 Zone 50 638889.6679E 7718239.026N
Orientation:	180/270
Community:	5
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	>5 years
Habitat:	Tall open shrubland over low hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia ancistrocarpa*, *Acacia colei*, *Acacia trudgeniana*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon sp. Pritzelianum (S. van Leeuwen 5095) (P3)	1.6		0.1
Acacia ancistrocarpa	3		4
Acacia colei	3		0.5
Acacia trudgeniana	3		5
Aristida holathera var. *holathera*	0.4		1
Arivela viscosa	0.2		0.1
Boerhavia coccinea			0.1
Bonamia alatisemina			0.1
Bonamia media			0.1
Bulbostylis barbata	0.1		0.1
Cajanus marmoratus			0.1
**Cenchrus ciliaris*	0.4		0.1
Chrysopogon fallax	0.4		0.1
Corchorus incanus subsp. *incanus*	0.8		0.3
Crotalaria medicaginea var. *neglecta*	0.1		0.1

Crotalaria ramosissima	0.2		0.1
Cullen lachnostachys	0.1		0.1
Dolichandrone occidentalis	1.5		0.2
Dysphania rhadinostachya subsp. *rhadinostachya*	0.1		0.1
Ehretia saligna			
Eragrostis eriopoda	0.4		1
Eriachne aristidea	0.1		0.1
Eriachne obtusa	0.5		0.1
Euphorbia australis var. *subtomentosa*	0.2		0.1
Euploca foliata	0.1		0.1
Evolvulus alsinoides var. *villosicalyx*	0.3		0.1
Goodenia microptera	0.3		0.1
Grevillea pyramidalis subsp. *leucadendron*	2.5		0.3
Grona filiformis	0.1		0.1
Hakea lorea subsp. *lorea*	2		0.2
Hypertelis cerviana	0.1		0.1
Indigofera colutea	0.2		0.1
Indigofera linifolia	0.1		0.1
Indigofera monophylla	0.6		0.1
Paraneurachne muelleri	0.4		0.1
Perotis rara	0.1		0.1
Pimelea ammocharis	1		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Ptilotus astrolasius	0.3		0.1
Sida echinocarpa	1		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.4		0.1
Solanum diversiflorum	0.2		0.1
Solanum lasiophyllum	0.4		0.1
Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	0.2		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.6		40
Zornia albiflora	0.2		0.1

PHOTOS

Site Name:	HD66
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	17/07/2022
GPS Location:	GDA94 Zone 50 638116.3289E 7715813.427N
Orientation:	245/155
Community:	5
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	>5 years
Habitat:	Low open woodland over tall open shrubland over low hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia candida* subsp. *candida*
Upper Stratum 2:	*Acacia colei*, *Acacia trudgeniana*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia colei	4		10
Acacia sericophylla	1.5		0.1
Acacia trachycarpa	3		0.3
Acacia trudgeniana	4		3
Afrohybanthus aurantiacus	0.4		0.1
Boerhavia coccinea			0.1
Bonamia alatisemina			0.1
Bonamia media	0.1		0.1
Carissa lanceolata	1.5		0.2
**Cenchrus ciliaris*	0.4		0.1
**Cenchrus setiger*	0.4		0.1
Chrysopogon fallax	0.4		0.1
Corymbia candida subsp. *candida*	4		7
Corymbia zygophylla	2.5		0.1
Cucumis variabilis			0.1

Eragrostis eriopoda	0.3		0.1
Evolvulus alsinoides var. *villosicalyx*	0.3		0.1
Goodenia nuda	0.3	10	0.1
Grevillea pyramidalis subsp. *leucadendron*	0.6		0.1
Hakea lorea subsp. *lorea*	2		0.2
Indigofera monophylla	0.8		0.1
Paraneurachne muelleri	0.3		0.1
Pimelea ammocharis	0.8		0.1
Ptilotus astrolasius	0.4		0.1
Sida rohlenae subsp. *rohlenae*	0.5		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.3		0.1
Solanum lasiophyllum	0.3		0.1
Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	0.1		0.1
Tinospora smilacina			0.1
Triodia epactia	0.4		60

PHOTOS

Site Name:	HD67
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	18/07/2022
GPS Location:	GDA94 Zone 50 648684.6871E 7698208.08N
Orientation:	330/240
Community:	4
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	< 1 year
Habitat:	Tall open shrubland with isolated trees over low sparse shrubland on low hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia zygophylla*
Upper Stratum 2:	*Acacia orthocarpa*
Lower Stratum 1:	*Acacia stellaticeps*, *Pluchea tetranthera*
Lower Stratum 2:	*Triodia schinzii*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	3		1
Acacia inaequilatera	3		1
Acacia orthocarpa	3		20
Acacia stellaticeps	1		1
Aristida holathera var. *holathera*	0.3		0.1
Arivela uncifera	0.2		0.1
Bonamia alatisemina			0.1
Bulbostylis barbata	0.1		0.1
Corchorus elachocarpus	0.3		0.1
Corymbia zygophylla			
Dysphania rhadinostachya subsp. *rhadinostachya*	0.1		0.1
Eragrostis eriopoda	0.3		0.1

Euphorbia australis var. *subtomentosa*	0.1		0.1
Euphorbia vaccaria var. *vaccaria*	0.1		0.1
Euploca foliata	0.1		0.1
Goodenia microptera	0.2		0.1
Hakea lorea subsp. *lorea*	1.5		0.2
Hibiscus sturtii var. *campylochlamys*	0.2		0.1
Indigofera monophylla	0.3		0.1
Panicum australiense var. *australiense*	0.1		0.1
Pimelea ammocharis	0.2		0.1
Pluchea dunlopii	0.5		0.1
Pluchea tetranthera	0.5		1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Portulaca oleracea	0.1		0.1
Ptilotus astrolasius	0.4		0.1
Ptilotus fusiformis	0.2		0.1
Senna notabilis	0.2		0.1
Sida arenicola	1.2		0.2
Sida sp. Pindan (B.G. Thomson 3398)	0.2		0.1
Solanum phlomoides	0.4		0.1
Tephrosia rosea var. *rosea*	0.5		0.1
Tinospora smilacina			0.1
Trianthema pilosum	0.1		0.1
Tribulus hirsutus			0.1
Trigastrotheca molluginea	0.1		0.1
Triodia schinzii	0.4		40
Triumfetta ramosa	0.2		0.1

PHOTOS

Site Name:	HD68
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	18/07/2022
GPS Location:	GDA94 Zone 50 648695.7297E 7698620.247N
Orientation:	300/210
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	>5 years
Habitat:	Tall open shrubland, but primarily low sparse shrubland over low hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia ancistrocarpa*, *Acacia inaequilatera*, *Acacia sericophylla*
Lower Stratum 1:	*Acacia stellaticeps*
Lower Stratum 2:	*Triodia lanigera*, *Triodia schinzii*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	3		10
Acacia inaequilatera	3		1
Acacia sericophylla	2.5		0.5
Acacia stellaticeps	0.8		0.5
Bonamia alatisemina			0.1
Bonamia erecta	0.3		0.1
Bulbostylis barbata	0.1		0.1
Cassytha capillaris			0.1
Dodonaea coriacea	0.4		0.1
Dysphania rhadinostachya subsp. *rhadinostachya*	0.1		0.1
Indigofera monophylla	0.5		0.1
Pluchea tetranthera	0.3		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1

Ptilotus astrolasius	0.4		0.1
Solanum phlomoides	0.4		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia			
Triodia lanigera	0.4		20
Triodia schinzii	0.4		20

PHOTOS

Site Name:	HD69
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	18/07/2022
GPS Location:	GDA94 Zone 50 648288.4932E 7699443.064N
Orientation:	150/240
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	20-60mm
CF Types:	Alluvium (other)
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	~ 3 - 5 years
Habitat:	Tall shrubland over low hummock grassland. Some low isolated trees

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia zygophylla*
Upper Stratum 2:	*Acacia acradenia*
Lower Stratum 1:	*Acacia stellaticeps*
Lower Stratum 2:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	2		35
Acacia ancistrocarpa	2		0.2
Acacia inaequilatera	3		0.3
Acacia stellaticeps	0.4		0.3
Bonamia erecta	0.3		0.1
Bulbostylis barbata	0.1		0.1
Corymbia zygophylla	3		0.3
Dysphania rhadinostachya subsp. *rhadinostachya*	0.1		0.1
Eragrostis eriopoda	0.2		0.1
Eriachne pulchella subsp. *dominii*	0.1		0.1

Goodenia microptera	0.1		0.1
Panicum australiense var. *australiense*	0.1		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Polygala galeocephala	0.1		0.1
Portulaca oleracea	0.1		0.1
Ptilotus calostachyus	0.7		0.7
Senna glutinosa subsp. *glutinosa*	1.3		0.1
Senna glutinosa subsp. *pruinosa*	1		0.1
Senna notabilis	0.1		0.1
Triodia epactia	0.4		30
Triodia lanigera	0.4		2

PHOTOS

Site Name:	HD70
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	18/07/2022
GPS Location:	GDA94 Zone 50 648027.0896E 7698993.364N
Orientation:	10/280
Community:	4
Landform Type:	Closed Depression
Slope Class:	Very Gently Inclined (1 degree)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	> 5 years/< 1 year
Habitat:	Low open woodland over tall open shrubland over low open shrubland over hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia hamersleyana*
Upper Stratum 2:	*Acacia ancistrocarpa*, *Acacia trachycarpa*
Lower Stratum 1:	*Acacia stellaticeps*
Lower Stratum 2:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon lepidum	1.2		0.1
Abutilon otocarpum	0.3		0.1
Acacia acradenia	3		0.5
Acacia ancistrocarpa	4		10
Acacia colei	4		0.5
Acacia inaequilatera	3		0.5
Acacia orthocarpa	3		0.5
Acacia sphaerostachya	1.2		0.1
Acacia stellaticeps	1		10
Acacia trachycarpa	4		5
Aristida holathera var. *holathera*	0.4		0.1
Arivela viscosa	0.3		0.1
Boerhavia coccinea			0.1

Bonamia alatisemina			0.1
Bulbostylis barbata	0.1		0.1
Calandrinia stagnensis	0.1		0.1
Cassytha capillaris			0.1
Chrysopogon fallax	0.3		0.1
Corchorus elachocarpus	0.3		0.1
Corymbia hamersleyana	4		8
Dodonaea coriacea	1		0.1
Dysphania rhadinostachya subsp. *rhadinostachya*	0.1		0.1
Eragrostis eriopoda	0.4		0.1
Euphorbia psilosperma	0.1		0.1
Euphorbia vaccaria var. *vaccaria*	0.1		0.1
Goodenia lamprosperma	0.3		0.1
Goodenia microptera	0.3		0.1
Hibiscus sturtii var. *campylochlamys*	0.2		0.1
Indigofera monophylla	0.3		0.1
Panicum australiense var. *australiense*	0.1		0.1
Paraneurachne muelleri	0.3		0.1
Pluchea tetranthera	0.3		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Polygala galeocephala	0.1		0.1
Portulaca oleracea	0.1		0.1
Ptilotus astrolasius	0.3		0.1
Ptilotus calostachyus	0.4		0.1
Rhynchosia minima	0.1		0.1
Senna artemisioides subsp. *oligophylla*	0.5		0.1
Senna notabilis	0.1		0.1
Sida arenicola	0.3		0.1
Sida sp. Pindan (B.G. Thomson 3398)	0.2		0.1
Solanum phlomoides	0.2		0.1
Synaptantha tillaeacea var. *tillaeacea*	0.1		0.1
Tephrosia rosea var. *rosea*	0.3		0.1
Tinospora smilacina			0.1
Tribulus hirsutus	0.1		0.1
Trichodesma zeylanicum	0.1		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.5		20
Triodia schinzii	0.4		2

PHOTOS

Site Name:	HD71
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	18/07/2022
GPS Location:	GDA94 Zone 50 647926.2494E 7699209.352N
Orientation:	20/290
Community:	8
Landform Type:	Other, Low rise (other)
Slope Class:	Very Gently Inclined (1 degree)
Soil Type:	Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	50-90%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	Metamorphose sedimentary rock (other), Calcrete
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	< 1 year
Habitat:	Low open woodland over tall sparse shrubland over low sparse shrubland over low hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia hamersleyana*
Upper Stratum 2:	*Acacia bivenosa*, *Acacia inaequilatera*
Lower Stratum 1:	*Acacia stellaticeps*, *Goodenia stobbsiana*
Lower Stratum 2:	*Triodia epactia*, *Triodia wiseana*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2		0.1
Acacia bivenosa	2.5		3
Acacia colei	2		0.1
Acacia inaequilatera	3		1
Acacia sericophylla	0.5		0.1
Acacia stellaticeps	0.6		0.5
Acacia tumida var. *pilbarensis*	2		0.1
Aristida holathera var. *holathera*	0.2		0.1
Bonamia pilbarensis			0.1
Cassytha capillaris			0.1

Corchorus elachocarpus	0.1		0.1
Corymbia hamersleyana	4		2
Eriachne pulchella subsp. *dominii*	0.1		0.1
Euphorbia vaccaria var. *vaccaria*	0.1		0.1
Euploca ?pachyphylla	0.1		0.1
Goodenia microptera	0.2		0.1
Goodenia stobbsiana	0.4		0.1
Grevillea wickhamii subsp. *aprica*	1.8		0.1
Haloragis ?gossei	0.1		0.1
Ptilotus astrolasius	0.4		0.1
Ptilotus calostachyus	1		0.1
Scaevola amblyanthera var. *centralis*	0.2		0.1
Senna glutinosa subsp. *pruinosa*	0.6		0.1
Senna notabilis	0.1		0.1
Solanum phlomoides	0.2		0.1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.2		0.1
Tribulus hirsutus	0.1		0.1
Triodia epactia	0.4		25
Triodia wiseana	0.3		15

PHOTOS

Site Name:	HD72
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	18/07/2022
GPS Location:	GDA94 Zone 50 647279.4006E 7700041.888N
Orientation:	75/165
Community:	8
Landform Type:	Other, Low rise (other)
Slope Class:	Very Gently Inclined (1 degree)
Soil Type:	Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	Calcrete, 2-10% bedrock exposed
CF Abundance:	50-90%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	Metamorphose sedimentary rock (other), Calcrete
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	< 1 year
Habitat:	Low open woodland over tall sparse shrubland over low sparse shrubland over low hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia hamersleyana*
Upper Stratum 2:	*Acacia bivenosa*, *Acacia inaequilatera*, *Grevillea wickhamii* subsp. *aprica*
Lower Stratum 1:	*Acacia stellaticeps*
Lower Stratum 2:	*Triodia chichesterensis*, *Triodia epactia*, *Triodia wiseana*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	1.8		0.2
Acacia bivenosa	2		0.5
Acacia inaequilatera	3		3
Acacia stellaticeps	0.5		1
Afrohybanthus aurantiacus	0.2		0.1
Aristida holathera var. *holathera*	0.3		0.1
Arivela viscosa	0.1		0.1
Bonamia pilbarensis	0.1		0.1
Bulbostylis barbata	0.1		0.1
Corchorus elachocarpus	0.3		0.1

Corymbia hamersleyana	3		0.2
Dysphania rhadinostachya subsp. *rhadinostachya*	0.1		0.1
Eriachne mucronata	0.3		0.1
Eriachne pulchella subsp. *dominii*	0.1		0.1
Euphorbia vaccaria var. *vaccaria*	0.1		0.1
Euploca cunninghamii	0.1		0.1
Euploca pachyphylla	0.1		0.1
Goodenia microptera	0.2		0.1
Goodenia muelleriana	0.3		0.1
Grevillea wickhamii subsp. *aprica*	2.5		3
Haloragis ?gossei	0.1		0.1
Panicum australiense var. *australiense*	0.1		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Polymeria sp. nov (Potentially undescribed)		20	0.1
Ptilotus astrolasius	0.5		0.1
Ptilotus axillaris	0.1		0.1
Ptilotus calostachyus	0.6		0.1
Scaevola amblyanthera var. *centralis*	0.3		0.1
Senna notabilis	0.1		0.1
Senna symonii	0.5		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.3		0.1
Solanum phlomoides	0.2		0.1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.2		0.1
Tribulus hirsutus			0.1
Trigastrotheca molluginea	0.1		0.1
Triodia chichesterensis (P3)	0.3	200	10
Triodia epactia	0.4		10
Triodia wiseana	0.4		20

PHOTOS

Site Name:	HD73
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	18/07/2022
GPS Location:	GDA94 Zone 50 647693.1129E 7699758.616N
Orientation:	200/110
Community:	8
Landform Type:	Hillock
Slope Class:	Moderately Inclined (10 degrees)
Soil Type:	Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	Metamorphose Sedimentary Rock (other), 2-10% bedrock exposed
CF Abundance:	50-90%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	Metamorphose sedimentary rock (other)
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	< 1 year
Habitat:	Isolated low trees over tall sparse shrubland over low sparse shrubland over low hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia hamersleyana*
Upper Stratum 2:	*Acacia bivenosa*, *Acacia inaequilatera*
Lower Stratum 1:	*Goodenia stobbsiana*
Lower Stratum 2:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	2		0.5
Acacia ancistrocarpa	2		0.5
Acacia bivenosa	2		1
Acacia inaequilatera	3		4
Aristida holathera var. *holathera*	0.3		0.1
Bonamia pilbarensis			0.1
Corchorus elachocarpus	0.2		0.1
Corymbia hamersleyana	5		0.5
Dodonaea coriacea	0.1		0.1
Dolichocarpa crouchiana	0.1		0.1

Eriachne pulchella subsp. *dominii*	0.1		0.1
Euphorbia australis var. *subtomentosa*	0.1		0.1
Fimbristylis simulans	0.1		0.1
Goodenia microptera	0.1		0.1
Goodenia stobbsiana	0.5		0.5
Grevillea wickhamii subsp. *aprica*	1.8		0.1
Hakea lorea subsp. *lorea*	2		0.1
Indigofera monophylla	0.2		0.1
Portulaca oleracea	0.1		0.1
Ptilotus calostachyus	1		0.1
Senna glutinosa subsp. *glutinosa*	1.3		0.1
Senna notabilis	0.1		0.1
Solanum phlomoides	0.5		0.1
Streptoglossa decurrens	0.1		0.1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.3		0.1
Tephrosia sp. NW Eremaean (S. van Leeuwen et al. PBS 0356)	0.1		0.1
Tribulus hirsutus			0.1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.5		50

PHOTOS

Site Name:	HD74
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	19/07/2022
GPS Location:	GDA94 Zone 50 646978.2784E 7700535.054N
Orientation:	270/180
Community:	4
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Habitat:	Low open woodland over tall open shrubland over low hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia zygophylla*
Upper Stratum 2:	*Acacia ancistrocarpa*
Lower Stratum 1:	*Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon otocarpum	0.1		0.1
Acacia ancistrocarpa	3		15
Acacia inaequilatera	2		0.2
Acacia sericophylla	3		0.3
Acacia tumida var. *pilbarensis*	4		1
Aristida holathera var. *holathera*	0.4		0.1
Arivela viscosa	0.3		0.1
Boerhavia coccinea			0.1
Bonamia alatisemina			0.1
Bonamia erecta	0.3		0.1
Bulbostylis barbata	0.1		0.1
Cassytha capillaris			0.1
Corchorus elachocarpus	0.2		0.1
Corymbia zygophylla	5		4
Dodonaea coriacea	0.1		0.1
Dysphania rhadinostachya subsp.	0.1		0.1

rhadinostachya			
Eragrostis eriopoda	0.3		0.1
Eriachne pulchella subsp. *dominii*	0.1		0.1
Euphorbia psilosperma	0.1		0.1
Euphorbia tannensis subsp. *eremophila*	0.1		0.1
Euphorbia vaccaria var. *vaccaria*	0.1		0.1
Euploca foliata	0.1		0.1
Goodenia microptera	0.2		0.1
Hibiscus leptocladus	0.2		0.1
Indigofera monophylla	0.2		0.1
Panicum australiense var. *australiense*	0.1		0.1
Paraneurachne muelleri	0.3		0.1
Pluchea tetranthera	0.3		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Polygala galeocephala	0.1		0.1
Portulaca filifolia	0.1		0.1
Portulaca oleracea	0.1		0.1
Ptilotus astrolasius	0.4		0.1
Ptilotus axillaris	0.1		0.1
Ptilotus fusiformis	0.2		0.1
Senna notabilis	0.3		0.1
Sida arenicola	0.2		0.1
Sida rohlenae subsp. *rohlenae*	0.4		0.1
Sida sp. Pindan (B.G. Thomson 3398)	0.3		0.1
Solanum phlomoides	0.3		0.1
Streptoglossa decurrens	0.1		0.1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.2		0.1
Tinospora smilacina			0.1
Trianthema pilosum	0.1		0.1
Tribulopis angustifolia	0.1		0.1
Tribulus hirsutus			0.1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.4		0.2
Triodia lanigera	0.4		40
Triodia schinzii	0.4		1

PHOTOS

Site Name:	HD75
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	19/07/2022
GPS Location:	GDA94 Zone 50 646364.8464E 7701904.83N
Orientation:	280/190
Community:	4
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Fire:	>5 years
Habitat:	Isolated low trees over tall sparse shrubland over low shrubland over low open hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia zygophylla*
Upper Stratum 2:	*Acacia ancistrocarpa*, *Acacia inaequilatera*
Lower Stratum 1:	*Acacia stellaticeps*
Lower Stratum 2:	*Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	3		0.2
Acacia inaequilatera	3		0.2
Acacia sphaerostachya	1.5		0.1
Acacia stellaticeps	0.8		35
Acacia trachycarpa	1.4		0.1
Bonamia erecta	0.5		0.1
Bulbostylis barbata	0.1		0.1
Cassytha capillaris			0.1
Corymbia zygophylla			
Eriachne pulchella subsp. *dominii*	0.1		0.1
Goodenia microptera	0.1		0.1
Panicum australiense var. *australiense*	0.1		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Polygala galeocephala	0.1		0.1

Ptilotus astrolasius	0.4		0.1
Senna notabilis	0.1		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.5		0.2
Triodia lanigera	0.5		20
Triodia schinzii	0.5		5

PHOTOS

Site Name:	HD76
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	19/07/2022
GPS Location:	GDA94 Zone 50 644760.0308E 7704783.264N
Orientation:	310/40
Community:	4
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Habitat:	Low open woodland over tall sparse shrubland over low open shrubland over low hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia zygophylla*
Upper Stratum 2:	*Melaleuca lasiandra*
Lower Stratum 1:	*Acacia stellaticeps*, *Pluchea tetranthera*
Lower Stratum 2:	*Triodia epactia*, *Triodia schinzii*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia stellaticeps	1		15
Aristida holathera var. *holathera*	0.3		0.1
Aristida inaequiglumis	0.4		0.1
Bonamia alatisemina			0.1
Bulbostylis barbata	0.1		0.1
Chrysopogon fallax	0.3		0.1
Clerodendrum tomentosum var. *tomentosum*	0.4		0.1
Corchorus elachocarpus	0.1		0.1
Corymbia candida subsp. *candida*			
Corymbia zygophylla	5		0.2
Cucumis variabilis			0.1
Dysphania rhadinostachya subsp. *rhadinostachya*	0.1		0.1

Eragrostis eriopoda	0.3		0.1
Eriachne obtusa	0.3		0.1
Euphorbia psilosperma	0.1		0.1
Goodenia lamprosperma	0.2		0.1
Goodenia microptera	0.3		0.1
Hibiscus leptocladus	0.3		0.1
Leptosema anomalum	0.1		0.1
Melaleuca lasiandra	3		2
Panicum australiense var. *australiense*	0.1		0.1
Pimelea ammocharis	0.1		0.1
Pluchea dunlopii	0.3		0.1
Pluchea tetranthera	0.5		0.3
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Polygala galeocephala	0.1		0.1
Ptilotus axillaris	0.1		0.1
Ptilotus fusiformis	0.4		0.1
Senna notabilis	0.2		0.1
Sida arenicola	0.1		0.1
Sida sp. Pindan (B.G. Thomson 3398)	0.3		0.1
Solanum phlomoides	0.3		0.1
Streptoglossa decurrens	0.1		0.1
Tinospora smilacina			0.1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.4		15
Triodia schinzii	0.4		15

PHOTOS

Site Name:	HD77
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	19/07/2022
GPS Location:	GDA94 Zone 50 642862.63E 7701089.86N
Orientation:	250/160
Community:	8
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	Calcrete, <2% bedrock exposed
CF Abundance:	20-50%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	Calcrete
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	< 1 year and > 5 years
Habitat:	Tall open shrubland over low sparse shrubland over low hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia bivenosa*, *Acacia inaequilatera*
Lower Stratum 1:	*Acacia stellaticeps*, *Scaevola amblyanthera* var. *centralis*
Lower Stratum 2:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2		0.3
Acacia bivenosa	2		7
Acacia inaequilatera	3		8
Acacia stellaticeps	0.6		0.3
Aristida holathera var. *holathera*	0.2		0.1
Arivela viscosa	0.2		0.1
Boerhavia coccinea			0.1
Bonamia alatisemina			0.1
Cassytha capillaris			0.1
Corchorus elachocarpus	0.4		0.1
Dysphania rhadinostachya subsp. *rhadinostachya*	0.1		0.1

Eragrostis eriopoda	0.3		0.1
Eriachne obtusa	0.3		0.1
Euphorbia australis var. *subtomentosa*	0.1		0.1
Euphorbia vaccaria var. *vaccaria*	0.1		0.1
Goodenia microptera	0.4		0.1
Hakea lorea subsp. *lorea*	3		0.2
Pimelea ammocharis	0.3		0.1
Ptilotus astrolasius	0.4		0.2
Ptilotus axillaris			0.1
Ptilotus calostachyus	1.2		0.1
Scaevola amblyanthera var. *centralis*	0.4		0.5
Senna notabilis	0.1		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.4		0.1
Solanum phlomoides	0.1		0.1
Tribulus hirsutus			0.1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.4		45

PHOTOS

Site Name:	HD78
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	20/07/2022
GPS Location:	GDA94 Zone 50 644268.9965E 7699220.589N
Orientation:	90/180
Community:	8
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clay Loam
Soil Colour:	Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	20-50%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	Calcrete
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	< 1 year
Habitat:	Tall open shrubland over low sparse shrubland over low hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia bivenosa*, *Hakea lorea* subsp. *lorea*
Lower Stratum 1:	*Acacia stellaticeps*
Lower Stratum 2:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia bivenosa	2		12
Acacia inaequilatera	2.5		0.5
Acacia stellaticeps	0.6		2
Aristida holathera var. *holathera*	0.3		0.1
Arivela viscosa	13		0.1
Bonamia pilbarensis	0.1		0.1
Bulbostylis barbata	0.1		0.1
Calandrinia stagnensis	0.1		0.1
Cassytha capillaris			0.1
Corchorus elachocarpus	0.3		0.1
Dysphania rhadinostachya subsp. *rhadinostachya*	0.1		0.1

Eriachne mucronata	0.3		0.1
Goodenia microptera	0.3		0.1
Grevillea wickhamii subsp. *aprica*	2.5		0.1
Hakea lorea subsp. *lorea*	2.5		0.5
Haloragis ?gossei	0.1		0.1
Hibiscus leptocladus	0.1		0.1
Panicum australiense var. *australiense*	0.1		0.1
Paraneurachne muelleri	0.2		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Polymeria mollis			0.1
Portulaca oleracea	0.1		0.1
Ptilotus astrolasius	0.3		0.1
Ptilotus axillaris	0.1		0.1
Ptilotus calostachyus	0.8		0.1
Scaevola amblyanthera var. *centralis*	0.4		0.1
Senna notabilis	0.2		0.1
Senna symonii	0.2		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.3		0.1
Solanum phlomoides	0.4		0.1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.3		0.1
Tribulus hirsutus			0.1
Triodia epactia	0.4		40

PHOTOS

Site Name:	HD79
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	20/07/2022
GPS Location:	GDA94 Zone 50 644486.7995E 7699417.981N
Orientation:	235/145
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	>5 years
Habitat:	Isolated tall shrubs over low sparse shrubland over low hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia inaequilatera*
Lower Stratum 1:	*Acacia stellaticeps*
Lower Stratum 2:	*Triodia epactia*, *Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2		0.1
Acacia inaequilatera	2.5		0.2
Acacia sphaerostachya	1.3		0.1
Acacia stellaticeps	0.6		7
Bonamia alatisemina	0.1		0.1
Bulbostylis barbata	0.1		0.1
Cassytha capillaris			0.1
Corchorus elachocarpus	0.4		0.1
Eriachne pulchella subsp. *dominii*	0.1		0.1
Hakea lorea subsp. *lorea*	1.5		0.1
Indigofera monophylla	0.5		0.1
Portulaca oleracea	0.1		0.1
Ptilotus astrolasius	0.3		0.1
Sida arenicola	0.8		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.4		0.1

Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.5		3
Triodia lanigera	0.5		37

PHOTOS

Site Name:	HD80
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	20/07/2022
GPS Location:	GDA94 Zone 50 645325.3742E 7700339.874N
Orientation:	45/135
Community:	4
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	< 1 year
Habitat:	Tall open shrubland over low sparse shrubland over low hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia ancistrocarpa*, *Acacia inaequilatera*, *Acacia tumida* var. *pilbarensis*
Lower Stratum 1:	*Acacia stellaticeps*
Lower Stratum 2:	*Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2.5		20
Acacia inaequilatera	3		1
Acacia stellaticeps	0.8		2
Acacia tumida var. *pilbarensis*	3		0.5
Aristida holathera var. *holathera*	0.1		0.1
Arivela viscosa	0.1		0.1
Boerhavia coccinea			0.1
Bonamia erecta	0.3		0.2
Bulbostylis barbata	0.1		0.1
Corchorus elachocarpus	0.1		0.1
Corymbia zygophylla	0.1		0.1
Dodonaea coriacea	0.1		0.1
Dysphania rhadinostachya subsp. *rhadinostachya*	0.1		0.1
Eriachne pulchella subsp. *dominii*	0.1		0.1

Euphorbia australis var. *subtomentosa*	0.1		0.1
Euphorbia psilosperma	0.1		0.1
Euphorbia vaccaria var. *vaccaria*	0.1		0.1
Goodenia microptera	0.3		0.1
Haloragis ?gossei	0.1		0.1
Hibiscus leptocladus	0.3		0.1
Indigofera monophylla	0.3		0.1
Panicum australiense var. *australiense*	0.1		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Polygala galeocephala	0.1		0.1
Portulaca oleracea	0.1		0.1
Ptilotus axillaris			0.1
Ptilotus fusiformis	0.1		0.1
Schizachyrium fragile	0.1		0.1
Senna notabilis	0.1		0.1
Sida arenicola	0.3		0.1
Solanum diversiflorum	0.1		0.1
Solanum phlomoides	0.1		0.1
Streptoglossa decurrens	0.2		0.1
Synaptantha tillaeacea var. *tillaeacea*	0.1		0.1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.1		0.1
Tribulus hirsutus			0.1
Triodia lanigera	0.5		40

PHOTOS

Site Name:	HD81
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	20/07/2022
GPS Location:	GDA94 Zone 50 645157.9553E 7700337.558N
Orientation:	270/180
Community:	4
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	< 1 year
Habitat:	Isolated low trees over isolated tall shrubland over low open shrubland over low hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia zygophylla*
Upper Stratum 2:	*Acacia inaequilatera*
Lower Stratum 1:	*Acacia stellaticeps*
Lower Stratum 2:	*Triodia epactia*, *Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2		0.1
Acacia inaequilatera	2.5		0.2
Acacia stellaticeps	0.8		25
Aristida holathera var. *holathera*	0.1		0.1
Bonamia erecta	0.2		0.1
Bulbostylis barbata	0.1		0.1
Calandrinia stagnensis	0.1		0.1
Corchorus elachocarpus	0.1		0.1
Corymbia zygophylla	3		0.2
Dysphania rhadinostachya subsp. *rhadinostachya*	0.1		0.1
Eriachne pulchella subsp. *dominii*	0.1		0.1
Euphorbia psilosperma	0.1		0.1

Goodenia microptera	0.2		0.1
Hibiscus leptocladus	0.1		0.1
Panicum australiense var. *australiense*	0.1		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Polygala galeocephala	0.1		0.1
Portulaca oleracea	0.1		0.1
Ptilotus axillaris			0.1
Ptilotus fusiformis	0.1		0.1
Schizachyrium fragile	0.1		0.1
Senna notabilis	0.1		0.1
Sida arenicola	0.3		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.1		0.1
Solanum phlomoides	0.1		0.1
Streptoglossa decurrens	0.1		0.1
Synaptantha tillaeacea var. *tillaeacea*	0.1		0.1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.1		0.1
Tribulus hirsutus			0.1
Triodia epactia	0.5		1
Triodia lanigera	0.5		39
Triodia schinzii	0.4		0.1

PHOTOS

Site Name:	HD82
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	21/07/2022
GPS Location:	GDA94 Zone 50 653796.34E 7679025.5N
Orientation:	240/150
Community:	7
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Brown
Rock Outcrop:	Granite, 10-20% bedrock exposed
CF Abundance:	20-50%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	Granite, Quartz
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	< 1 year and > 5 years
Habitat:	Tall sparse shrubland over low sparse shrubland over low open hummock grassland
Comments:	Plot intersect of granite outcrop and red-brown sand plain

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia tumida* var. *pilbarensis*
Lower Stratum 1:	*Tephrosia rosea* var. *clementii*
Lower Stratum 2:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1.5		0.5
Acacia trachycarpa	1.4		0.1
Acacia tumida var. *pilbarensis*	3		0.5
Aristida holathera var. *holathera*	0.2		0.1
Arivela uncifera	0.2		0.1
Arivela viscosa	0.1		0.1
Boerhavia coccinea			0.1
Bonamia alatisemina			0.1
Bonamia erecta	0.2		0.1
Bulbostylis barbata	0.1		0.1

Calocephalus beardii	0.1		0.1
Corchorus incanus subsp. *incanus*	0.4		1.5
Crotalaria medicaginea var. *neglecta*	0.1		0.1
Cullen martinii	0.2		0.1
Cyperus squarrosus	0.1		0.1
Dysphania rhadinostachya subsp. *rhadinostachya*	0.1		0.1
Eragrostis cumingii	0.1		0.1
Eragrostis dielsii	0.1		0.1
Eriachne pulchella subsp. *dominii*	0.1		0.1
Euphorbia vaccaria var. *vaccaria*	0.1		0.1
Fimbristylis dichotoma	0.1		0.1
Goodenia microptera	0.3		0.1
Grona filiformis	0.1		0.1
Indigofera colutea	0.1		0.1
Indigofera linifolia	0.2		0.1
Indigofera monophylla	0.4		0.1
Panicum australiense var. *australiense*	0.1		0.1
Perotis rara	0.1		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Polygala galeocephala	0.1		0.1
Polymeria mollis	0.1		0.1
Portulaca oleracea	0.1		0.1
Schizachyrium fragile	0.1		0.1
Senna notabilis	0.3		0.1
Solanum diversiflorum	0.2		0.1
Solanum phlomoides	0.1		0.1
Synaptantha tillaeacea var. *tillaeacea*	0.1		0.1
Tephrosia rosea var. *clementii*	0.8		1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.3		0.1
Trachymene oleracea subsp. *oleracea*	0.1		0.1
Trianthema pilosum	0.1		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.5		30
Triumfetta ramosa	0.4		0.1
Vigna lanceolata var. *lanceolata*			0.1
Zornia muelleriana subsp. *congesta*	0.1		0.1

PHOTOS

Site Name:	HD-R01
Site Type:	RELEVE
Survey Date:	15/07/2022
GPS Location:	GDA94 Zone 50 635586.2071E 7726853.264N
Community:	2
Landform Type:	Closed Depression
Slope Class:	Level (0 degrees)
Soil Type:	Light Clay
Soil Colour:	Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Disturbance:	Animal Disturbance - Cattle
Fire:	>5 years
Habitat:	Low sparse tussock grassland over low sparse forbland
Comments:	Clay pan area, very small (< 50 x 50). Predominantly fringed by *Triodia epactia* and *Triodia longiceps* VT.

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Calandrinia pumila	0.1		0.1
Carissa lanceolata	1.5		0.1
**Cenchrus ciliaris*	0.5		0.1
Centipeda minima subsp. *macrocephala*	0.1		0.1
Chloris pumilio	0.2		0.1
Cyperus difformis	0.1		0.1
Cyperus iria	0.1		0.1
Cyperus leptocarpus	0.1		0.1
Cyperus pulchellus	0.1		0.1
Cyperus squarrosus	0.1		0.1
Dactyloctenium radulans	0.1		0.1
**Echinochloa colona*	0.1		0.1
Eragrostis crateriformis (P3)	0.1		0.1
Eragrostis cumingii	0.1		0.1
Eragrostis xerophila	0.4		0.1
Eriachne benthamii	0.5		2
Eriachne glauca var. *glauca*	0.2		1
Fimbristylis dichotoma	0.3		0.1
Marsilea hirsuta	0.1		0.1
Neptunia dimorphantha	0.2		0.1
Paspalidium rarum	0.1		0.1
Peplidium muelleri	0.1		1

Ptilotus murrayi	0.1		0.1
Schoenoplectiella laevis	0.1		0.1
Triodia epactia	0.4		0.1
Triodia longiceps	0.3		0.1

PHOTOS

Site Name:	HD-R02
Site Type:	RELEVE
Survey Date:	16/07/2022
GPS Location:	GDA94 Zone 50 637312.6754E 7723843.634N
Community:	2
Landform Type:	Closed Depression
Slope Class:	Level (0 degrees)
Soil Type:	Light Clay
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	6-20mm
Disturbance:	Animal Disturbance - Cattle
Fire:	>5 years
Habitat:	Isolated clumps of tall shrubs over low tussock grassland. Same as HD63

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia colei*, *Hakea lorea* subsp. *lorea*
Lower Stratum 1:	*Carissa lanceolata*
Lower Stratum 2:	*Eriachne flaccida*, *Eulalia aurea*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia colei	2		1
Calandrinia pumila	0.1		0.1
Carissa lanceolata	1		0.5
Chrysopogon fallax	0.4		0.1
Cyperus iria	0.1		0.1
Eriachne flaccida	0.4		10
Eriachne glauca var. *glauca*	0.1		0.1
Eulalia aurea	0.6		40
Goodenia lamprosperma	0.3		0.1
Goodenia microptera	0.3		0.1
Hakea lorea subsp. *lorea*	2.5		0.5
Marsilea hirsuta	0.1		0.1
Peplidium muelleri	0.1		0.1
Triodia epactia	0.5		0.2

PHOTOS

Site Name:	HD-R03
Site Type:	RELEVE
Survey Date:	21/07/2022
GPS Location:	GDA94 Zone 50 653975E 7678849N
Community:	7
Landform Type:	Other, Granite outcrop (other)
Soil Type:	Sandy Loam
Soil Colour:	Brown
Rock Outcrop:	Granite, 10-20% bedrock exposed
CF Abundance:	10-20%
CF Sizes:	20-60mm
CF Types:	Granite
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	<1

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	3		0.1
Acacia tumida var. *pilbarensis*	3		1
Aristida contorta	0.2		0.2
Bulbostylis barbata	0.1		0.1
Calocephalus beardii	0.2		0.2
Corchorus incanus subsp. *incanus*	1		1
Cyperus squarrosus	0.1		0.1
Eragrostis cumingii	0.2		0.1
Euphorbia vaccaria var. *vaccaria*	0.1		0.2
Euploca tenuifolia	0.2		0.1
Gomphrena leptoclada subsp. *leptoclada*	0.1		0.1
Grona filiformis	0.1		0.1
Indigofera colutea	0.1		0.2
Perotis rara	0.1		0.1
Swainsona formosa	0.2		0.2
Triodia epactia	0.4		15

PHOTOS

Site Name:	HJ01
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	09/03/2022
GPS Location:	GDA94 Zone 50 660478.65E 7697215.74N
Orientation:	90/180
Community:	16
Landform Type:	Drainage Line
Slope Class:	Level (0 degrees)
Soil Type:	Sand
Soil Colour:	orange (other)
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm
CF Types:	colluvium (other)
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Grazing, Exotic Weeds
Fire:	>15
Habitat:	Mid open woodland over tall sparse shrubland over mid open shrubland (~2 m) over mid open hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Eucalyptus camaldulensis* subsp. *refulgens*, *Triodia lanigera*
Mid Stratum 1:	*Acacia coriacea* subsp. *pendens*, *Acacia trachycarpa*
Mid Stratum 2:	*Melaleuca glomerata*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia colei	2.5		0.1
Acacia coriacea subsp. *pendens*	6.3		5
Acacia pyrifolia var. *pyrifolia*	0.8		0.2
Acacia trachycarpa	5		4
Acacia tumida var. *pilbarensis*	2.2		0.1
**Aerva javanica*	0.5		0.1
Afrohybanthus aurantiacus	0.3		0.1
Arivela viscosa	0.3		0.1
Boerhavia coccinea	0.1		0.1
Boerhavia schomburgkiana	0.2		0.1
Bulbostylis barbata	0.1		0.1

Cassytha filiformis			1.5
**Cenchrus ciliaris*	0.3		0.1
**Cenchrus setiger*	0.4		0.1
**Citrullus colocynthis*			0.2
Corchorus incanus subsp. *incanus*	1		1
Corynotheca pungens	0.5		0.1
Crotalaria cunninghamii	1.2		0.6
Cynanchum floribundum	0.6		0.1
Eucalyptus camaldulensis subsp. *refulgens*	12		3
Euphorbia australis var. *subtomentosa*	0.3		0.1
Euphorbia tannensis subsp. *eremophila*	0.5		0.1
Euphorbia trigonosperma	0.3		0.1
**Malvastrum americanum*	0.1		0.1
Melaleuca glomerata	2		15
**Opuntia* sp.			
Rhynchosia minima			0.1
Sida rohlenae subsp. *rohlenae*	0.8		0.8
Solanum phlomoides	0.7		0.1
Tephrosia sp. B Kimberley Flora (C.A. Gardner 7300)			
Tinospora smilacina	0.2		0.1
Triodia epactia	0.6		0.9
Triodia lanigera	0.6		15

PHOTOS

Site Name:	HJ02
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	09/03/2022
GPS Location:	GDA94 Zone 50 659292.4E 7697180.1N
Orientation:	90/180
Community:	14
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm, 6-20mm, 20-60mm
CF Types:	colluvium (other)
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	5-10
Habitat:	Low open hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1: *Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon sp. Pritzelianum (S. van Leeuwen 5095) (P3)		1	
Acacia acradenia			
Acacia tumida var. *pilbarensis*	0.5		0.1
Aristida hygrometrica			
Pluchea tetranthera	0.4		0.1
Senna notabilis			
Triodia epactia	0.4		10.5

PHOTOS

Site Name:	HJ03
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	09/03/2022
GPS Location:	GDA94 Zone 50 660378.92E 7695876.43N
Orientation:	90/180
Community:	11
Landform Type:	Other, Undulating plain (other)
Slope Class:	Gently Inclined (3 degrees)
Soil Type:	Sandy Clay
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	20-50%
CF Sizes:	2-6mm, 6-20mm, 20-60mm
CF Types:	colluvium, calcareous? (other)
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	>10
Habitat:	Mid sparse shrubland over low open hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia orthocarpa*
Lower Stratum 1:	*Triodia angusta*, *Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia inaequilatera	2		0.6
Acacia orthocarpa	2		6.5
Acacia stellaticeps	0.7		0.2
Bonamia pilbarensis	0.2		0.1
Cassytha capillaris			0.1
Corchorus incanus subsp. *incanus*	0.3		0.1
Corymbia hamersleyana			
Grevillea wickhamii subsp. *aprica*	2		0.1
Ptilotus calostachyus	0.8		0.1
Scaevola browniana subsp. *browniana*	0.4		0.1
Triodia angusta	0.5		20
Triodia lanigera	0.4		2.5

PHOTOS

Site Name:	HJ04
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	10/03/2022
GPS Location:	GDA94 Zone 50 661430.38E 7695433.23N
Orientation:	90/180
Community:	11
Landform Type:	Other, Undulating plain (other)
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	W
Soil Type:	Clay Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	50-90%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	colluvium (chert?) (other)
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	fire (other)
Fire:	<5
Habitat:	Mid isolated (sparse shrubland before fire?) over low sparse hummock grassland (open before fire)

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia orthocarpa*
Lower Stratum 1:	*Triodia angusta*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1		0.1
Acacia ancistrocarpa x orthocarpa			
Acacia colei	0.4		0.4
Acacia inaequilatera	2.5		0.2
Acacia orthocarpa	1		5
Acacia stellaticeps	0.4		0.1
Bonamia pilbarensis	0.1		0.1
Corchorus incanus subsp. *incanus*	0.4		0.1
Dampiera candicans			
Eriachne mucronata	0.3		0.1
Eriachne pulchella subsp. *dominii*	0.1		0.1

Grevillea wickhamii subsp. *aprica*	0.6		0.1
Petalostylis labicheoides			
Ptilotus astrolasius	0.3		0.1
Ptilotus calostachyus	0.5		0.1
Ptilotus sp.	0.4		
Tephrosia clementii	0.1		0.1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.3		0.1
Triodia angusta	0.2		6
Triodia lanigera	0.2		1.5

PHOTOS

Site Name:	HJ05
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	10/03/2022
GPS Location:	GDA94 Zone 50 655934.76E 7694898.84N
Orientation:	90/180
Community:	14
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sand
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	2-10%
CF Sizes:	6-20mm
CF Types:	colluvium (other)
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Drillpad/track nearby
Fire:	>3-5
Habitat:	Low open hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1: *Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia inaequilatera			
Acacia stellaticeps	0.8		0.1
Pluchea tetranthera	0.5		0.1
Triodia epactia	0.4		16

PHOTOS

Site Name:	HJ06
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	10/03/2022
GPS Location:	GDA94 Zone 50 659442.83E 7695343.87N
Orientation:	90/180
Community:	14
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	>10
Habitat:	Tall open shrubland over low open hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia ancistrocarpa*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2.8		10
Acacia colei	2		0.8
Acacia inaequilatera	2.2		0.6
Acacia orthocarpa	2.8		1
Acacia orthocarpa x stellaticeps	2.2	1	0.1
Acacia sericophylla	2		0.1
Acacia sphaerostachya	1.5	3	0.1
Acacia stellaticeps	1		0.4
Acacia tumida var. *pilbarensis*	2		0.1
Corchorus incanus subsp. *incanus*	1.5		0.1
Corymbia hamersleyana	3.2		0.1
Cullen cinereum	0.5		0.1
Grevillea pyramidalis subsp. *leucadendron*			
Hibiscus leptocladus			
Indigofera monophylla	0.4		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)			

Triodia epactia	0.4		22

PHOTOS

Site Name:	HJ07
Site Type:	QUADRAT
Dimensions:	25m x 100m
Survey Date:	10/03/2022
GPS Location:	GDA94 Zone 50 651229.71E 7687400.29N
Orientation:	30/120
Community:	10
Landform Type:	Ridge, Crest (other)
Slope Class:	Gently Inclined (3 degrees)
Aspect:	NE
Soil Type:	Clayey Sand
Soil Colour:	Red
Rock Outcrop:	Ironstone, 20-50% bedrock exposed
CF Abundance:	10-20%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	Ironstone
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	>10
Habitat:	Mid open shrubland over low-mid open hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia acradenia*
Lower Stratum 1:	*Triodia lanigera*, *Triodia schinzii*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	1.8		10
Acacia ancistrocarpa	1.6		0.2
Acacia inaequilatera	2.2		0.3
Aristida holathera var. *holathera*	0.3		0.1
Arivela uncifera	0.4		0.1
Bonamia alatisemina	0.1		0.1
Bonamia erecta	0.4		0.7
Cassytha capillaris			0.1
Corchorus parviflorus	0.7		0.1
Dampiera candicans	0.7		0.2
Dodonaea coriacea	0.5		0.1
Eragrostis eriopoda	0.4		0.1

Goodenia stobbsiana	0.5		0.4
Hakea lorea subsp. *lorea*	1.6		0.1
Hibiscus brachychlaenus	0.3		0.1
Paraneurachne muelleri	0.3		0.2
Petalostylis cassioides	0.6		0.1
Pluchea tetranthera	0.3		0.1
Portulaca ?filifolia	0.1		0.1
Ptilotus astrolasius	0.4		0.1
Ptilotus calostachyus	1		0.1
Sida arenicola	0.8		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.5		0.1
Solanum diversiflorum	0.3		0.1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.4		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia lanigera	0.6		3.5
Triodia schinzii	0.4		10

PHOTOS

Site Name:	HJ08
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	11/03/2022
GPS Location:	GDA94 Zone 50 651291.91E 7690225.86N
Orientation:	90/180
Community:	9
Landform Type:	Crest, Upper Slope (other)
Slope Class:	Gently Inclined (3 degrees)
Aspect:	W
Soil Type:	Clay Loam
Soil Colour:	Red
Rock Outcrop:	Chert (Iron Rich) (other), <2% bedrock exposed
CF Abundance:	50-90%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	chert (iron rich) (other)
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	(other) - track and drill pad nearby
Fire:	>10
Habitat:	Mid isolated shrubs over low open hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1: *Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1.1		0.1
Acacia inaequilatera	1.8		1
Acacia sericophylla	0.9		0.1
Acacia stellaticeps	0.3		0.1
Acacia tumida var. *pilbarensis*	2		0.1
Bonamia alatisemina	0.1		0.1
Bonamia erecta	0.3		0.1
Goodenia stobbsiana	0.4		0.1
Grevillea wickhamii subsp. *aprica*	1.8		0.2
Ptilotus calostachyus	0.5		0.1
Triodia epactia	0.3		10.5
Triodia lanigera	0.4		0.5
Triodia wiseana	0.4		0.2

PHOTOS

Site Name:	HJ09
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	12/03/2022
GPS Location:	GDA94 Zone 50 660251.92E 7696582.2N
Orientation:	90/180
Community:	11
Landform Type:	Other, Undulating plain (other)
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	SE
Soil Type:	Sandy Clay Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	10-20%
CF Sizes:	2-6mm, 6-20mm, 20-60mm
CF Types:	colluvium (other)
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	>10
Habitat:	Tall open shrubland over low open hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia orthocarpa*
Lower Stratum 1:	*Triodia angusta*, *Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2		0.1
Acacia colei	3.5		0.1
Acacia inaequilatera	0.4		0.1
Acacia orthocarpa	2.5		6
Aristida holathera var. *holathera*	0.3		0.1
Bonamia pilbarensis	0.1		0.1
Cassytha capillaris			0.1
Corymbia hamersleyana	3.2		0.2
Hakea lorea subsp. *lorea*	0.4		0.1
Ptilotus astrolasius	0.3		0.1
Ptilotus calostachyus	0.6		0.1
Senna notabilis	0.2		0.1

Solanum lasiophyllum	0.5		0.1
Solanum phlomoides	0.7		0.1
Tinospora smilacina			0.1
Triodia angusta	0.5		1.5
Triodia lanigera	0.4		17

PHOTOS

Site Name:	HJ10
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	12/03/2022
GPS Location:	GDA94 Zone 50 645753.36E 7686953.15N
Orientation:	90/180
Community:	12
Landform Type:	Drainage Line, Undulating plain (other)
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	W
Soil Type:	Sandy Clay Loam
Soil Colour:	Brown (other)
Rock Outcrop:	Dolomite (other), 2-10% bedrock exposed
CF Abundance:	50-90%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	Dolomite
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	>10
Habitat:	Tall isolated clumps of shrubs (mixed species) over mid open hummock grassland
Comments:	with red sand - *Triodia epactia*

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 2:	*Acacia stellaticeps*
Lower Stratum 1:	*Triodia epactia*, *Triodia wiseana*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	2.5		1
Acacia ancistrocarpa	0.5		0.1
Acacia inaequilatera	2.2		0.4
Acacia sphaerostachya	2.5		0.3
Acacia stellaticeps	0.9		2.5
Aristida holathera var. *holathera*	0.3		0.1
Bonamia alatisemina	0.1		0.1
Bonamia pilbarensis	0.1		0.1
Cassytha capillaris			0.1
Corchorus parviflorus	1.2		0.1

Dodonaea coriacea	0.3		0.1
Eriachne mucronata	0.5		0.1
Evolvulus alsinoides var. *villosicalyx*	0.1		0.1
Goodenia stobbsiana	0.5		0.2
Grevillea wickhamii subsp. *aprica*	2.2		0.3
Hakea lorea subsp. *lorea*	1.3		0.1
Hibiscus brachychlaenus			
Paraneurachne muelleri	0.4		0.1
Pluchea tetranthera	0.7		0.1
Ptilotus astrolasius	0.3		0.1
Ptilotus axillaris	0.1		0.1
Ptilotus calostachyus	0.6		0.1
Senna artemisioides subsp. *oligophylla*	0.3		0.1
Senna glutinosa subsp. *glutinosa*	1.6		0.1
Senna notabilis	0.3		0.1
Solanum cleistogamum	0.2		0.1
Solanum phlomoides	0.4		0.1
Swainsona formosa	0.3		0.1
Trigastrotheca molluginea	0.2		0.1
Triodia epactia	0.6		3
Triodia wiseana	0.5		12

PHOTOS

Site Name:	HJ11
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	12/03/2022
GPS Location:	GDA94 Zone 50 643044.31E 7686982.9N
Orientation:	90/180
Community:	12
Landform Type:	Other, Crest; Upper, mid and lower slope (other)
Slope Class:	Moderately Inclined (10 degrees)
Aspect:	SW
Soil Type:	Clay Loam
Soil Colour:	Brown
Rock Outcrop:	Dolerite?, Dolomite (other), 10-20% bedrock exposed
CF Abundance:	20-50%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm, 200-600mm
CF Types:	Dolerite?, Dolomite (other)
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	>10
Habitat:	Mid sparse shrubland over low open hummock grassland
Comments:	track nearby (ripped)

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Grevillea wickhamii* subsp. *aprica*
Lower Stratum 1:	*Triodia epactia*, *Triodia wiseana*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	1.2		0.3
Acacia ancistrocarpa	1		0.1
Acacia inaequilatera	2		0.4
Acacia stellaticeps	0.4		0.1
Arivela viscosa	0.3		0.1
Bonamia pilbarensis	0.1		0.1
Corchorus parviflorus	1		0.1
Corymbia hamersleyana	2		0.1
Eriachne mucronata	0.5		0.1
Goodenia stobbsiana	0.5		0.1
Grevillea wickhamii subsp. *aprica*	1.7		3.5

Hakea lorea subsp. *lorea*	0.4		0.1
Ptilotus axillaris	0.1		0.1
Ptilotus calostachyus	0.6		0.1
Tephrosia sp. NW Eremaean (S. van Leeuwen et al. PBS 0356)	0.5		0.1
Tinospora smilacina			0.1
Triodia epactia	0.4		10
Triodia wiseana	0.4		10

PHOTOS

Site Name:	HJ12
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	12/03/2022
GPS Location:	GDA94 Zone 50 641511.86E 7691302.52N
Orientation:	90/180
Community:	10
Landform Type:	Other, Undulating plain (other)
Slope Class:	Gently Inclined (3 degrees)
Aspect:	SW
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	Mudstone (other), <2% bedrock exposed
CF Abundance:	50-90%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm, 200-600mm
CF Types:	Mudstone (other)
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	(other) - track nearby
Fire:	>5
Habitat:	Mid sparse shrubland over low open hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia acradenia*
Mid Stratum 2:	*Acacia stellaticeps*
Lower Stratum 1:	*Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	1.5		4.5
Acacia ancistrocarpa	2.2		0.5
Acacia inaequilatera	1.6		0.1
Acacia stellaticeps	0.8		2
Bonamia alatisemina	0.1		0.1
Corymbia zygophylla	1		0.1
Dodonaea coriacea	0.4		0.1
Goodenia stobbsiana	0.5		0.2
Grevillea wickhamii subsp. *aprica*	2.5		0.1
Hakea lorea subsp. *lorea*	0.5		0.1
Ptilotus astrolasius	0.3		0.1

Ptilotus calostachyus	0.6		0.1
Sida arenicola	0.6		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.4		0.1
Triodia lanigera	0.4		15

PHOTOS

Site Name:	HJ13
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	13/03/2022
GPS Location:	GDA94 Zone 50 642614.19E 7690760.67N
Orientation:	90/180
Community:	17
Landform Type:	Other, Crest and Upper Slope (other)
Slope Class:	Moderately Inclined (10 degrees)
Soil Type:	Sand
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Grazing
Fire:	>15
Habitat:	Tall sparse shrubland over mid sparse shrubland over low isolated clumps of hummock grasses with low isolated other grasses, sand dune with N and S aspect

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia sabulosa*
Mid Stratum 2:	*Acacia trachycarpa*
Lower Stratum 1:	*Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia sabulosa	5		6
Acacia trachycarpa	2		3
Adriana tomentosa var. *tomentosa*	1.3		0.5
Aristida holathera var. *holathera*	0.5		0.8
Boerhavia coccinea	0.1		0.1
Bonamia alatisemina	0.1		0.1
Bonamia erecta	0.4		0.1
Bonamia media	0.1		0.2
Corchorus incanus subsp. *incanus*	1		0.5
Corymbia zygophylla	3.8		0.3
Corynotheca pungens	0.8		0.1
Crotalaria cunninghamii			
Dodonaea coriacea	0.6		0.1

Eragrostis eriopoda	0.4		0.3
Eriachne aristidea	0.4		0.1
Hibiscus leptocladus	0.4		0.1
Indigofera monophylla	0.5		0.1
Ptilotus arthrolasius	0.3		0.2
Senna artemisioides subsp. *oligophylla*	1		0.1
Sida arenicola	1.6		0.1
Trianthema pilosum	0.1		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia lanigera	0.4		3.5

PHOTOS

Site Name:	HJ14
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	13/03/2022
GPS Location:	GDA94 Zone 50 642025.17E 7690732.7N
Orientation:	90/180
Community:	17
Landform Type:	Crest
Slope Class:	Gently Inclined (3 degrees)
Soil Type:	Sand
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Grazing
Fire:	>15
Habitat:	Tall sparse shrubland over low isolated clumps of hummock grasses

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia sabulosa*
Lower Stratum 1:	*Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia sabulosa	3.6		8
Acacia trachycarpa	1.5		0.5
Aristida holathera var. *holathera*	0.4		0.5
Boerhavia coccinea	0.1		0.1
Bonamia erecta	0.4		0.1
Bonamia media	0.1		0.1
Corchorus incanus subsp. *incanus*	1		0.3
Dodonaea coriacea	0.7		0.1
Eragrostis eriopoda	0.4		0.3
Indigofera monophylla			
Ipomoea muelleri			0.1
Ptilotus arthrolasius	0.3		0.1
Scaevola parvifolia subsp. *pilbarae*	0.2		0.1
Sida arenicola	1.8	110	0.1
Solanum phlomoides	0.6		0.1
Trianthema pilosum	0.1		0.1

Triodia lanigera	0.5		2

PHOTOS

Site Name:	HJ15
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	13/03/2022
GPS Location:	GDA94 Zone 50 641765.87E 7690361.83N
Orientation:	90/180
Community:	12
Landform Type:	Other, Undulating plain (other)
Slope Class:	Very Gently Inclined (1 degree)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red
Rock Outcrop:	Dolerite?, Dolomite, Chert (other), <2% bedrock exposed
CF Abundance:	20-50%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	Dolerite?, Dolomite, Chert (other), Quartz
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	>10
Habitat:	Mid to tall sparse shrubland over low open hummock grassland, On a low rise

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Grevillea wickhamii* subsp. *aprica*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	1.5		0.1
Acacia ancistrocarpa	1.5		0.1
Acacia inaequilatera	1.7		0.1
Codonocarpus cotinifolius	4.5		0.1
Corchorus parviflorus	0.8		0.1
Corymbia hamersleyana	2.2		0.1
Goodenia stobbsiana	0.5		0.1
Grevillea wickhamii subsp. *aprica*	2.3		2.5
Hakea lorea subsp. *lorea*	2.5		0.1
Polymeria mollis	0.1		0.1
Ptilotus calostachyus	0.8		0.1
Triodia epactia	0.5		15

PHOTOS

Site Name:	HJ16
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/03/2022
GPS Location:	GDA94 Zone 50 643278.27E 7689944.65N
Orientation:	90/180
Community:	4
Landform Type:	Plain
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	S
Soil Type:	Sandy Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Grazing
Fire:	>5
Habitat:	Low isolated clumps of shrubs over mid sparse hummock grassland (with isolated tussock grasses)

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia stellaticeps*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia sabulosa	1.8		0.1
Acacia stellaticeps	1		4.5
Aristida holathera var. *holathera*	0.4		0.6
Bulbostylis barbata	0.1		
Chrysopogon fallax	0.6		0.1
Cyperus blakeanus	0.4		0.3
Dodonaea coriacea	0.1		0.1
Eragrostis eriopoda	0.4		0.2
Eriachne obtusa	0.4		1
Eucalyptus victrix	0.4		0.1
Hibiscus leptocladus	0.1		0.1
Pluchea tetranthera	0.5		0.4
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.7		8

Zornia muelleriana subsp. *congesta*	0.2		0.1

PHOTOS

Site Name:	HJ17
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/03/2022
GPS Location:	GDA94 Zone 50 643527.02E 7690197.8N
Orientation:	90/180
Community:	4
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Grazing
Fire:	>15
Habitat:	Low open woodland over mid open hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Eucalyptus victrix*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon lepidum	0.5		0.1
Abutilon otocarpum	0.5		0.1
Acacia ancistrocarpa	2		0.2
Acacia colei	4.5		0.2
Acacia sabulosa			
Acacia sericophylla	3.2		0.1
Acacia stellaticeps	0.4		0.1
Acacia tumida var. *pilbarensis*	6		0.1
**Aerva javanica*			
Aristida holathera var. *holathera*	0.5		0.3
Boerhavia coccinea	0.1		0.1
Bonamia alatisemina	0.1		0.1
Cassytha capillaris			0.1
Chrysopogon fallax	0.5		0.1
Clerodendrum tomentosum var. *tomentosum*			

Corchorus incanus subsp. *incanus*	0.5		0.1
Corchorus parviflorus	0.1		0.1
Cucumis variabilis			0.1
Eragrostis eriopoda	0.4		0.1
Eucalyptus victrix	6		3.8
Euphorbia trigonosperma	0.4		0.1
Evolvulus alsinoides var. *villosicalyx*			
Goodenia lamprosperma	0.2		0.1
Goodenia microptera	0.1		0.1
Pluchea tetranthera	0.5		0.2
Portulaca oleracea	0.1		0.1
Ptilotus fusiformis	0.3		0.1
Senna notabilis	0.2		0.1
Sida arenicola	0.5		0.1
Sida rohlenae subsp. *rohlenae*	0.7		0.1
Sida sp. L (A.M. Ashby 4202)	0.3		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.5		0.1
Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	0.3		0.1
Tribulus hirsutus	0.1		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.5		20
Triodia lanigera	0.3		0.1

PHOTOS

Site Name:	HK01
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	21/07/2022
GPS Location:	GDA94 Zone 50 649742.49E 7686141.23N
Orientation:	90/180
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clayey Sand
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cow manure
Fire:	<2 Years
Habitat:	Unburnt pockets were *Melaleuca lasiandra*, *Acacia acradenia* tall open shrubland over *Acacia stellaticeps* mid shrubland over mixed hummock grassland of *Triodia lanigera* and *Triodia schinzii*.

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Melaleuca lasiandra*
Mid Stratum 2:	*Acacia stellaticeps*
Lower Stratum 1:	*Triodia lanigera*, *Triodia schinzii*
Lower Stratum 2:	*Goodenia lamprosperma*, *Pluchea tetranthera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	3		0.2
Acacia stellaticeps	0		0.2
Aristida holathera var. *holathera*	0.2		0.1
Bonamia alatisemina	0.1		0.2
Corchorus parviflorus	0.3		0.3
Euphorbia psilosperma	0.1		0.1
Goodenia lamprosperma	0.2		1
Goodenia microptera	0.2		0.1
Indigofera monophylla	0.2		0.1
Melaleuca lasiandra	3		1
Panicum australiense var. *australiense*	0.1		0.1
Pluchea tetranthera	0.3		0.75

Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Polygala galeocephala	0.1		0.1
Ptilotus astrolasius	0.4		0.1
Ptilotus axillaris	0.1		0.1
Ptilotus fusiformis	0.3		0.1
Senna glutinosa subsp. *glutinosa*	0.5		0.3
Senna notabilis	0.1		0.1
Sida arenicola	0.3		0.1
Solanum diversiflorum	0.3		0.1
Stemodia grossa	0.2		0.2
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.2		0.1
Trachymene oleracea subsp. *oleracea*	0.8		0.1
Trianthema pilosum			0.1
Tribulus hirsutus			0.1
Trigastrotheca molluginea	0.1		0.2
Triodia lanigera			0.2
Triodia schinzii	0.2		5

PHOTOS

Site Name:	HK02
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	21/07/2022
GPS Location:	GDA94 Zone 50 648186.72E 7686248.89N
Orientation:	90/180
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clayey Sand
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cow manure/tracks
Fire:	<2 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia ancistrocarpa*, *Melaleuca lasiandra*
Mid Stratum 2:	*Acacia stellaticeps*, *Goodenia lamprosperma*, *Senna notabilis*
Lower Stratum 1:	*Stemodia grossa*, *Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	3		0.2
Acacia stellaticeps	0.1		0.2
Aristida holathera var. *holathera*	0.2		0.1
Arivela uncifera	0.2		0.3
Bonamia alatisemina			0.1
Bulbostylis barbata	0.1		0.1
Corchorus parviflorus	0.2		0.3
Dysphania rhadinostachya subsp. *rhadinostachya*	0.1		0.1
Eragrostis eriopoda	0.4		0.1
Euphorbia vaccaria var. *vaccaria*	0.1		0.1
Goodenia lamprosperma	0.2		0.5
Goodenia microptera	0.2		0.1
Indigofera monophylla	0.2		0.1
Melaleuca lasiandra	2.5		1
Panicum australiense var. *australiense*	0.1		0.1

Pluchea tetranthera	0.1		0.2
Ptilotus arthrolasius	0.2		0.1
Ptilotus fusiformis	0.2		0.1
Senna glutinosa subsp. *glutinosa*	0.5		0.2
Senna notabilis	0.2		1
Sida arenicola	0.1		0.1
Solanum diversiflorum	0.2		0.1
Stemodia grossa	0.3		7
Trianthema pilosum	0.1		0.1
Tribulus hirsutus			0.1
Trigastrotheca molluginea	0.1		0.2
Triodia lanigera	0.3		7
Triodia schinzii	0.4		3

PHOTOS

Site Name:	HK03
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	22/07/2022
GPS Location:	GDA94 Zone 50 648230.57E 7685997.64N
Orientation:	90/180
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clayey Sand
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cow manure
Fire:	>10 Years
Comments:	Moved to unburnt patch

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia ancistrocarpa*, *Melaleuca lasiandra*
Mid Stratum 2:	*Acacia stellaticeps*
Lower Stratum 1:	*Triodia lanigera*, *Triodia schinzii*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2.5		1
Acacia stellaticeps	1.3		4.5
Bonamia alatisemina			0.1
Bulbostylis barbata	0.1		0.1
Corchorus parviflorus	0.3		0.1
Dampiera candicans	0.3		0.1
Eragrostis eriopoda	0.3		0.1
Goodenia microptera	0.1		0.1
Melaleuca lasiandra	3		0.5
Panicum australiense var. *australiense*	0.1		0.1
Polygala galeocephala	0.1		0.1
Ptilotus astrolasius	0.3		0.1
Ptilotus calostachyus	0.9		0.1
Senna glutinosa subsp. *glutinosa*	1.5		0.1
Sida arenicola	0.4		0.1

Triodia lanigera	0.6		65
Triodia schinzii	0.6		10

PHOTOS

Site Name:	HK04
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	22/07/2022
GPS Location:	GDA94 Zone 50 649242.03E 7684777.38N
Orientation:	90/180
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clayey Sand
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cow manure/tracks
Fire:	<2 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Melaleuca lasiandra*
Mid Stratum 2:	*Acacia stellaticeps*
Lower Stratum 1:	*Triodia lanigera*, *Triodia schinzii*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	0.2		0.1
Acacia sericophylla			
Acacia stellaticeps	0.1		0.1
Aristida holathera var. *holathera*	0.2		0.1
Arivela uncifera	0.2		0.1
Arivela viscosa	0.2		0.1
Bonamia alatisemina			0.2
Bulbostylis barbata	0.1		0.1
Corchorus parviflorus	0.3		0.1
Corymbia zygophylla			
Dysphania rhadinostachya subsp. *rhadinostachya*	0.1		0.1
Euphorbia australis var. *subtomentosa*	0.1		0.1
Euphorbia psilosperma	0.1		0.1
Euphorbia vaccaria var. *vaccaria*	0.1		0.1
Goodenia lamprosperma	0.2		0.1

Goodenia microptera	0.1		0.1
Hibiscus leptocladus	0.3		0.1
Indigofera monophylla	0.2		0.1
Melaleuca lasiandra	2.5		0.5
Panicum australiense var. *australiense*	0.1		0.1
Pluchea tetranthera	0.3		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Ptilotus axillaris	0.1		0.1
Ptilotus calostachyus	0.1		0.1
Ptilotus fusiformis	0.3		0.1
Senna glutinosa subsp. *glutinosa*	0.4		0.1
Senna notabilis	0.2		0.1
Sida arenicola	0.3		0.1
Solanum diversiflorum	0.2		0.1
Tinospora smilacina			0.1
Tribulus hirsutus	0.1		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia lanigera	0.3		1.5
Triodia schinzii	0.3		0.25
Triumfetta ramosa	0.1		0.1

PHOTOS

Site Name:	HK05
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	22/07/2022
GPS Location:	GDA94 Zone 50 649726.38E 7683883.95N
Orientation:	90/180
Community:	9
Landform Type:	Hillock
Slope Class:	Very Gently Inclined (1 degree)
Soil Type:	Clayey Sand
Soil Colour:	Red-Brown
Rock Outcrop:	Granite, 20-50% bedrock exposed
CF Abundance:	>90%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm, 200-600mm
CF Types:	Granite, Calcrete
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cow manure/tracks
Fire:	<2 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia inaequilatera*
Mid Stratum 2:	*Corchorus parviflorus*
Lower Stratum 1:	*Themeda triandra*
Lower Stratum 2:	*Triodia lanigera*, *Triodia schinzii*, *Triodia wiseana*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon lepidum	0.2		0.1
Acacia inaequilatera	3.5		4
Acacia sericophylla	1.8		0.2
Amaranthus undulatus	0.2		0.1
Aristida holathera var. *holathera*	0.3		0.2
Arivela uncifera	0.2		0.1
Arivela viscosa	0.4		0.1
Boerhavia coccinea			0.1
Bonamia alatisemina			0.1
Bulbostylis barbata	0.1		0.1
Cassytha capillaris			0.1
Corchorus parviflorus	0.3		0.7

Corymbia hamersleyana	3.5		0.3
Dolichocarpa crouchiana	0.1		0.1
Dysphania rhadinostachya subsp. *rhadinostachya*	0.1		0.1
Eragrostis eriopoda	0.4		0.1
Eriachne mucronata	0.2		1.5
Eriachne pulchella subsp. *dominii*	0.1		0.1
Euphorbia australis var. *subtomentosa*	0.1		0.1
Euphorbia trigonosperma	0.2		0.1
Euphorbia vaccaria var. *vaccaria*	0.1		0.1
Gomphrena cunninghamii	0.1		0.2
Goodenia microptera	0.2		0.1
Gossypium australe	0.4		0.1
Grevillea wickhamii subsp. *aprica*	0.7		0.1
Hakea lorea subsp. *lorea*	0.6		0.1
Hibiscus leptocladus	0.4		0.1
Hypertelis cerviana	0.1		0.1
Panicum australiense var. *australiense*	0.1		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Polymeria mollis			0.1
Portulaca oleracea	0.1		0.1
Ptilotus astrolasius	0.3		0.1
Ptilotus axillaris			0.2
Ptilotus calostachyus	0.3		0.1
Ptilotus exaltatus	0.1		0.1
Ptilotus fusiformis	0.2		0.1
Rhynchosia minima			0.2
Senna glutinosa subsp. *glutinosa*	0.4		0.1
Senna notabilis	0.1		0.1
Sida echinocarpa	0.7		0.3
Solanum diversiflorum	0.1		0.1
Solanum phlomoides	0.3		0.2
Swainsona formosa	0.1		0.1
Tephrosia sp. NW Eremaean (S. van Leeuwen et al. PBS 0356)	0.1		0.4
Themeda triandra	0.5		0.7
Tinospora smilacina			0.1
Trianthema pilosum			0.1
Tribulus hirsutus	0.1		0.2
Trigastrotheca molluginea	0.1		0.2
Triodia lanigera	0.3		3
Triodia schinzii	0.3		2
Triodia wiseana	0.3		10
Triumfetta clementii	0.4		0.2

PHOTOS

Site Name:	HK06
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	23/07/2022
GPS Location:	GDA94 Zone 50 649376.35E 7682577.43N
Orientation:	90/180
Community:	9
Landform Type:	Crest, and Upper Slope (other)
Slope Class:	Gently Inclined (3 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	Granite, >50% bedrock exposed
CF Abundance:	50-90%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm, 200-600mm
CF Types:	Granite, Quartz
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	5-10 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 2:	*Acacia pyrifolia* var. *pyrifolia*, *Corchorus parviflorus*
Lower Stratum 1:	*Triodia epactia*, *Triodia wiseana*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon lepidum	0.5		0.1
Acacia acradenia	0.4		0.1
Acacia ancistrocarpa	0.5		0.1
Acacia pyrifolia var. *pyrifolia*	0.5		1
Aristida contorta	0.2		0.1
Aristida holathera var. *holathera*	0.2		0.2
Bonamia pilbarensis	0.1		0.1
Corchorus parviflorus	0.5		2
Dolichocarpa crouchiana	0.1		0.1
Dysphania rhadinostachya subsp. *rhadinostachya*	0.1		0.1
Enneapogon caerulescens	0.1		0.1
Eriachne mucronata	0.2		0.2
Euploca tenuifolia	0.2		0.1
Evolvulus alsinoides var. *villosicalyx*	0.2		0.1

Gomphrena cunninghamii	0.1		0.1
Goodenia microptera	0.2		0.1
Hibiscus coatesii	0.2		0.1
Indigofera monophylla	0.3		0.2
Iseilema dolichotrichum	0.1		0.1
Isotropis atropurpurea	0.4		0.1
Ptilotus auriculifolius	0.2		0.1
Senna notabilis	0.2		0.1
Sida echinocarpa	0.8		0.1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.2		0.2
Tephrosia sp. NW Eremaean (S. van Leeuwen et al. PBS 0356)	0.1		0.1
Tephrosia virens	1		0.4
Trachymene oleracea subsp. *oleracea*	0.1		0.1
Tribulus platypterus	0.2		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.3		15
Triodia wiseana	0.3		25

PHOTOS

Site Name:	HK07
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	23/07/2022
GPS Location:	GDA94 Zone 50 649604.44E 7682523.01N
Orientation:	90/180
Community:	9
Landform Type:	Plain
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	S
Soil Type:	Clayey Sand
Soil Colour:	Red-Brown
Rock Outcrop:	Granite, <2% bedrock exposed
CF Abundance:	50-90%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm, 200-600mm
CF Types:	Granite, Quartz, Calcrete
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	5-10 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia acradenia*, *Acacia pyrifolia* var. *pyrifolia*, *Grevillea wickhamii* subsp. *aprica*
Mid Stratum 2:	*Corchorus parviflorus*, *Tephrosia* sp. Bungaroo Creek (M.E. Trudgen 11601)
Lower Stratum 1:	*Triodia epactia*, *Triodia wiseana*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	0.5		0.4
Acacia pyrifolia var. *pyrifolia*	0.6		0.3
Acacia stellaticeps	0.1		0.2
Arivela uncifera	0.2		0.1
Bonamia pilbarensis	0.1		0.2
Corchorus parviflorus	0.8		7
Dysphania rhadinostachya subsp. *rhadinostachya*	0.1		0.1
Eragrostis eriopoda	0.2		0.1
Euploca tenuifolia	0.2		0.2
Goodenia microptera	0.2		0.1

Grevillea wickhamii subsp. *aprica*	1		0.3
Haloragis ?gossei	0.1		0.1
Indigofera monophylla	0.3		0.1
Isotropis atropurpurea	0.3		0.1
Pimelea ammocharis	0.3		0.1
Pluchea tetranthera	0.3		0.2
Polymeria mollis	0.1		0.2
Portulaca oleracea	0.1		0.1
Ptilotus astrolasius	0.6		0.1
Ptilotus axillaris			0.1
Senna notabilis	0.1		0.1
Solanum diversiflorum	0.2		0.1
Solanum phlomoides	0.6		0.1
Stemodia grossa	0.2		0.2
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.3		0.4
Tephrosia sp. NW Eremaean (S. van Leeuwen et al. PBS 0356)	0.1		0.1
Tephrosia virens	0.1		0.1
Trachymene oleracea subsp. *oleracea*	0.1		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.2		3
Triodia lanigera	0.3		0.5
Triodia wiseana	0.2		12

PHOTOS

Site Name:	HK08
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	23/07/2022
GPS Location:	GDA94 Zone 50 649918.92E 7682869.8N
Orientation:	90/180
Community:	10
Landform Type:	Plain
Slope Class:	Very Gently Inclined (1 degree)
Soil Type:	Clayey Sand
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle manure/tracks
Fire:	5-10 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia acradenia*, *Acacia inaequilatera*
Mid Stratum 2:	*Bonamia erecta*, *Corchorus parviflorus*, *Indigofera monophylla*, *Ptilotus astrolasius*, *Triumfetta ramosa*
Lower Stratum 1:	*Triodia lanigera*, *Triodia schinzii*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	1		0.3
Acacia ancistrocarpa	0.3		0.1
Acacia inaequilatera	2.5		0.3
Arivela uncifera	0.4		0.2
Boerhavia coccinea	0.1		0.1
Bonamia alatisemina			0.1
Bonamia erecta	0.4		0.75
Corchorus parviflorus	0.8		6
Eragrostis eriopoda	0.2		0.1
Euphorbia australis var. *subtomentosa*	0.1		0.1
Euploca vestita	0.3		0.1
Goodenia microptera	0.2		0.1
Hibiscus coatesii	0.2		0.1
Hibiscus leptocladus	1.3		0.1
Indigofera monophylla	0.4		0.4

Portulaca filifolia	0.3		0.1
Ptilotus astrolasius	0.6		0.3
Ptilotus axillaris			0.1
Ptilotus calostachyus	1.3		0.1
Ptilotus fusiformis	0.1		0.1
Sida arenicola	1.5		0.2
Sida sp. Pindan (B.G. Thomson 3398)	0.5		0.1
Solanum diversiflorum	0.3		0.1
Solanum phlomoides	0.3		0.1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.4		0.2
Tribulus hirsutus	0.1		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia lanigera	0.4		30
Triodia schinzii	0.4		40
Triumfetta ramosa	0.8		0.3

PHOTOS

Site Name:	HK09
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	23/07/2022
GPS Location:	GDA94 Zone 50 649816.53E 7683245.35N
Orientation:	90/180
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clayey Sand
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle manure/tracks
Fire:	5-10 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia acradenia*, *Acacia inaequilatera*, *Corchorus parviflorus*
Mid Stratum 2:	*Indigofera monophylla*, *Sida arenicola*
Lower Stratum 1:	*Triodia lanigera*, *Triodia schinzii*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	0.3		0.4
Acacia inaequilatera	2		0.3
Acacia sericophylla	3.5		0.2
Arivela uncifera	0.2		0.2
Bonamia alatisemina			0.1
Bonamia erecta	0.2		0.3
Corchorus parviflorus	1.1		25
Euploca vestita	0.2		0.1
Goodenia microptera	0.2		0.1
Hibiscus leptocladus	0.6		0.1
Indigofera monophylla	0.5		0.4
Ptilotus arthrolasius	0.2		0.1
Ptilotus axillaris			0.1
Senna notabilis	0.1		0.1
Sida arenicola	1.5		0.4
Solanum diversiflorum	0.2		0.1

Solanum phlomoides	0.9		0.2
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.3		0.1
Tribulus hirsutus	0.1		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia lanigera	0.3		10
Triodia schinzii	0.3		30
Triumfetta ramosa	0.3		0.2

PHOTOS

Site Name:	HK10
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	23/07/2022
GPS Location:	GDA94 Zone 50 649145.24E 7682957.34N
Orientation:	90/180
Community:	10
Landform Type:	Plain
Slope Class:	Very Gently Inclined (1 degree)
Soil Type:	Clayey Sand
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle manure/tracks
Fire:	5-10 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia acradenia*, *Acacia inaequilatera*
Mid Stratum 2:	*Bonamia erecta*, *Corchorus parviflorus*, *Tephrosia* sp. Bungaroo Creek (M.E. Trudgen 11601)
Lower Stratum 1:	*Triodia lanigera*, *Triodia schinzii*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	3		2
Acacia inaequilatera	4		0.5
Acacia sericophylla	2.5		0.3
Arivela uncifera	0.1		0.1
Boerhavia coccinea	0.1		0.1
Bonamia alatisemina			0.1
Bonamia erecta	0.3		0.5
Cassytha capillaris			0.1
Corchorus parviflorus	0.8		6
Dampiera candicans	0.4		0.1
Dodonaea coriacea	0.6		0.1
Eragrostis eriopoda	0.3		0.1
Euploca vestita	0.2		0.1
Goodenia microptera	0.2		0.1
Hibiscus coatesii	0.4		0.1

Hibiscus leptocladus	0.7		0.1
Indigofera monophylla	0.3		0.1
Pluchea tetranthera	0.3		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Ptilotus arthrolasius	0.1		0.1
Ptilotus astrolasius	0.3		0.1
Ptilotus axillaris			0.1
Ptilotus fusiformis	0.2		0.1
Senna notabilis	0.2		0.1
Sida arenicola	1.5		0.1
Sida sp. Pindan (B.G. Thomson 3398)	0.8		0.1
Solanum diversiflorum	0.2		0.1
Solanum phlomoides	0.3		0.1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.3		0.5
Trianthema pilosum	0.1		0.1
Tribulus hirsutus	0.1		0.1
Trichodesma zeylanicum	0.4		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia lanigera	0.4		35
Triodia schinzii	0.4		5
Triumfetta ramosa	0.3		0.2

PHOTOS

Site Name:	HK11
Site Type:	QUADRAT
Dimensions:	25m x 100m
Survey Date:	23/07/2022
GPS Location:	GDA94 Zone 50 649057.13E 7683256.7N
Orientation:	90/180
Community:	9
Landform Type:	Crest, and Upper Slope (other)
Slope Class:	Moderately Inclined (10 degrees)
Aspect:	N
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	Granite, >50% bedrock exposed
CF Abundance:	>90%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	Granite
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	5-10 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia inaequilatera*, *Grevillea wickhamii* subsp. *aprica*
Mid Stratum 2:	*Tephrosia* sp. NW Eremaean (S. van Leeuwen et al. PBS 0356), *Tribulus platypterus*
Lower Stratum 1:	*Triodia epactia*
Lower Stratum 2:	*Eriachne mucronata*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon lepidum			
Acacia inaequilatera	1.8		0.3
Acacia pyrifolia var. *pyrifolia*	1.5		0.2
Amaranthus undulatus	0.1		0.1
Arivela viscosa	0.4		0.1
Bonamia pilbarensis			0.1
Corchorus parviflorus	0.3		0.1
Cucumis variabilis			0.1
Dolichocarpa crouchiana	0.1		0.1
Enneapogon lindleyanus	0.3		0.1

Eriachne mucronata	0.2		0.5
Euphorbia trigonosperma	0.2		0.1
Euploca tenuifolia	0.2		0.1
Evolvulus alsinoides var. *villosicalyx*	0.1		0.1
Gomphrena cunninghamii	0.1		0.1
Goodenia muelleriana	0.2		0.1
Gossypium australe	1.3		0.1
Grevillea wickhamii subsp. *aprica*	2		0.3
Hakea lorea subsp. *lorea*	0.7		0.1
Hibiscus leptocladus	0.2		0.1
Indigofera trita subsp. *trita*	0.2		0.2
Paspalidium tabulatum	0.3		0.1
Ptilotus exaltatus	0.3		0.1
Ptilotus obovatus	0.4		0.1
Rhynchosia minima			0.1
Senna glutinosa subsp. *glutinosa*	1.2		0.1
Senna notabilis	0.1		0.1
Solanum diversiflorum	0.2		0.1
Tephrosia densa	0.4		0.1
Tephrosia sp. NW Eremaean (S. van Leeuwen et al. PBS 0356)	0.1		0.4
Themeda triandra	0.3		0.1
Trachymene oleracea subsp. *oleracea*	0.2		0.1
Tribulus platypterus	0.3		0.3
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.2		40
Triodia wiseana	0.2		1
Triumfetta clementii	0.3		0.1

PHOTOS

Site Name:	HK12
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	24/07/2022
GPS Location:	GDA94 Zone 50 649599.5E 7681776.01N
Orientation:	90/180
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clayey Sand
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle manure
Fire:	5-10 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia ancistrocarpa*
Mid Stratum 2:	*Acacia stellaticeps*, *Corchorus parviflorus*
Lower Stratum 1:	*Triodia lanigera*, *Triodia schinzii*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2.5		5
Acacia inaequilatera	0.8		0.2
Acacia sericophylla	2		0.2
Acacia stellaticeps	1.2		3
Aristida holathera var. *holathera*	0.3		0.1
Arivela uncifera	0.2		0.2
Bonamia alatisemina			0.1
Bulbostylis barbata	0.1		0.1
Cassytha capillaris			0.1
Corchorus parviflorus	1		3
Dampiera candicans	0.4		0.1
Dodonaea coriacea	0.6		0.1
Eragrostis eriopoda	0.2		0.2
Euphorbia australis var. *subtomentosa*	0.2		0.1
Goodenia microptera	0.1		0.1
Grevillea wickhamii subsp. *aprica*	1.8		0.2

Hibiscus leptocladus	0.9		0.1
Indigofera monophylla	0.1		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Ptilotus astrolasius	0.3		0.2
Ptilotus axillaris			0.1
Ptilotus fusiformis	0.2		0.1
Senna notabilis	0.2		0.2
Sida arenicola	0.9		0.1
Sida sp. Pindan (B.G. Thomson 3398)	0.7		0.1
Solanum diversiflorum	0.2		0.2
Solanum phlomoides	0.8		0.2
Tribulus hirsutus	0.1		0.1
Trigastrotheca molluginea	0.1		0.2
Triodia lanigera	0.4		35
Triodia schinzii	0.4		15
Triumfetta ramosa	0.3		0.2

PHOTOS

Site Name:	HK13
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	24/07/2022
GPS Location:	GDA94 Zone 50 650080.93E 7681667.61N
Orientation:	90/180
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clayey Sand
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	10-20%
CF Sizes:	2-6mm, 6-20mm, 20-60mm
CF Types:	Granite, Quartz, Calcrete
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle manure
Fire:	5-10 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia inaequilatera*
Mid Stratum 2:	*Acacia stellaticeps*, *Corchorus parviflorus*, *Tephrosia* sp. Bungaroo Creek (M.E. Trudgen 11601)
Lower Stratum 1:	*Triodia epactia*, *Triodia lanigera*, *Triodia schinzii*
Lower Stratum 2:	*Eragrostis eriopoda*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1		0.2
Acacia inaequilatera	2.5		0.2
Acacia stellaticeps	0.3		1
Aristida holathera var. *holathera*	0.3		0.1
Arivela uncifera	0.2		0.1
Bonamia alatisemina			0.1
Corchorus parviflorus	0.6		15
Eragrostis eriopoda	0.3		0.5
Euphorbia australis var. *subtomentosa*	0.1		0.1
Goodenia microptera	0.1		0.1
Grevillea wickhamii subsp. *aprica*	0.1		0.1

Haloragis ?gossei	0.1		0.1
Indigofera monophylla	0.4		0.2
Pluchea tetranthera	0.4		0.1
Polymeria mollis	0.1		0.1
Ptilotus astrolasius	0.2		0.2
Ptilotus axillaris			0.1
Sida echinocarpa	0.4		0.1
Solanum diversiflorum	0.2		0.1
Solanum phlomoides	0.4		0.1
Stemodia grossa	0.4		0.1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.2		1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.2		55
Triodia lanigera	0.3		3
Triodia schinzii	0.3		2
Triumfetta ramosa	0.3		0.1

PHOTOS

Site Name:	HK14
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	24/07/2022
GPS Location:	GDA94 Zone 50 649895.41E 7681412.77N
Orientation:	90/180
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clayey Sand
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle manure/tracks
Fire:	5-10 Years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia zygophylla*
Mid Stratum 1:	*Acacia ancistrocarpa*, *Acacia inaequilatera*, *Acacia sericophylla*
Mid Stratum 2:	*Acacia stellaticeps*, *Corchorus parviflorus*, *Tephrosia* sp. Bungaroo Creek (M.E. Trudgen 11601)
Lower Stratum 1:	*Triodia lanigera*, *Triodia schinzii*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	0.5		0.3
Acacia inaequilatera	1		0.2
Acacia sericophylla	1.3		0.3
Acacia stellaticeps	0.3		15
Amaranthus undulatus			
Aristida holathera var. *holathera*	0.3		0.1
Arivela uncifera	0.2		0.1
Bonamia alatisemina			0.1
Bulbostylis barbata	0.1		0.1
Corchorus parviflorus	0.8		3.5
Corymbia zygophylla	25		0.4
Dysphania rhadinostachya subsp. *rhadinostachya*	0.1		0.1
Eragrostis eriopoda	0.1		0.1

Goodenia microptera	0.2		0.1
Goodenia stobbsiana	0.3		0.1
Hibiscus leptocladus	0.2		0.1
Pimelea ammocharis	0.2		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Portulaca filifolia	0.1		0.1
Portulaca oleracea	0.1		0.1
Ptilotus astrolasius	0.2		0.1
Ptilotus axillaris			0.1
Ptilotus calostachyus	0.7		0.1
Ptilotus fusiformis	0.2		0.1
Senna notabilis	0.2		0.1
Sida arenicola	1.8		0.5
Sida sp. Pindan (B.G. Thomson 3398)	0.6		0.2
Solanum diversiflorum	0.2		0.1
Solanum phlomoides	0.8		0.2
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.3		0.4
Tribulus hirsutus	0.1		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia lanigera	0.3		2
Triodia schinzii	0.3		45

PHOTOS

Site Name:	HK15
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	24/07/2022
GPS Location:	GDA94 Zone 50 651801.39E 7678514.86N
Orientation:	90/180
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clayey Sand
Soil Colour:	Brown (other)
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	>10 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia acradenia*, *Acacia ancistrocarpa*, *Acacia inaequilatera*
Lower Stratum 1:	*Triodia lanigera*, *Triodia schinzii*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	1		1
Acacia ancistrocarpa	1.3		0.3
Acacia inaequilatera	3		3
Acacia stellaticeps	0.3		0.1
Arivela uncifera	0.2		0.1
Bonamia alatisemina			0.1
Cassytha capillaris			0.1
Corchorus parviflorus	0.7		0.1
Euphorbia australis var. *subtomentosa*	0.2		0.1
Euploca pachyphylla	0.3		0.1
Goodenia microptera	0.3		0.1
Pluchea tetranthera	0.3		0.2
Ptilotus astrolasius	0.3		0.1
Ptilotus axillaris			0.1
Ptilotus calostachyus	0.6		0.1
Senna notabilis	0.1		0.1
Sida arenicola	1.8		0.1

Solanum phlomoides	0.2		0.1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.4		0.2
Trigastrotheca molluginea	0.1		0.1
Triodia lanigera	0.4		40
Triodia schinzii	0.4		40

PHOTOS

Site Name:	HK16
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	24/07/2022
GPS Location:	GDA94 Zone 50 653481.79E 7681108.96N
Orientation:	90/180
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clayey Sand
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	>2 years but Quadrat in unburnt pocket
Habitat:	Quadrat surrounded by burnt area <2 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia acradenia*, *Acacia ancistrocarpa*, *Acacia inaequilatera*, *Acacia sericophylla*
Mid Stratum 2:	*Acacia stellaticeps*
Lower Stratum 1:	*Triodia lanigera*, *Triodia schinzii*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	2		2.5
Acacia ancistrocarpa	2.2		2
Acacia inaequilatera	1.5		0.5
Acacia sericophylla	2.2		0.2
Acacia stellaticeps	1		2
Arivela uncifera	0.1		0.1
Bonamia alatisemina			0.1
Cassytha capillaris			0.1
Corchorus parviflorus	0.2		0.1
Dampiera candicans	0.4		0.2
Dodonaea coriacea	0.2		0.1
Goodenia microptera	0.1		0.1
Hakea lorea subsp. *lorea*	0.3		0.1
Haloragis ?gossei	0.1		0.1

Hibiscus leptocladus	0.2		0.1
Ptilotus astrolasius	0.3		0.1
Ptilotus calostachyus	0.3		0.1
Senna notabilis	0.1		0.1
Senna symonii	1.5		0.2
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.2		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia lanigera	0.4		40
Triodia schinzii	0.4		40

PHOTOS

Site Name:	HK17
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	25/07/2022
GPS Location:	GDA94 Zone 50 650821.76E 7677425.66N
Orientation:	90/180
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clayey Sand
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle manure/tracks, fence post
Fire:	>10 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia acradenia*, *Acacia ancistrocarpa*, *Acacia sericophylla*
Mid Stratum 2:	*Bonamia erecta*
Lower Stratum 1:	*Triodia lanigera*, *Triodia schinzii*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	0.7		1.5
Acacia ancistrocarpa	1.5		2.5
Acacia inaequilatera	1.6		0.2
Acacia sericophylla	3.5		0.75
Arivela uncifera	0.1		0.1
Bonamia alatisemina			0.1
Bonamia erecta	0.3		2
Corchorus parviflorus	0.5		0.1
Dampiera candicans	0.4		0.1
Goodenia forrestii	0.2		0.1
Goodenia microptera	0.2		0.1
Goodenia stobbsiana	0.1		0.1
Ptilotus astrolasius	0.2		0.1
Ptilotus calostachyus	0.4		0.1
Senna glutinosa subsp. *glutinosa*	1.2		0.2
Sida arenicola	1.9		0.3

Solanum phlomoides	0.4		0.1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.4		0.3
Trigastrotheca molluginea	0.1		0.1
Triodia lanigera	0.4		35
Triodia schinzii	0.4		35

PHOTOS

Site Name:	HK18
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	25/07/2022
GPS Location:	GDA94 Zone 50 651850.16E 7677628.86N
Orientation:	90/180
Community:	10
Landform Type:	Other, Low Rise (other)
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	SW
Soil Type:	Clayey Sand
Soil Colour:	Orange-brown
Rock Outcrop:	Granite, 10-20% bedrock exposed
CF Abundance:	10-20%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	Granite, Quartz, Calcrete
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle manure/tracks
Fire:	>10 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Grevillea wickhamii* subsp. *aprica*
Mid Stratum 2:	*Acacia stellaticeps*
Lower Stratum 1:	*Triodia epactia*, *Triodia lanigera*, *Triodia schinzii*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1		0.2
Acacia stellaticeps	0.8		4
Bulbostylis barbata	0.1		0.1
Cassytha capillaris			0.3
Corchorus parviflorus	0.4		0.1
Dampiera candicans	0.3		0.1
Goodenia microptera	0.2		0.1
Grevillea wickhamii subsp. *aprica*	2.5		0.75
Indigofera monophylla	0.2		0.1
Polymeria mollis	0.1		0.1
Ptilotus astrolasius	0.4		0.1
Tephrosia sp. Bungaroo Creek (M.E.	0.3		0.1

Trudgen 11601)			
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.4		70
Triodia lanigera	0.4		9
Triodia schinzii	0.4		1
Triumfetta ramosa	0.4		0.1

PHOTOS

Site Name:	HK19
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	25/07/2022
GPS Location:	GDA94 Zone 50 652392.91E 7677350.77N
Orientation:	90/180
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clayey Sand
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	>10 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia ancistrocarpa*, *Acacia inaequilatera*
Mid Stratum 2:	*Acacia stellaticeps*
Lower Stratum 1:	*Triodia lanigera*, *Triodia schinzii*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2.5		10
Acacia inaequilatera	2		0.4
Acacia stellaticeps	0.8		0.3
Arivela uncifera	0.2		0.1
Bonamia alatisemina			0.1
Bonamia erecta	0.4		0.2
Cassytha capillaris	0.1		1
Codonocarpus cotinifolius	5		0.2
Corchorus parviflorus	0.4		0.1
Goodenia microptera	0.2		0.1
Goodenia stobbsiana	0.7		0.1
Ptilotus astrolasius	0.3		0.1
Ptilotus calostachyus	0.4		0.1
Sida arenicola	0.6		0.1
Solanum phlomoides	0.8		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia lanigera	0.4		35

Triodia schinzii	0.3		15

PHOTOS

Site Name:	HK20
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	25/07/2022
GPS Location:	GDA94 Zone 50 655191.92E 7678281.84N
Orientation:	90/180
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clayey Sand
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle manure/tracks
Fire:	>10 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia acradenia*, *Acacia ancistrocarpa*, *Acacia stellaticeps*, *Corymbia zygophylla*
Lower Stratum 1:	*Triodia lanigera*, *Triodia schinzii*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	1.7		2.5
Acacia ancistrocarpa	1.5		0.75
Acacia inaequilatera	1		0.2
Acacia sericophylla	1.5		0.3
Acacia stellaticeps	1.7		2.5
Arivela uncifera	0.2		0.1
Bonamia alatisemina			0.1
Cassytha capillaris			0.3
Corchorus parviflorus	0.8		0.1
Corymbia zygophylla	3.5		0.5
Euploca pachyphylla	0.1		0.1
Goodenia microptera	0.1		0.1
Hakea lorea subsp. *lorea*	2		0.3
Indigofera monophylla	0.3		0.1
Ptilotus astrolasius	0.3		0.1
Ptilotus calostachyus	0.4		0.1

Senna glutinosa subsp. *glutinosa*	1.8		0.2
Sida arenicola	1		0.2
Solanum phlomoides	0.4		0.1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.5		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia lanigera	0.4		10
Triodia schinzii	0.3		40

PHOTOS

Site Name:	HK21
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	25/07/2022
GPS Location:	GDA94 Zone 50 654547.36E 7678132.08N
Orientation:	90/180
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clayey Sand
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle manure
Fire:	>10 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia ancistrocarpa*
Mid Stratum 2:	*Acacia sphaerostachya*, *Acacia stellaticeps*
Lower Stratum 1:	*Triodia lanigera*, *Triodia schinzii*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2		0.3
Acacia inaequilatera	2.2		0.2
Acacia sericophylla	0.9		0.3
Acacia sphaerostachya	1.1		0.5
Acacia stellaticeps	0.8		70
Acacia tumida var. *pilbarensis*	1.3		0.1
Bonamia alatisemina	4		0.1
Bonamia erecta	0.3		0.1
Codonocarpus cotinifolius			
Corchorus parviflorus	0.2		0.1
Eragrostis eriopoda	0.2		0.1
Hakea lorea subsp. *lorea*	0.6		0.1
Halgania solanacea var. *solanacea* ms	0.3		0.1
Ptilotus astrolasius	0.2		0.1
Ptilotus calostachyus	0.8		0.1
Senna glutinosa subsp. *glutinosa*			

Sida arenicola	0.7		0.1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.3		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia lanigera	0.5		35
Triodia schinzii	0.5		35

PHOTOS

Site Name:	HK22
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	25/07/2022
GPS Location:	GDA94 Zone 50 654059.12E 7677728.53N
Orientation:	90/180
Community:	9
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clayey Sand
Soil Colour:	Red-Brown
Rock Outcrop:	?Dolerite (other), <2% bedrock exposed
CF Abundance:	50-90%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	Quartz, Calcrete, ?Dolerite (other)
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	>10 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia trachycarpa*
Mid Stratum 2:	*Senna artemisioides* subsp. *helmsii*
Lower Stratum 1:	*Triodia lanigera*, *Triodia wiseana*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1.5		0.3
Acacia inaequilatera	1.2		0.1
Acacia trachycarpa	1.8		0.4
Bonamia alatisemina			0.1
Bonamia erecta	0.1		0.1
Corchorus parviflorus	0.8		0.1
Eragrostis eriopoda	0.2		0.1
Euploca pachyphylla	0.1		0.1
Goodenia microptera	0.2		0.1
Gossypium australe	1.2		0.1
Indigofera monophylla	0.4		0.2
Pluchea tetranthera	0.3		0.1
Polymeria mollis	0.1		0.1

Senna artemisioides subsp. *helmsii*	1.2		1
Senna artemisioides subsp. *oligophylla*	0.8		0.2
Sida arenicola	1.1		0.1
Stemodia grossa	0.1		0.1
Swainsona formosa	0.1		0.1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.5		0.2
Trachymene oleracea subsp. *oleracea*	0.1		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia lanigera	0.4		15
Triodia wiseana	0.4		65
Triumfetta ramosa	0.3		0.1

PHOTOS

Site Name:	HK23
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	26/07/2022
GPS Location:	GDA94 Zone 50 653832.22E 7677498.7N
Orientation:	90/180
Community:	9
Landform Type:	Other, Low Rise (other)
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	N
Soil Type:	Clayey Sand
Soil Colour:	Red-Brown
Rock Outcrop:	?Dolerite (other), <2% bedrock exposed
CF Abundance:	50-90%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	Granite, Quartz, Calcrete, ?Dolerite (other)
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	>10 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia inaequilatera*
Mid Stratum 2:	*Corchorus parviflorus*, *Senna artemisioides* subsp. *oligophylla*
Lower Stratum 1:	*Triodia lanigera*, *Triodia wiseana*
Lower Stratum 2:	*Paraneurachne muelleri*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	0.4		0.1
Acacia ancistrocarpa	0.5		0.2
Acacia inaequilatera	2.5		0.75
Bonamia alatisemina	0.1		0.1
Bonamia pilbarensis	0.1		0.1
Corchorus parviflorus	0.6		0.4
Dampiera candicans	0.2		0.1
Dysphania rhadinostachya subsp. *rhadinostachya*	0.1		0.1
Eragrostis eriopoda	0.2		0.1
Euploca pachyphylla	-0.2		-0.1

Goodenia microptera	0.2		0.1
Grevillea wickhamii subsp. *aprica*	0.8		0.1
Hakea lorea subsp. *lorea*	1.2		0.4
Haloragis ?gossei	0.1		0.1
Indigofera monophylla	0.3		0.2
Paraneurachne muelleri			
Polymeria mollis	0.2		0.1
Ptilotus astrolasius	0.3		0.1
Senna artemisioides subsp. *oligophylla*	0.5		0.5
Sida arenicola	0.5		0.2
Swainsona formosa	0.1		0.1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.2		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia lanigera	0.3		2
Triodia wiseana	0.3		60

PHOTOS

Site Name:	HK24
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	26/07/2022
GPS Location:	GDA94 Zone 50 651078.61E 7680476.11N
Orientation:	90/180
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clayey Sand
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle manure
Fire:	5-10 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia acradenia*, *Acacia ancistrocarpa*
Mid Stratum 2:	*Corchorus parviflorus*, *Pluchea tetranthera*
Lower Stratum 1:	*Triodia lanigera*, *Triodia schinzii*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	1		2.5
Acacia ancistrocarpa	0.8		0.4
Acacia sericophylla	4		0.4
Acacia tumida var. *pilbarensis*			
Aristida holathera var. *holathera*	0.3		0.1
Arivela uncifera	0.2		0.2
Bonamia alatisemina			0.1
Corchorus parviflorus	1		6
Eragrostis eriopoda	0.2		0.1
Goodenia lamprosperma	0.2		0.1
Goodenia microptera	0.2		0.1
Grevillea wickhamii subsp. *aprica*	1.3		0.1
Halgania solanacea var. *solanacea* ms	0.2		0.1
Indigofera monophylla	0.5		0.2
Isotropis atropurpurea	0.4		0.4
Melaleuca lasiandra	1.3		0.3

Pluchea tetranthera	0.2		0.75
Ptilotus arthrolasius	0.2		0.1
Ptilotus astrolasius	0.2		0.1
Ptilotus axillaris	0.1		0.1
Ptilotus calostachyus	0.4		0.1
Ptilotus fusiformis	0.2		0.1
Senna notabilis	0.2		0.1
Sida arenicola	1		0.4
Sida sp. Pindan (B.G. Thomson 3398)	0.5		0.1
Solanum diversiflorum	0.2		0.1
Stemodia grossa	0.2		0.1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.4		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia lanigera	0.3		10
Triodia schinzii	0.3		30

PHOTOS

Site Name:	HK25
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	26/07/2022
GPS Location:	GDA94 Zone 50 652274.67E 7682458.96N
Orientation:	90/180
Community:	9
Landform Type:	Lower Slope
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	W
Soil Type:	Sandy Clay
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	>90%
CF Sizes:	2-6mm, 6-20mm, 20-60mm
CF Types:	Granite, Ironstone, Quartz
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle manure
Fire:	<2 Years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia acradenia*, *Acacia inaequilatera*
Mid Stratum 2:	*Acacia stellaticeps*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	1.2		0.2
Acacia inaequilatera	3		0.4
Acacia stellaticeps	0.5		0.5
Acacia tumida var. *pilbarensis*	0.2		0.1
Arivela uncifera	0.2		0.1
Bonamia alatisemina			0.1
Bonamia pilbarensis	0.1		0.1
Bulbostylis barbata	0.1		0.1
Corchorus parviflorus	0.2		0.2
Dampiera candicans	0.4		0.1
Dodonaea coriacea	0.2		0.1
Eriachne pulchella subsp. *dominii*	0.1		0.1

Fimbristylis simulans	0.1		0.1
Goodenia microptera	0.1		0.1
Goodenia stobbsiana	0.4		0.5
Grevillea wickhamii subsp. *aprica*	1		0.2
Hakea lorea subsp. *lorea*	0.2		0.1
Hibiscus leptocladus	0.2		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Polycarpaea holtzei	0.1		0.1
Ptilotus calostachyus	0.4		0.1
Senna notabilis	0.2		0.2
Sida arenicola	0.2		0.1
Solanum diversiflorum	0.3		0.1
Solanum phlomoides	0.4		0.1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.2		0.1
Tephrosia sp. NW Eremaean (S. van Leeuwen et al. PBS 0356)	0.1		0.1
Trigastrotheca molluginea	0.1		0.3
Triodia epactia	0.2		4
Triodia lanigera	0.2		0.3
Triodia wiseana	0.2		0.1

PHOTOS

Site Name:	HL01
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/07/2022
GPS Location:	GDA94 Zone 50 637157.664E 7723301.587N
Orientation:	90/180
Community:	5
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle
Fire:	>5 Years
Habitat:	Sparse shrubland over dense hummock

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia trudgeniana*
Mid Stratum 1:	*Acacia stellaticeps*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia stellaticeps	1		1
Acacia trudgeniana	2.5		1
Aristida holathera var. *holathera*	0.3		0.1
Bonamia alatisemina	0.1		0.1
Bonamia media	0.1		0.1
Bulbostylis barbata	0.1		0.1
**Cenchrus ciliaris*	0.5		0.1
Chrysopogon fallax	0.6		0.1
Corchorus incanus subsp. *incanus*	0.6		0.2
Crotalaria medicaginea var. *neglecta*	0.1		0.1
Cullen lachnostachys	0.1		0.1
Dysphania ?rhadinostachya	0.1		0.1
Eragrostis eriopoda	0.4		0.8
Evolvulus alsinoides var. *villosicalyx*	0.3		0.2
Goodenia microptera	0.3		0.1

Grona filiformis	0.1		0.1
Hypertelis cerviana	0.1		0.1
Pimelea ammocharis	1		0.5
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Ptilotus astrolasius	0.4		0.1
Sida arenicola	0.5		0.1
Solanum lasiophyllum	0.5		0.2
Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	0.2		0.4
Trigastrotheca molluginea	0.2		0.1
Triodia epactia	0.5		75

PHOTOS

Site Name:	HL02
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/07/2022
GPS Location:	GDA94 Zone 50 637362.4431E 7723359.154N
Orientation:	90/180
Community:	1
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm
CF Types:	Ironstone, Quartz
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle
Fire:	>5 Years
Habitat:	Isolated low shrubs over low, open hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1: *Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia stellaticeps	0.1		0.1
Aristida contorta	0.1		0.1
Bulbostylis barbata	0.1		0.1
Byblis pilbarana	0.1		0.1
Calandrinia stagnensis	0.1		0.1
Carissa lanceolata	1.5		0.4
Chrysopogon fallax	0.5		0.2
Cyperus squarrosus	0.1		0.1
Dactyloctenium radulans	0.1		0.1
Eragrostis dielsii	0.1		0.1
Eriachne aristidea	0.1		0.1
Fimbristylis dichotoma	0.1		
Pimelea ammocharis	0.1		0.1
Polygala galeocephala	0.1		0.1
Stackhousia sp. swollen gynophore (W.R.	0.1		0.1

Barker 2041)			
Triodia epactia	0.4		30
Triodia longiceps	0.4		0.5

PHOTOS

Site Name:	HL03
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/07/2022
GPS Location:	GDA94 Zone 50 637561.9314E 7722956.485N
Orientation:	90/180
Community:	1
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Clay Loam
Soil Colour:	Red-Brown
CF Abundance:	<2%
CF Sizes:	2-6mm, 6-20mm
CF Types:	Ironstone, Quartz
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle
Fire:	>5 Years
Habitat:	Sparse, low hummock grassland

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Byblis pilbarana	0.1		0.1
Calandrinia stagnensis	0.1		0.1
Eriachne aristidea	0.1		0.1
Fimbristylis dichotoma	0.1		0.2
Stackhousia sp. swollen gynophore (W.R. Barker 2041)	0.1		0.1
Triodia epactia	0.4		25

PHOTOS

Site Name:	HL04
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/07/2022
GPS Location:	GDA94 Zone 50 637319.9355E 7722807.785N
Orientation:	90/180
Community:	5
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle
Fire:	>5 Years
Habitat:	Isolated *Corymbia candida* subsp. *candida* over moderate low shrubland over hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

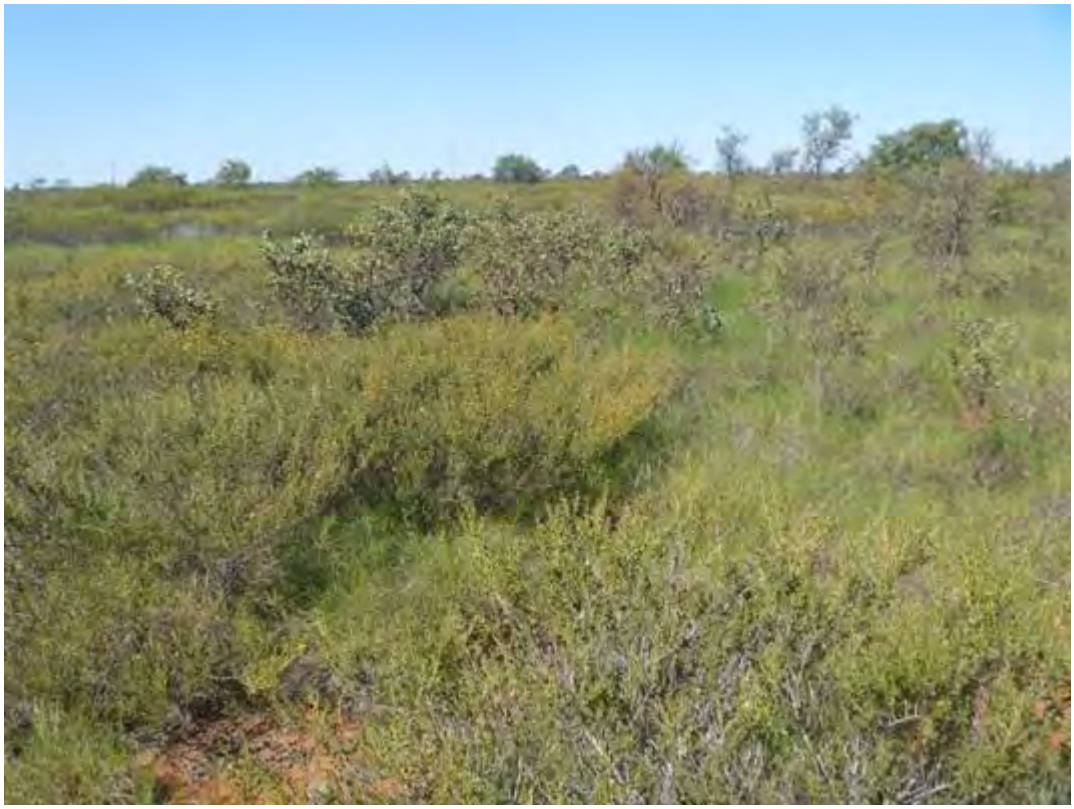
Upper Stratum 1:	*Corymbia candida* subsp. *candida*
Mid Stratum 1:	*Acacia stellaticeps*, *Acacia trudgeniana*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia colei	1.8		0.1
Acacia stellaticeps	0.7		20
Acacia trudgeniana	1.2		4
Bonamia media	0.1		0.1
**Cenchrus ciliaris*	0.4		0.5
Chrysopogon fallax	0.5		0.2
Corchorus incanus subsp. *incanus*	0.3		0.1
Corymbia candida subsp. *candida*	3		2
Eragrostis eriopoda	0.2		0.1
Evolvulus alsinoides var. *villosicalyx*	0.1		0.1
Hakea lorea subsp. *lorea*	2.5		0.1
Ipomoea polymorpha	0.1		0.1
Pimelea ammocharis	0.7		0.1
Sida arenicola	0.5		0.1

Solanum lasiophyllum	0.3		0.1
Tinospora smilacina			0.1
Triodia epactia	0.5		50

PHOTOS



Site Name:	HL05
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/07/2022
GPS Location:	GDA94 Zone 50 637806.3417E 7722272.055N
Orientation:	90/180
Community:	5
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle
Fire:	>5 Years
Habitat:	Dense shrubland over hummock grassland

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia colei	0.4		0.1
Acacia stellaticeps	0.6		0.2
Acacia trudgeniana	1.5		8
Aristida holathera var. *holathera*	0.4		0.3
Arivela viscosa	0.6		0.1
Boerhavia coccinea	0.1		0.1
Bonamia alatisemina	0.1		0.2
Bonamia media	0.1		0.1
Bulbostylis barbata	0.1		0.1
Carissa lanceolata	0.7		0.1
Cassytha capillaris			0.1
Chrysopogon fallax	0.5		0.3
Corchorus incanus subsp. *incanus*	0.5		0.2
Dolichandrone occidentalis	0.6		0.1
Dysphania ?rhadinostachya	0.1		0.1
Eragrostis eriopoda	0.4		0.8
Eriachne aristidea	0.7		0.1
Eriachne obtusa	0.4		0.1
Euploca foliata	0.1		0.1
Evolvulus alsinoides var. *villosicalyx*	0.2		0.1
Goodenia microptera	0.3		0.1

Grona filiformis	0.1		0.1
Hibiscus leptocladus	0.3		0.1
Panicum australiense var. *australiense*	0.1		0.1
Paspalidium rarum	0.1		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Ptilotus astrolasius	0.5		0.3
Ptilotus axillaris	0.1		0.1
Ptilotus calostachyus	0.1		0.1
Ptilotus polystachyus	0.7		0.2
Schizachyrium fragile	0.1		0.1
Sida arenicola	0.6		0.2
Solanum lasiophyllum			0.1
Streptoglossa decurrens	0.1		0.1
Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	0.3		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.6		25

PHOTOS

Site Name:	HL06
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	16/07/2022
GPS Location:	GDA94 Zone 50 637545.6231E 7722063.071N
Orientation:	90/180
Community:	2
Landform Type:	Flat
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	>5 Years
Habitat:	Low open Triodia hummock grass
Comments:	Previous surface pooling in SE corner, absent of veg

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia stellaticeps	0.8		0.2
Aristida holathera var. *holathera*	0.5		0.1
Arivela viscosa	0.1		0.1
Bonamia alatisemina	0.1		0.1
Bulbostylis barbata	0.1		0.1
Calandrinia stagnensis	0.1		0.1
Chrysopogon fallax	1.1		0.1
Cyperus squarrosus	0.1		0.1
Dactyloctenium radulans	0.2		0.2
Dysphania ?rhadinostachya	0.1		0.1
Eragrostis crateriformis (P3)	0.2	14	0.1
Eragrostis cumingii	0.1		0.1
Eragrostis dielsii	0.1		0.1
Eriachne aristidea	0.2		0.1
Eriachne flaccida	0.5		0.1
Eriachne glauca var. *glauca*	0.4		0.1
Eriachne obtusa	0.5		0.2
Fimbristylis dichotoma	0.3		1
Goodenia lamprosperma	0.3		0.1

Ipomoea polymorpha	0.2		0.1
Neptunia dimorphantha	0.1		0.1
Paspalidium rarum	0.2		0.1
Pluchea tetranthera	0.6		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Polygala galeocephala	0.1		0.1
Portulaca oleracea	0.1		0.1
Ptilotus murrayi	0.1		0.1
Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	0.1		0.1
Trianthema triquetrum	0.2		0.1
Triodia epactia	0.5		25
Triodia longiceps	0.5		15

PHOTOS

Site Name:	HL07
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	16/07/2022
GPS Location:	GDA94 Zone 50 637775.7289E 7721544.248N
Orientation:	90/180
Community:	5
Landform Type:	Flat
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - G - Good
Disturbance:	(other) - Fire
Fire:	<2 Years
Habitat:	Burnt low open shrubland over open grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia trudgeniana*
Lower Stratum 1:	*Aristida holathera* var. *holathera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon otocarpum	0.1		0.1
Abutilon sp. Pritzelianum (S. van Leeuwen 5095) (P3)	0.4		0.1
Acacia trudgeniana	3.5		3
Aristida holathera var. *holathera*	0.3		1.5
Arivela viscosa	0.4		0.1
Boerhavia gardneri	0.1		0.1
Bonamia alatisemina	0.1		0.1
Bonamia media	0.2		0.3
Bulbostylis barbata	0.1		0.1
Cajanus marmoratus			0.1
Carissa lanceolata	1.2		0.4
**Cenchrus ciliaris*	0.3		0.1
Chrysopogon fallax	0.3		0.1
Corchorus incanus subsp. *incanus*	0.5		0.1
Cullen martinii	0.3		0.1
Dysphania rhadinostachya	0.2		0.1

Eragrostis eriopoda	0.4		0.5
Eriachne obtusa	0.3		0.4
Euphorbia tannensis subsp. *eremophila*	0.2		0.1
Euphorbia trigonosperma	0.3		0.1
Euphorbia vaccaria var. *vaccaria*	0.1		0.1
Euploca foliata	0.2		0.1
Goodenia microptera	0.4		0.1
Grona filiformis	0.2		0.1
Hibiscus leptocladus	0.3		0.1
Indigofera colutea	0.2		0.1
Indigofera linifolia	0.2		0.2
Indigofera linnaei	0.2		0.1
Panicum australiense var. *australiense*	0.2		0.1
Paspalidium clementii	0.4		0.1
Pimelea ammocharis	0.5		0.1
Pluchea tetranthera	0.3		0.1
Polycarpaea corymbosa var. *corymbosa*	0.2		0.1
Portulaca oleracea	0.1		0.1
Senna notabilis	0.2		0.1
Sida arenicola	0.5		0.1
Solanum lasiophyllum	0.4		0.2
Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	0.2		0.2
Trianthema pilosum	0.2		0.1
Tribulopis angustifolia	0.1		0.1
Tribulus hirsutus	0.1		0.1
Trigastrotheca molluginea	0.1		0.2
Triodia epactia	0.15		0.2

PHOTOS

Site Name:	HL08
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	16/07/2022
GPS Location:	GDA94 Zone 50 637627.4993E 7722442.319N
Orientation:	90/180
Community:	5
Landform Type:	Flat
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	>5 Years
Habitat:	Isolated low shrubs over tall hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Hakea lorea* subsp. *lorea*
Upper Stratum 2:	*Acacia trudgeniana*
Mid Stratum 1:	*Acacia stellaticeps*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia stellaticeps	0.8		10
Acacia trudgeniana	1.5		1
Aristida holathera var. *holathera*	0.3		0.1
Chrysopogon fallax	0.4		0.2
Eragrostis eriopoda	0.2		0.1
Hakea lorea subsp. *lorea*	2.2		0.2
Paraneurachne muelleri	0.4		0.1
Polygala galeocephala	0.1		0.1
Triodia epactia	0.5		30

PHOTOS

Site Name:	HL09
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	17/07/2022
GPS Location:	GDA94 Zone 50 639553.7549E 7715995.023N
Orientation:	90/180
Community:	5
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm, 6-20mm, 20-60mm
CF Types:	Ironstone, Quartz
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle
Fire:	>5 Years
Habitat:	Tall open shrubland over hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia victoriae*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon otocarpum	0.5		0.4
Abutilon oxycarpum subsp. Prostrate (A.A. Mitchell PRP 1266)	0.2		0.2
Abutilon sp. Pilbara (W.R. Barker 2025)	0.4		0.1
Abutilon sp. Pritzelianum (S. van Leeuwen 5095) (P3)	1		0.1
Acacia victoriae	4.5		12
**Aerva javanica*	0.5		0.1
Aristida holathera var. *holathera*	0.3		0.2
Arivela viscosa	0.3		0.1
Boerhavia coccinea	0.1		0.1
Bonamia alatisemina	0.1		0.1
Bulbostylis barbata	0.1		0.1
**Cenchrus ciliaris*	0.6		1

Corchorus incanus subsp. *incanus*	0.4		0.2
Cucumis variabilis			0.1
Dactyloctenium radulans	0.1		0.2
**Digitaria ciliaris*	0.2		0.1
Dysphania ?rhadinostachya	0.2		0.1
Eragrostis crateriformis (P3)	0.1	75	0.1
Eragrostis cumingii	0.1		0.2
Euphorbia trigonosperma	0.1		0.1
Euphorbia vaccaria var. *vaccaria*	0.1		0.1
Evolvulus alsinoides var. *villosicalyx*	0.3		0.1
Fimbristylis dichotoma	0.1		0.2
Hibiscus brachychlaenus	0.6		0.1
Indigofera colutea	0.1		0.1
Indigofera linifolia	0.2		0.1
Indigofera linnaei	0.1		0.1
**Malvastrum americanum*	0.4		0.1
Panicum australiense var. *australiense*	0.1		0.1
Paspalidium clementii	0.2		0.1
Perotis rara	0.1		0.1
Pluchea tetranthera	0.7		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Portulaca oleracea	0.1		0.1
Senna artemisioides subsp. *oligophylla*	0.9		0.4
Sida arenicola	0.4		0.1
Sida echinocarpa	1.4		0.2
Sida fibulifera	0.2		0.1
Sida rohlenae subsp. *rohlenae*	0.5		0.2
Sida sp. Pindan (B.G. Thomson 3398)	0.3		0.1
Solanum cleistogamum	0.3		0.1
Solanum diversiflorum	0.5		0.1
Solanum lasiophyllum	0.5		0.1
Streptoglossa decurrens	0.1		0.1
Synaptantha tillaeacea var. *tillaeacea*	0.1		0.1
Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	0.3		0.1
Tinospora smilacina			0.1
Trianthema triquetrum	0.1		0.1
Trigastrotheca molluginea			
Triodia epactia	0.6		20
Triodia longiceps	0.6		4

PHOTOS

Site Name:	HL10
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	17/07/2022
GPS Location:	GDA94 Zone 50 639245.97E 7716186.96N
Orientation:	90/180
Community:	5
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle
Fire:	>5 Years
Habitat:	isolated low shrubs over moderately dense hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia trudgeniana*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon sp. Pritzelianum (S. van Leeuwen 5095) (P3)	0.6	1	0.1
Acacia ancistrocarpa	2		0.2
Acacia trudgeniana	3		2
Aristida holathera var. *holathera*	0.4		0.2
Bonamia alatisemina	0.2		0.1
Cajanus marmoratus			0.1
**Cenchrus ciliaris*	0.5		0.2
Chrysopogon fallax	0.6		0.1
Corchorus incanus subsp. *incanus*	0.6		0.2
Crotalaria ramosissima	0.1		0.1
Cullen lachnostachys	0.5		0.1
Eragrostis eriopoda	0.4		0.1
Euphorbia trigonosperma	0.1		0.1
Evolvulus alsinoides var. *villosicalyx*	0.3		0.2
Goodenia microptera	0.3		0.1

Grevillea pyramidalis subsp. *leucadendron*	2.2		0.5
Hibiscus brachychlaenus	0.5		0.1
Hibiscus leptocladus	0.5		0.1
Indigofera linifolia	0.1		0.1
Indigofera linnaei	0.4		0.1
Pimelea ammocharis	0.6		0.5
Sida arenicola	0.7		0.1
Solanum diversiflorum	0.5		0.2
Solanum lasiophyllum	0.3		0.1
Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	0.3		0.2
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.6		55

PHOTOS

Site Name:	HL11
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	17/07/2022
GPS Location:	GDA94 Zone 50 638978.8571E 7715622.273N
Orientation:	90/180
Community:	5
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle
Fire:	>5 Years
Habitat:	Isolated tall shrubs over sparse shrubland over hummock grassland. Dense *Acacia ancistrocarpa* to S of quadrat; assemblages of differing species create irregular patchwork of vegetation.

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Grevillea pyramidalis* subsp. *leucadendron*
Mid Stratum 2:	*Senna artemisioides* subsp. *oligophylla*
Lower Stratum 1:	*Eragrostis eriopoda*, *Eriachne obtusa*, *Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon sp. Pritzelianum (S. van Leeuwen 5095) (P3)	1.1	10	0.2
Acacia ancistrocarpa	3		0.2
Acacia colei			
Acacia trudgeniana	0.5		0.5
**Aerva javanica*	0.6		0.1
Afrohybanthus aurantiacus	0.4		0.3
Aristida holathera var. *holathera*	0.4		0.5
Boerhavia coccinea	0.1		0.1
Bonamia alatisemina	0.3		0.2
Bonamia media	0.1		0.2
**Cenchrus ciliaris*	0.5		0.1
Corchorus incanus subsp. *incanus*	0.5		0.2

Crotalaria ramosissima	0.1		0.1
Cullen lachnostachys	0.7		0.1
Eragrostis eriopoda	0.4		6
Eriachne aristidea	0.2		0.1
Eriachne obtusa	0.4		7
Evolvulus alsinoides var. *villosicalyx*	0.3		0.2
Goodenia microptera	0.3		0.1
Grevillea pyramidalis subsp. *leucadendron*	3.5		10
Hypertelis cerviana	0.1		0.1
Indigofera linifolia	0.2		0.1
Pimelea ammocharis	0.7		0.5
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Senna artemisioides subsp. *oligophylla*	1.5		4
Sida rohlenae subsp. *rohlenae*	0.6		0.1
Solanum diversiflorum	0.4		0.1
Solanum phlomoides	0.7		0.1
Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	0.4		0.1
Tinospora smilacina			-0.1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.6		20

PHOTOS

Site Name:	HL12
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	19/07/2022
GPS Location:	GDA94 Zone 50 640810.6011E 7699266.669N
Orientation:	90/180
Community:	1
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm, 6-20mm, 20-60mm
CF Types:	Ironstone, Quartz
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle
Fire:	>5 Years
Habitat:	Isolated low shrubs over hummock grassland

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia sphaerostachya	2		0.1
Acacia stellaticeps	0.8		2
Aristida holathera var. *holathera*	0.2		0.1
Bonamia alatisemina	0.1		0.1
Bulbostylis barbata	0.1		0.1
Byblis pilbarana	0.1		0.2
Calandrinia pentavalvis	0.1		0.1
Calandrinia stagnensis	0.1		0.2
Corchorus elachocarpus	0.5		0.1
Cyperus squarrosus	0.1		0.1
Eragrostis eriopoda	0.5		0.2
Eriachne aristidea	0.1		0.1
Eriachne obtusa	0.5		1
Fimbristylis dichotoma	0.1		0.2
Heliotropium crispatum	0.1		0.1
Panicum australiense var. *australiense*	0.1		0.1
Portulaca cyclophylla	0.1		0.5
Senna notabilis	0.1		0.1

Sida arenicola	0.5		0.1
Sporobolus australasicus			
Stackhousia sp. swollen gynophore (W.R. Barker 2041)	0.1		0.1
Trianthema triquetrum	0.1		0.1
Triodia epactia	0.5		10
Triodia longiceps	0.6		30

PHOTOS

Site Name:	HL13
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	19/07/2022
GPS Location:	GDA94 Zone 50 641383.09E 7698385.66N
Orientation:	90/180
Community:	4
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Habitat:	Isolated patches of tall shrubs over low shrubland, over sparse, patchy hummock grassland and tussock grassland

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Grevillea wickhamii* subsp. *aprica*
Mid Stratum 1:	*Acacia stellaticeps*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon sp. Pritzelianum (S. van Leeuwen 5095) (P3)	0.8	15	0.2
Acacia colei	0.6		0.1
Acacia stellaticeps	0.7		30
Aristida holathera var. *holathera*	0.3		0.1
Bonamia alatisemina	0.2		0.2
Bonamia erecta	0.3		0.1
Bulbostylis barbata	0.1		0.1
Byblis pilbarana	0.1		0.1
Cassytha capillaris			0.1
Chrysopogon fallax	0.5		0.2
Corchorus elachocarpus	0.4		0.1
Digitaria brownii	0.2		0.1
Dodonaea coriacea	1		0.3
Dysphania rhadinostachya	0.1		0.1

Eragrostis eriopoda	0.5		0.8
Eriachne helmsii	0.5		0.4
Eriachne obtusa	0.5		2.5
Evolvulus alsinoides var. *villosicalyx*	0.3		0.1
Grevillea wickhamii subsp. *aprica*	4.5		10
Hakea lorea subsp. *lorea*	1		0.3
Melaleuca lasiandra	1.5		2
Pluchea tetranthera	0.4		0.2
Ptilotus calostachyus	0.6		0.1
Schizachyrium fragile	0.1		0.2
Sida arenicola	0.6		0.5
Sida rohlenae subsp. *rohlenae*	0.6		0.1
Solanum phlomoides	0.4		0.1
Stackhousia sp. swollen gynophore (W.R. Barker 2041)	0.1		0.1
Tinospora smilacina			0.1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.5		5
Triodia lanigera	0.6		3
Triodia schinzii	0.5		0.1
Triumfetta ramosa	0.7		0.3

PHOTOS

Site Name:	HL14
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	19/07/2022
GPS Location:	GDA94 Zone 50 642194.8326E 7698403.261N
Orientation:	90/180
Community:	4
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>5 years
Habitat:	Isolated medium shrubs over moderately dense low shrubs over sparse hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

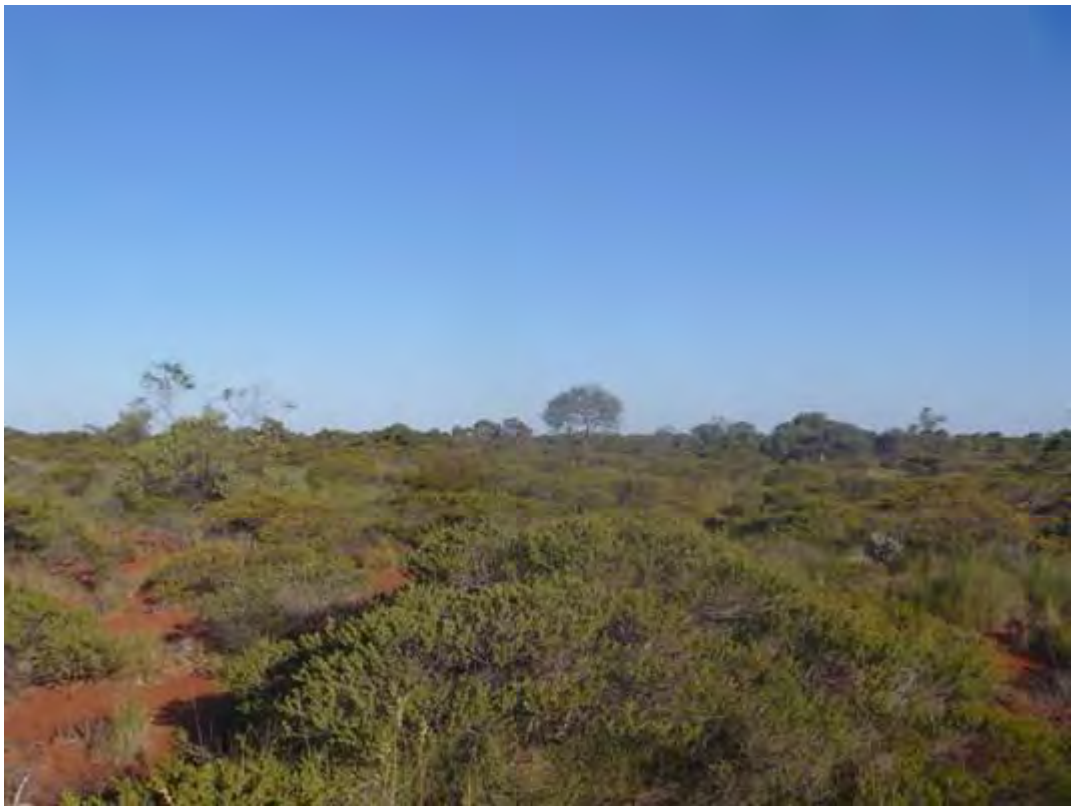
Mid Stratum 1:	*Acacia stellaticeps*
Lower Stratum 1:	*Triodia epactia*, *Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	3		0.2
Acacia sphaerostachya	1.2		0.2
Acacia stellaticeps	0.6		18
Bonamia alatisemina	0.1		0.2
Cassytha capillaris			0.1
Corchorus elachocarpus	0.6		0.2
Dodonaea coriacea	0.7		0.4
Eragrostis eriopoda	0.5		0.2
Eriachne obtusa	0.5		0.1
Euphorbia tannensis subsp. *eremophila*	0.3		0.1
Evolvulus alsinoides var. *villosicalyx*	0.3		0.2
Goodenia microptera	0.4		0.1
Hakea lorea subsp. *lorea*	2		0.2
Paraneurachne muelleri	0.3		0.1
Pluchea tetranthera	0.3		0.2
Polygala galeocephala	0.1		0.1

Ptilotus astrolasius	0.4		0.2
Ptilotus axillaris	0.1		0.1
Ptilotus calostachyus	0.9		0.2
Schizachyrium fragile	0.1		0.1
Senna artemisioides subsp. *oligophylla*	1.8		0.3
Sida arenicola	0.5		0.3
Solanum cleistogamum	0.3		0.2
Solanum lasiophyllum	0.5		0.1
Solanum phlomoides	0.5		0.1
Trachymene oleracea subsp. *oleracea*	0.1		0.1
Tribulus hirsutus	0.1		0.2
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.6		4
Triodia lanigera	0.6		20
Triumfetta ramosa	0.6		0.2

PHOTOS



Site Name:	HL15
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	20/07/2022
GPS Location:	GDA94 Zone 50 643119.952E 7696776.374N
Orientation:	90/180
Community:	4
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Fire:	>5 years
Habitat:	Isolated tall sparse shrubs over patchy low shrubland over sparse hummock and tussock grassland
Comments:	Lower than normal foliage cover of *Acacia stellaticeps*

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Acacia ancistrocarpa*, *Melaleuca lasiandra*
Mid Stratum 1:	*Acacia stellaticeps*
Lower Stratum 1:	*Triodia epactia*, *Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2		4
Acacia colei	1.3		0.1
Acacia sphaerostachya	0.7		0.1
Acacia stellaticeps	1		30
Bonamia alatisemina	0.1		0.1
Bulbostylis barbata	0.1		0.1
Cassytha capillaris			0.1
Chrysopogon fallax	0.5		0.3
Corchorus elachocarpus	0.4		0.1
Dodonaea coriacea	1		0.2
Dysphania rhadinostachya	0.1		0.1
Eragrostis eriopoda	0.3		0.2
Eriachne obtusa	0.4		0.4
Eriachne pulchella subsp. *dominii*	0.1		0.1

Euphorbia psilosperma	0.1		0.1
Euphorbia tannensis subsp. *eremophila*	0.1		0.1
Euphorbia vaccaria var. *vaccaria*	0.1		0.1
Euploca foliata	0.1		0.1
Evolvulus alsinoides var. *villosicalyx*	0.2		0.1
Hakea lorea subsp. *lorea*	1		0.1
Melaleuca lasiandra	1.7		5
Paraneurachne muelleri	0.3		0.1
Pluchea tetranthera	0.8		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Polygala galeocephala	0.1		0.1
Ptilotus calostachyus	0.4		0.1
Schizachyrium fragile	0.1		0.1
Senna artemisioides subsp. *oligophylla*	0.3		0.1
Sida arenicola	0.3		0.1
Solanum cleistogamum	0.2		0.1
Solanum ?cleistogamum	0.3		0.2
Streptoglossa decurrens	0.1		0.1
Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	0.2		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.3		3
Triodia lanigera	0.6		1

PHOTOS

Site Name:	HL16
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	20/07/2022
GPS Location:	GDA94 Zone 50 643619.7396E 7695742.786N
Orientation:	90/180
Community:	10
Landform Type:	Flat
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>5 years
Habitat:	Open hummock grassland
Comments:	*Triodia lanigera* grasslands sampled in quadrat surrounded by *Acacia ancistrocarpa* shrublands approximately 100 m away from NW corner. *Acacia stellaticeps* showing signs of defoliation across quadrat

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1: *Acacia stellaticeps*, *Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia stellaticeps	0.6		10
Bonamia alatisemina	0.2		0.1
Cassytha capillaris			0.1
Dodonaea coriacea	0.7		0.3
Eragrostis eriopoda	0.4		0.1
Goodenia microptera	0.4		0.1
Hibiscus brachychlaenus	0.2		0.1
Panicum australiense var. *australiense*	0.1		0.1
Polygala galeocephala	0.1		0.1
Ptilotus astrolasius	0.1		0.1
Ptilotus calostachyus	0.2		0.1
Senna artemisioides subsp. *oligophylla*	0.7		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia lanigera	0.6		30

PHOTOS

Site Name:	HL17
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	20/07/2022
GPS Location:	GDA94 Zone 50 643953.8811E 7696380.225N
Orientation:	90/180
Community:	4
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	>5 years
Habitat:	Low open shrubland over hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia stellaticeps*
Lower Stratum 1:	*Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1.1		0.1
Acacia stellaticeps	1.1		20
Bonamia alatisemina	0.1		0.1
Corchorus elachocarpus	0.3		0.1
Dodonaea coriacea	0.5		0.3
Eragrostis eriopoda	0.4		0.1
Eriachne obtusa	0.3		0.1
Panicum australiense var. *australiense*	0.1		0.1
Pluchea tetranthera	0.8		0.2
Polygala galeocephala	0.1		0.1
Ptilotus calostachyus	0.8		0.1
Sida arenicola	0.5		0.1
Solanum cleistogamum	0.2		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.4		0.5
Triodia lanigera	0.7		30

PHOTOS

Site Name:	HL18
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	20/07/2022
GPS Location:	GDA94 Zone 50 645089.05E 7696834.51N
Orientation:	90/180
Community:	4
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle
Fire:	<1 Year
Habitat:	Entirely burnt, sparse low shrubs over first responders to fire.

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia stellaticeps	0.1		0.2
Aristida holathera var. *holathera*	0.2		0.1
Arivela viscosa	0.3		0.1
Bonamia alatisemina	0.1		0.1
Cassytha capillaris			0.1
Chrysopogon fallax	0.3		0.1
Corchorus elachocarpus	0.3		0.1
Dysphania rhadinostachya	0.1		0.1
Eragrostis eriopoda	0.3		0.1
Eriachne obtusa	0.4		0.1
Eriachne pulchella subsp. *dominii*	0.1		0.1
Euphorbia psilosperma	0.1		0.1
Euploca foliata	0.1		0.1
Goodenia lamprosperma	0.3		1.5
Goodenia microptera	0.3		0.1
Grevillea wickhamii subsp. *aprica*	0.3		0.1
Hakea lorea subsp. *lorea*	0.5		0.1
Hibiscus leptocladus	0.4		0.1
Indigofera monophylla			0.1
Melaleuca lasiandra	0.5		3
Panicum australiense var. *australiense*	0.1		0.1

Pluchea tetranthera	0.4		1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Polygala galeocephala	0.1		0.1
Ptilotus axillaris	0.1		0.1
Ptilotus fusiformis	0.3		0.1
Schizachyrium fragile	0.1		0.1
Senna notabilis	0.2		0.3
Sida arenicola	0.3		0.1
Sida ?echinocarpa	0.2		0.1
Solanum ?cleistogamum	0.2		0.1
Solanum lasiophyllum	0.3		0.1
Stemodia grossa	0.2		5
Trianthema pilosum	0.3		0.1
Tribulus hirsutus	0.1		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.1		0.2
Triodia lanigera	0.1		0.2

PHOTOS

Site Name:	HL19
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	21/07/2022
GPS Location:	GDA94 Zone 50 642656.2497E 7699295.478N
Orientation:	90/180
Community:	4
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm
CF Types:	Ironstone, Quartz
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle
Fire:	>5 Years
Habitat:	Isolated shrubs over sparse, low shrubland over hummock grassland

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia stellaticeps*, *Melaleuca lasiandra*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia colei	4.5		1
Acacia inaequilatera	2		0.2
Acacia stellaticeps	0.7		7
Aristida holathera var. *holathera*	0.3		0.1
Bonamia alatisemina	0.2		0.1
Bulbostylis barbata	0.1		0.1
Byblis pilbarana	0.1		0.1
Calandrinia stagnensis	0.1		0.1
Cassytha capillaris			0.1
Chrysopogon fallax	0.7		0.1
Corchorus elachocarpus	0.3		0.2
Eragrostis eriopoda	0.4		0.1
Eriachne obtusa	0.5		3

Goodenia lamprosperma	0.3		0.2
Melaleuca lasiandra	2.5		3
Pluchea dentex	0.3		0.1
Pluchea tetranthera	0.6		1
Sida arenicola	0.6		0.2
Solanum cleistogamum	0.2		0.1
Synaptantha tillaeacea var. *tillaeacea*	0.1		0.1
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.5		35

PHOTOS

Site Name:	HM01
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	02/05/2022
GPS Location:	GDA94 Zone 50 659543.75E 7698720.57N
Orientation:	90/180
Community:	11
Landform Type:	Other, Top of small hill on island. (other)
Slope Class:	Gently Inclined (3 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red-Brown
Rock Outcrop:	Granite, <2% bedrock exposed
CF Abundance:	50-90%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm, 200-600mm
CF Types:	Granite, Dolerite, Ironstone, Quartz
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>10 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia hamersleyana*
Mid Stratum 1:	*Acacia orthocarpa*
Lower Stratum 1:	*Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	1		0.2
Acacia inaequilatera	3		0.6
Acacia orthocarpa	1.8		30
Acacia orthocarpa x stellaticeps	0.2		0.1
Acacia stellaticeps	0.9		2
Corymbia hamersleyana	3.5		0.5
Grevillea wickhamii subsp. *aprica*	2.2		0.2
Ptilotus astrolasius	0.2		0.1
Ptilotus calostachyus	0.4		0.1
Triodia lanigera	0.4		40
Triodia wiseana	0.5		0.1

PHOTOS

Site Name:	HM02
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	02/05/2022
GPS Location:	GDA94 Zone 50 658961.51E 7699203.81N
Orientation:	90/180
Community:	11
Landform Type:	Other, Undulating river banks (other)
Slope Class:	Gently Inclined (3 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	2-10%
CF Sizes:	2-6mm, 6-20mm, 20-60mm
CF Types:	Dolerite, Ironstone, Quartz
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Flood
Fire:	>10 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia hamersleyana*
Mid Stratum 1:	*Acacia orthocarpa*
Lower Stratum 1:	*Triodia lanigera*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2		1
Acacia inaequilatera	2		0.3
Acacia orthocarpa	2.5		28
Acacia trachycarpa	2.5		2
Afrohybanthus aurantiacus	0.1		0.1
Bonamia alatisemina	0.1		0.1
Bonamia pilbarensis	0.1		0.1
Cajanus cinereus	0.9		0.2
Cassytha capillaris			0.1
Corchorus incanus subsp. *incanus*	0.9		0.1
Corchorus tectus	0.9		0.1
Corymbia hamersleyana	3.5		1
Dampiera candicans	0.4		0.2

Eucalyptus camaldulensis subsp. *refulgens*	4		0.3
Euphorbia trigonosperma	0.3		0.1
Evolvulus alsinoides var. *villosicalyx*	0.1		0.1
Goodenia stobbsiana	0.3		0.1
Hakea lorea subsp. *lorea*	1		0.1
Nellica maderaspatensis	0.6		0.1
Paraneurachne muelleri	0.4		0.2
Petalostylis labicheoides	0.9		0.2
Ptilotus calostachyus	0.4		0.1
Solanum cleistogamum	0.4		0.1
Solanum phlomoides	0.4		0.1
Tinospora smilacina			0.1
Trigastrotheca molluginea	0.1		0.1
Triodia angusta	0.5		10
Triodia epactia	0.4		3
Triodia lanigera	0.4		20

PHOTOS

Site Name:	HM03
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	02/05/2022
GPS Location:	GDA94 Zone 50 658797.08E 7700288.77N
Orientation:	90/180
Community:	14
Landform Type:	Other, Flood plain (other)
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm
CF Types:	Dolerite, Ironstone, Quartz
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>10 years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia ancistrocarpa*
Mid Stratum 2:	*Acacia acradenia*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon sp. Pritzelianum (S. van Leeuwen 5095) (P3)	0.3	1	0.1
Acacia acradenia	2		5
Acacia ancistrocarpa	2.2		20
Acacia inaequilatera	2.2		1
Acacia tumida var. *pilbarensis*	4		0.5
Bonamia alatisemina	0.1		0.1
Evolvulus alsinoides var. *villosicalyx*	0.1		0.1
Triodia epactia	0.6		50

PHOTOS

Site Name:	HM04
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	02/05/2022
GPS Location:	GDA94 Zone 50 658844.98E 7700686.2N
Orientation:	90/180
Community:	14
Landform Type:	Other, Flood plain (other)
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm
CF Types:	Dolerite, Ironstone, Quartz
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Grazing
Fire:	>10 years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia tumida* var. *pilbarensis*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	3.5		1
Acacia coriacea subsp. *pendens*	5.5		1
Acacia orthocarpa	1.5		0.2
Acacia pyrifolia var. *pyrifolia*	1.3		0.5
Acacia trachycarpa	2		0.1
Acacia tumida var. *pilbarensis*	3.5		35
Aristida holathera var. *holathera*	0.3		0.2
Bonamia alatisemina	0.1		0.1
Corchorus incanus subsp. *incanus*	0.6		0.8
Eragrostis eriopoda	0.3		0.2
Eriachne obtusa	0.3		0.2
Evolvulus alsinoides var. *villosicalyx*	0.1		0.1
Paraneurachne muelleri	0.1		0.1
Sida rohlenae subsp. *rohlenae*	0.2		0.1
Solanum cleistogamum	0.3		0.1

Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.5		5

PHOTOS

Site Name:	HM05
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	03/05/2022
GPS Location:	GDA94 Zone 50 659176.43E 7700692.26N
Orientation:	90/180
Community:	16
Landform Type:	Other, Flow line, raised bank within river bed (other)
Slope Class:	Level (0 degrees)
Aspect:	NW
Soil Type:	Sandy Loam
Soil Colour:	Light-brown (other)
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm, 6-20mm, 20-60mm
CF Types:	Dolerite, Quartz
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Grazing, Exotic Weeds, Flood
Fire:	>10 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Eucalyptus camaldulensis* subsp. *refulgens*
Mid Stratum 1:	*Melaleuca glomerata*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia colei			
Acacia coriacea subsp. *pendens*	4		1
Acacia pyrifolia var. *pyrifolia*	1.5		1.5
Acacia trachycarpa	3		5
**Aerva javanica*	0.3	6	0.2
Afrohybanthus aurantiacus	0.3		0.2
Arivela viscosa	0.4		0.2
Boerhavia coccinea	0.1		0.1
Bonamia alatisemina	0.1		0.2
Cajanus cinereus	0.5		0.2
Cassytha filiformis			8
**Cenchrus ciliaris*	0.1		0.2

** Citrullus colocynthis*			0.2
Corchorus incanus subsp. *incanus*	0.6		0.5
Corchorus tridens	0.1		0.1
Corynotheca pungens	0.9		0.2
Crotalaria cunninghamii	1		0.2
Cynanchum floribundum			0.2
Eucalyptus camaldulensis subsp. *refulgens*	12		10
Eucalyptus victrix	10		2
Euphorbia australis var. *subtomentosa*	0.3		0.4
Euphorbia trigonosperma	0.3		0.2
Melaleuca glomerata	2.5		7
Nellica maderaspatensis	0.9		0.2
Paspalidium reflexum	1		0.3
Petalostylis labicheoides	1.6		0.2
Portulaca oleracea	0.1		0.1
Rhynchosia minima			0.2
Senna notabilis	0.1		0.1
Sida rohlenae subsp. *rohlenae*	0.3		0.1
Tephrosia sp. B Kimberley Flora (C.A. Gardner 7300)	0.6		0.1
Tinospora smilacina			0.2
Triodia epactia	0.8		3
Triodia lanigera	0.4		0.3
Triumfetta propinqua	1.6		0.5

PHOTOS

Site Name:	HM06
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	03/05/2022
GPS Location:	GDA94 Zone 50 658262.37E 7699647.6N
Orientation:	90/180
Community:	14
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm, 6-20mm, 20-60mm
CF Types:	Dolerite, Ironstone, Quartz
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>10 years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Acacia inaequilatera*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	1.3		0.4
Acacia ancistrocarpa	0.6		0.1
Acacia colei	0.7		0.1
Acacia inaequilatera	2.5		0.8
Acacia stellaticeps	0.8		3
Corymbia hamersleyana			
Fimbristylis dichotoma	0.1		0.1
Paraneurachne muelleri	0.1		0.1
Pluchea tetranthera	0.4		0.3
Ptilotus calostachyus	0.6		0.1
Triodia epactia	0.5		35

PHOTOS

Site Name:	HM07
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	03/05/2022
GPS Location:	GDA94 Zone 50 658555.68E 7698946.7N
Orientation:	90/180
Community:	13
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>10 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia hamersleyana*
Mid Stratum 1:	*Acacia ancistrocarpa*
Mid Stratum 2:	*Acacia tumida* var. *pilbarensis*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	1.8		2
Acacia ancistrocarpa	2.2		12
Acacia colei	2.5		2
Acacia inaequilatera	0.2		0.1
Acacia orthocarpa	1.8		2
Acacia stellaticeps	0.6		1
Acacia tumida var. *pilbarensis*	2		6
Bonamia alatisemina	0.1		0.1
Cassytha capillaris			0.1
Corymbia hamersleyana	3		6
Eragrostis eriopoda	0.1		0.1
Grevillea wickhamii subsp. *aprica*	2		0.2
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.5		0.1
Tinospora smilacina			0.1
Triodia epactia	0.6		48

PHOTOS

Site Name:	HM08
Site Type:	QUADRAT
Dimensions:	33m x 80m
Survey Date:	03/05/2022
GPS Location:	GDA94 Zone 50 658046.71E 7698613.06N
Orientation:	90/180
Community:	11
Landform Type:	Other, Simple slope of stony rise (other)
Slope Class:	Gently Inclined (3 degrees)
Aspect:	SSW
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	Dolerite, Quartz, Chert (other), 2-10% bedrock exposed
CF Abundance:	>90%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm, 200-600mm
CF Types:	Dolerite, Chert (other), Quartz
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	>10 years

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	0.4		0.1
Acacia inaequilatera	2		4
Acacia orthocarpa	0.1		0.1
Acacia stellaticeps	0.6		0.6
Cassytha capillaris			0.1
Corymbia hamersleyana	3.5		0.6
Grevillea wickhamii subsp. *aprica*	2		1
Hakea lorea subsp. *lorea*	1.8		0.6
Pluchea ferdinandi-muelleri	0.8		0.2
Pluchea tetranthera	0.6		2
Ptilotus astrolasius	0.3		0.2
Ptilotus calostachyus	0.7		0.2
Scaevola browniana subsp. *browniana*	0.1		0.1
Triodia epactia	0.5		40

PHOTOS

Site Name:	HM09
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	25/07/2022
GPS Location:	GDA94 Zone 50 647291.3E 7698112.1N
Orientation:	90/180
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Fire:	> 10 Years

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa			
Acacia inaequilatera			
Acacia stellaticeps	1.2		25
Bonamia alatisemina	0.1		0.1
Cassytha capillaris			0.1
Corchorus elachocarpus	0.3		0.2
Goodenia microptera	0.1		0.1
Hakea lorea subsp. *lorea*			
Hibiscus brachychlaenus	0.5		15
Pluchea tetranthera	0.3		0.2
Sida arenicola	0.3		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)			
Trigastrotheca molluginea	0.2		0.1
Triodia epactia	0.5		15
Triodia lanigera	1.2		25
Triodia schinzii	1.2		25

PHOTOS

Site Name:	HM10
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	25/07/2022
GPS Location:	GDA94 Zone 50 646007.47E 7698006.97N
Orientation:	90/180
Community:	4
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red-Brown
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	<2 Years

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	0.1		0.5
Acacia inaequilatera	2.5		0.5
Acacia sericophylla	2		0.5
Acacia stellaticeps	0.1		0.2
Aristida holathera var. *holathera*	0.2		0.2
Arivela uncifera	0.3		0.3
Bonamia alatisemina	0.3		0.3
Bonamia erecta	0.3		0.3
Bulbostylis barbata	0.1		0.1
Corchorus elachocarpus	0.3		10
Dampiera candicans			
Dodonaea coriacea	0.1		0.1
Dysphania rhadinostachya	0.1		0.1
Euphorbia australis var. *subtomentosa*	0.1		0.1
Euploca foliata	0.1		0.2
Euploca pachyphylla	0.1		0.2
Goodenia microptera	0.3		1
Grevillea wickhamii subsp. *aprica*	0.4		0.2
Hakea lorea subsp. *lorea*			
Haloragis ?gossei	0.1		0.1
Hibiscus leptocladus	0.3		0.5
Indigofera monophylla	0.3		0.2
Panicum australiense var. *australiense*	0.1		0.1

Pimelea ammocharis	0.4		0.2
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Portulaca oleracea	0.1		0.2
Ptilotus astrolasius	0.2		0.3
Ptilotus axillaris	0.1		0.2
Ptilotus fusiformis	0.2		0.2
Senna notabilis	0.1		1
Sida arenicola	0.2		0.2
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.1		0.1
Solanum phlomoides	0.3		0.2
Stemodia grossa	0.1		0.1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.2		0.3
Trachymene oleracea subsp. *oleracea*	0.1		0.1
Tribulus hirsutus	0.1		0.2
Trigastrotheca molluginea	0.1		0.2
Triodia epactia	0.2		0.8
Triodia lanigera	0.31		
Waltheria ?*indica*	0.1		0.1

PHOTOS

Site Name:	HM11
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	25/07/2022
GPS Location:	GDA94 Zone 50 644909.48E 7698844.55N
Orientation:	90/180
Community:	4
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - cattle
Fire:	<2 Years

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	0.1		0.2
Acacia inaequilatera	1.8		0.5
Acacia sericophylla	0.3		0.2
Acacia stellaticeps	0.1		0.3
Acacia tumida var. *pilbarensis*	1.5		0.5
Amaranthus undulatus	0.1		0.2
Aristida holathera var. *holathera*	0.2		0.2
Arivela viscosa	0.1		0.1
Boerhavia coccinea	0.1		0.1
Bonamia alatisemina	0.1		0.2
Bonamia erecta	0.2		0.2
Bulbostylis barbata	0.1		0.1
Calandrinia stagnensis	0.1		0.3
Carissa lanceolata	0.4		0.3
Chrysopogon fallax	0.1		0.1
Corchorus elachocarpus	0.3		0.5
Corymbia candida subsp. *candida*	0.3		0.9
Cucumis variabilis			0.1
Dysphania rhadinostachya	0.1		0.2
Eragrostis crateriformis (P3)	0.1	6	0.1
Eulalia aurea	0.3		0.2
Euphorbia australis var. *subtomentosa*	0.2		0.2

Euphorbia trigonosperma	0.2		0.1
Goodenia microptera	0.3		0.5
Hakea lorea subsp. *lorea*	2.2		0.5
Hibiscus leptocladus	0.3		0.2
Indigofera monophylla	0.3		0.2
Melaleuca lasiandra	1.8		0.5
Pluchea tetranthera	0.4		0.3
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1
Polymeria mollis	0.1		0.3
Portulaca oleracea	0.1		0.1
Ptilotus axillaris	0.1		0.1
Ptilotus fusiformis	0.2		0.1
Rhynchosia minima			0.1
Senna notabilis	0.2		0.2
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.4		0.3
Solanum diversiflorum	0.3		0.1
Solanum phlomoides	0.2		0.2
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.2		2
Tribulus hirsutus	0.1		0.3
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.3		0.5
Triodia lanigera	0.5		0.3
Waltheria ?*indica*	0.3		0.2

PHOTOS

Site Name:	HM12
Site Type:	QUADRAT
Dimensions:	25m x 100m
Survey Date:	25/07/2022
GPS Location:	GDA94 Zone 50 644819.28E 7698657.13N
Orientation:	140/230
Community:	4
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Animal Disturbance - Cattle
Fire:	10 Years

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon lepidum	0.4		0.2
Abutilon otocarpum	0.4		0.2
Acacia inaequilatera	2		0.8
Acacia stellaticeps	1.2		30
Bonamia alatisemina	0.1		0.2
Bonamia erecta	0.2		0.2
Bulbostylis barbata	0.1		0.1
Calandrinia stagnensis	0.1		0.2
Cassytha capillaris			0.1
Chrysopogon fallax	0.2		0.2
Corchorus elachocarpus	0.2		0.3
Dysphania rhadinostachya	0.2		0.1
Eriachne obtusa	0.4		0.3
Euphorbia australis var. *subtomentosa*	0.1		0.1
Fimbristylis dichotoma	0.1		0.1
Goodenia microptera	0.1		0.2
Hibiscus leptocladus	0.2		0.1
Indigofera monophylla	0.4		0.3
Melaleuca lasiandra	0.9		0.5
Panicum australiense var. *australiense*	0.1		0.1
Pluchea tetranthera	0.5		0.3
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1

Portulaca oleracea	0.1		0.1
Ptilotus astrolasius	0.3		0.2
Ptilotus axillaris	0.1		0.2
Senna notabilis	0.2		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.4		0.2
Solanum diversiflorum	0.3		0.2
Solanum phlomoides	0.5		0.3
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.1		0.2
Tinospora smilacina			0.2
Tribulus hirsutus	0.1		0.2
Trigastrotheca molluginea	0.1		0.1
Triodia epactia	0.5		15
Triodia longiceps	0.5		0.5

PHOTOS

Site Name:	HM13
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	26/07/2022
GPS Location:	GDA94 Zone 50 642358.09E 7699709.6N
Orientation:	90/180
Community:	1
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm, 6-20mm
CF Types:	Dolerite, Quartz
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle
Fire:	>10 Years

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa			
Acacia inaequilatera	2.5		0.2
Acacia stellaticeps	1		0.5
Acacia trachycarpa			
Aristida holathera var. *holathera*	0.3		0.1
Byblis pilbarana	0.1		0.1
Calandrinia stagnensis	0.1		0.1
Carissa lanceolata	0.5		0.2
Cassytha capillaris			0.1
Chrysopogon fallax	1		1.5
Corchorus elachocarpus	0.5		0.2
Dysphania plantaginella	0.1		0.1
Eriachne obtusa	0.5		8
Fimbristylis dichotoma	0.1		0.1
Goodenia lamprosperma	0.3		0.2
Pluchea ferdinandi-muelleri	0.4		0.1
Pluchea tetranthera	0.4		4
Polymeria mollis	0.3		0.2
Portulaca oleracea	0.1		0.1

Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.5		0.1
Sporobolus australasicus	0.1		0.1
Trigastrotheca molluginea	0.2		0.1
Triodia epactia	0.5		0.15
Triodia longiceps	0.6		20

PHOTOS

Site Name:	HM14
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	26/07/2022
GPS Location:	GDA94 Zone 50 645552.95E 7696068.29N
Orientation:	90/180
Community:	4
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - cattle
Fire:	>10 Years

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	0.1		0.1
Acacia stellaticeps	0.5		20
Aristida holathera var. *holathera*	0.6		0.2
Bonamia alatisemina	0.1		0.1
Bulbostylis barbata	0.1		0.1
Cassytha capillaris			0.1
Corchorus elachocarpus	0.3		0.1
Cucumis variabilis			0.1
Dodonaea coriacea	0.7		0.2
Dysphania rhadinostachya	0.1		0.1
Eragrostis eriopoda	0.4		0.2
Eriachne obtusa	0.3		0.1
Euphorbia tannensis subsp. *eremophila*	0.7		0.1
Evolvulus alsinoides var. *villosicalyx*	0.1		0.1
Goodenia lamprosperma	0.3		0.1
Goodenia microptera	0.1		0.1
Hibiscus brachychlaenus	0.2		0.1
Indigofera monophylla	0.3		0.1
Melaleuca lasiandra	0.5		15
Panicum australiense var. *australiense*	0.1		0.1
Pluchea tetranthera	0.4		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1

Polygala galeocephala	0.1		0.1
Ptilotus astrolasius			
Ptilotus axillaris	0.1		0.1
Ptilotus calostachyus	1.2		0.1
Schizachyrium fragile	0.1		0.1
Solanum horridum	0.3		0.1
Solanum phlomoides	0.3		0.1
Stemodia grossa	0.1		0.1
Tinospora smilacina			0.1
Trigastrotheca molluginea	0.1		0.1
Triodia lanigera	0.5		15
Triumfetta ramosa	0.4		0.1

PHOTOS

Site Name:	HM15
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	26/07/2022
GPS Location:	GDA94 Zone 50 643917.2E 7698558.95N
Orientation:	150/240
Community:	4
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red-Brown
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Disturbance:	Animal Disturbance - Cows/cattle
Fire:	>10 Years
Comments:	Firescar either side of quadrat

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia bivenosa	1.8		0.1
Acacia inaequilatera			
Acacia stellaticeps	0.7		15
Aristida holathera var. *holathera*	0.3		0.1
Arivela uncifera	0.3		0.2
Bonamia alatisemina	0.1		0.2
Bulbostylis barbata	0.1		0.1
Calandrinia stagnensis	0.1		0.1
Chrysopogon fallax	0.6		0.3
Corchorus elachocarpus	0.3		0.2
Dysphania rhadinostachya	0.1		0.1
Eriachne obtusa	0.3		2
Eriachne pulchella subsp. *dominii*	0.1		0.1
Euphorbia australis var. *subtomentosa*	0.1		0.1
Euphorbia trigonosperma	0.2		0.1
Goodenia microptera	0.3		0.1
Hakea lorea subsp. *lorea*	2.5		0.5
Hibiscus leptocladus	0.2		0.1
Melaleuca lasiandra	2		0.5
Panicum australiense var. *australiense*	0.1		0.2
Pluchea tetranthera	0.4		0.1
Polycarpaea corymbosa var. *corymbosa*	0.1		0.1

Polygala galeocephala	0.1		0.1
Ptilotus astrolasius	0.3		0.1
Ptilotus axillaris	0.1		0.1
Ptilotus fusiformis	0.3		0.1
Schizachyrium fragile	0.1		0.1
Senna glutinosa subsp. *glutinosa*	1.2		0.2
Senna notabilis	0.2		0.3
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.3		0.3
Solanum phlomoides	0.4		0.2
Synaptantha tillaeacea var. *tillaeacea*	0.1		0.1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.2		0.1
Tinospora smilacina			
Tribulus hirsutus	0.1		0.1
Trigastrotheca molluginea	0.2		0.1
Triodia epactia	0.5		10
Triodia longiceps	0.7		0.2

PHOTOS

Site Name:	HMR01
Site Type:	RELEVE
Survey Date:	26/07/2022
GPS Location:	GDA94 Zone 50 642463.01E 7699720.55N
Community:	8
Landform Type:	Other, Low Rise (other)
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	E
Soil Type:	Clay Loam
Soil Colour:	Red-Brown
Rock Outcrop:	Calcrete, <2% bedrock exposed
CF Abundance:	20-50%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	Quartz, Calcrete
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Animal Disturbance - Cattle
Fire:	>10 Years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia hamersleyana*
Mid Stratum 1:	*Grevillea wickhamii* subsp. *aprica*, *Hakea lorea* subsp. *lorea*
Mid Stratum 2:	*Acacia bivenosa*
Lower Stratum 1:	*Triodia epactia*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia bivenosa			
Acacia stellaticeps			
Carissa lanceolata			
Corchorus elachocarpus			
Corymbia hamersleyana			
Eriachne obtusa			
Grevillea wickhamii subsp. *aprica*			
Hakea lorea subsp. *lorea*			
Pimelea ammocharis			
Polymeria mollis			
Ptilotus astrolasius			
Ptilotus axillaris			
Ptilotus calostachyus			

Scaevola amblyanthera var. *centralis*			
Sida sp. Pilbara (A.A. Mitchell PRP 1543)			
Triodia epactia			

PHOTOS

Site Name:	MD01
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/03/2022
GPS Location:	GDA94 Zone 50 658738E 7691170N
Community:	14
Landform Type:	Other, Plain/minor basin(other)
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	NW
Soil Type:	Sandy loam with clay
Soil Colour:	Red
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	Grazing
Fire:	>5
Habitat:	Low open shrubland over Triodia grassland

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	0.5		0.1
Acacia inaequilatera	0.6		0.1
Acacia stellaticeps	0.5		0.2
Acacia synchronicia	1		0.5
Corymbia candida subsp. *candida*	1.5		0.2
Pluchea tetranthera	0.3		0.2
Triodia epactia	0.3		45

PHOTOS

Site Name:	MD02
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/06/2010
GPS Location:	GDA94 Zone 50 659228E 7692156N
Community:	14
Landform Type:	Plain
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	NW
Soil Type:	Sandy Loam
Soil Colour:	Red
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Grazing
Fire:	<5
Habitat:	Low shrubland over Triodia grassland

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia colei	0.3		0.3
Acacia inaequilatera	1		0.2
Acacia stellaticeps	0.4		30
Bonamia erecta	0.3		1
Pluchea tetranthera	0.4		5.3
Triodia epactia	0.3		20

PHOTOS

Site Name:	MD03
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/06/2010
GPS Location:	GDA94 Zone 50 659197E 7693659N
Community:	14
Landform Type:	Plain
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	W
Soil Type:	Sandy Loam
Soil Colour:	Red
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Grazing
Fire:	>5
Habitat:	Triodia grassland

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia stellaticeps	0.2		0.1
Pluchea tetranthera	0.3		0.2
Triodia epactia	0.4		45

PHOTOS

Site Name:	MD04
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/06/2010
GPS Location:	GDA94 Zone 50 659346E 7694268N
Community:	14
Landform Type:	Plain
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	NW
Soil Type:	Sandy Loam
Soil Colour:	Red
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Grazing
Fire:	?>5 years
Habitat:	Low shrubland over Triodia grassland

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1		0.2
Acacia colei	1.5		0.1
Acacia sphaerostachya	0.3		0.1
Acacia stellaticeps	0.4		20
Pluchea tetranthera	0.2		2
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.3		1
Solanum lasiophyllum	0.2		0.1
Triodia epactia	0.3		30

PHOTOS

Site Name:	MD05
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/03/2022
GPS Location:	GDA94 Zone 50 659922E 7694419N
Community:	14
Landform Type:	Plain
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	N
Soil Type:	Sandy Loam
Soil Colour:	Red
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - G - Good
Disturbance:	Grazing
Fire:	<5
Habitat:	Shrubland over Triodia grassland with occasional tall shrubs

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia colei	1.5		0.5
Acacia inaequilatera	1.5		0.2
Acacia sphaerostachya	0.3		0.1
Acacia stellaticeps	0.5		20
Aristida holathera var. *holathera*	0.2		0.3
Aristida inaequiglumis	0.3		1
Senna notabilis	0.2		
Sida arenicola	0.4		0.5
Sida ?echinocarpa	0.3		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.3		2.7
Solanum lasiophyllum	0.3		0.5
Triodia epactia	0.3		15

PHOTOS

Site Name:	MD06
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/06/2010
GPS Location:	GDA94 Zone 50 660542E 7693854N
Community:	14
Landform Type:	Plain
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	NW
Soil Type:	Sandy Loam
Soil Colour:	Red
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Grazing
Fire:	?<5 years
Habitat:	Low shrubland over Triodia grassland

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia inaequilatera	0.5		0.1
Acacia stellaticeps	0.4		8
Hakea lorea subsp. *lorea*	0.5		0.2
Pluchea tetranthera	0.3		3
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.5		0.2
Triodia epactia	0.3		35

PHOTOS

Site Name:	MD08
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/03/2022
GPS Location:	GDA94 Zone 50 657632E 7692209N
Community:	14
Landform Type:	Plain
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	N
Soil Type:	Sandy Loam
Soil Colour:	Red
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Grazing
Fire:	>5 years
Habitat:	Open shrubland over Triodia grassland

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1		0.5
Acacia colei	0.3		0.1
Acacia inaequilatera	1.5		4.5
Acacia sericophylla	1		0.1
Corymbia hamersleyana	1		0.2
Pluchea tetranthera	0.3		
Sida ?echinocarpa	0.2		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.2		1
Triodia epactia	0.3		60

PHOTOS

Site Name:	MD09
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	16/06/2010
GPS Location:	GDA94 Zone 50 658215E 7692761N
Community:	14
Landform Type:	Plain
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	NW
Soil Type:	Sandy Loam
Soil Colour:	Red
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Grazing
Fire:	?<5 years
Habitat:	Shrubland over Triodia grassland

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1.5		3
Acacia colei	1		3.5
Acacia inaequilatera	1		1
Acacia stellaticeps	0.3		0.5
Bonamia erecta	0.3		0.2
Pluchea tetranthera	0.4		3
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.4		0.3
Triodia epactia	0.3		45

PHOTOS

Site Name:	MD10
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	16/06/2010
GPS Location:	GDA94 Zone 50 652765E 7687205N
Community:	10
Landform Type:	Other, PLAIN/LOWERSLOPE (other)
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	W
Soil Type:	Sandy Loam
Soil Colour:	Red
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	>5 years
Habitat:	Scrub over Triodia grassland

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia stellaticeps	0.5		30
Cassytha capillaris			0.2
Indigofera monophylla	0.2		0.2
Pluchea tetranthera	0.2		0.1
Triodia lanigera	0.3		40

PHOTOS

Site Name:	MD12
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/03/2022
GPS Location:	GDA94 Zone 50 654191E 7687240N
Community:	10
Landform Type:	Other, PLAIN/LOWERSLOPE (other)
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	W
Soil Type:	Sandy Loam
Soil Colour:	Red
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Grazing
Fire:	?<5 years
Habitat:	Low shrubland over Triodia grassland

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1		30
Acacia inaequilatera	1.5		0.1
Acacia stellaticeps	0.3		4
Cassytha capillaris			0.3
Corchorus parviflorus	0.3		0.5
Triodia epactia	0.3		15
Triodia lanigera	0.4		40

PHOTOS

Site Name:	MD13
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/03/2022
GPS Location:	GDA94 Zone 50 654612E 7687187N
Community:	10
Landform Type:	Other, PLAIN/LOWERSLOPE (other)
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	W
Soil Type:	Sandy Loam
Soil Colour:	Red
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Grazing
Fire:	?<5 years
Habitat:	Open shrubland over scrub over Triodia grassland

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1.5		3
Acacia stellaticeps	1		15
Bonamia alatisemina	0.1		
Cassytha capillaris			0.2
Corchorus parviflorus	0.4		0.5
Euphorbia australis var. *subtomentosa*	0.2		0.1
Indigofera monophylla	0.3		
Senna notabilis	0.2		0.1
Triodia epactia	0.3		25
Triodia lanigera	0.3		25

PHOTOS

Site Name:	MD16
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/03/2022
GPS Location:	GDA94 Zone 50 655703E 7689863N
Community:	10
Landform Type:	Plain
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	NW
Soil Type:	Sandy Loam
Soil Colour:	Red
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	3 years
Habitat:	Open shrubland over Triodia grassland with occasional trees
Comments:	Recently burnt

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	0.3		0.3
Acacia ancistrocarpa	0.3		0.5
Acacia inaequilatera	1		0.1
Acacia sericophylla	2		4
Arivela viscosa	0.2		0.1
Bonamia alatisemina	0.1		0.1
Bonamia erecta	0.3		0.5
Cassytha capillaris			0.1
Corymbia hamersleyana	4		0.6
Euploca mutica (P3)	0.2		0.1
Indigofera monophylla	0.2		
Pluchea tetranthera	0.5		1
Sida arenicola	0.4		0.2
Stemodia sp.	0.3		0.1
Triodia schinzii	0.2		40

PHOTOS

Site Name:	MD17
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/03/2022
GPS Location:	GDA94 Zone 50 655147E 7689359N
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Soil Type:	Sandy Loam
Soil Colour:	Red
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Grazing
Fire:	3 years
Habitat:	Very open shrubland over Triodia grassland
Comments:	Recently burnt

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	0.3		
Acacia ancistrocarpa	0.3		1
Acacia inaequilatera	1.5		2
Acacia sericophylla	1		0.5
Bonamia alatisemina	0.1		0.1
Bonamia erecta	0.2		1
Cassytha capillaris			0.1
Corchorus parviflorus	0.4		0.1
Euploca mutica (P3)	0.2		
Indigofera monophylla	0.3		0.1
Stemodia sp.	0.4		
Triodia lanigera	0.3		0.5
Triodia schinzii	0.3		35

PHOTOS

Site Name:	MD18
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/03/2022
GPS Location:	GDA94 Zone 50 656349E 7689006N
Community:	10
Landform Type:	Plain
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	NW
Soil Type:	Sandy Loam
Soil Colour:	RED/BROWN (other)
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Grazing
Fire:	3-5 years
Habitat:	Very open shrubland over Triodia grassland
Comments:	Recently burnt

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	0.2		1
Acacia ancistrocarpa	0.4		1
Acacia inaequilatera	1.5		1
Acacia orthocarpa	0.3		0.1
Acacia sericophylla	1.5		0.2
Acacia stellaticeps	0.4		0.5
Bonamia alatisemina	0.1		0.1
Bonamia erecta	0.2		2
Corchorus parviflorus	0.3		0.2
Corymbia hamersleyana	0.3		0.1
Indigofera monophylla	0.2		0.1
Pluchea tetranthera	0.5		0.5
Solanum lasiophyllum	0.5		0.1
Triodia lanigera	0.3		0.5
Triodia schinzii	0.3		45

PHOTOS

Site Name:	MD19
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/03/2022
GPS Location:	GDA94 Zone 50 655565E 7688308N
Community:	10
Landform Type:	Other, PLAIN/LOWERSLOPE (other)
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	E
Soil Type:	Sandy Loam
Soil Colour:	RED/BROWN (other)
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Grazing
Fire:	>5 years
Habitat:	Triodia grassland with occasional shrubs

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	0.5		1
Acacia ancistrocarpa	0.4		0.2
Acacia colei	1		0.1
Acacia inaequilatera	1		0.5
Acacia stellaticeps	0.2		0.1
Bonamia alatisemina	0.1		0.1
Bonamia erecta	0.3		0.1
Cassytha capillaris			0.5
Dampiera candicans	0.3		0.1
Ptilotus astrolasius	0.3		0.3
Sida ?echinocarpa	0.4		0.2
Solanum lasiophyllum	0.2		0.1
Triodia schinzii	0.3		45

PHOTOS

Site Name:	MD20
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	17/06/2010
GPS Location:	GDA94 Zone 50 657003E 7687826N
Community:	10
Landform Type:	Other, PLAIN/LOWERSLOPE (other)
Slope Class:	Level (0 degrees)
Aspect:	N
Soil Type:	Sandy Loam
Soil Colour:	Red
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Grazing
Fire:	>5 years
Habitat:	Scrub to thicket

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1		0.4
Acacia inaequilatera	1		0.5
Acacia sphaerostachya	0.2		0.1
Acacia stellaticeps	0.5		65
Pluchea tetranthera	0.4		0.3
Triodia lanigera	0.3		20

PHOTOS

Site Name:	MD21
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/03/2022
GPS Location:	GDA94 Zone 50 656444E 7687148N
Community:	10
Landform Type:	Other, PLAIN/LOWERSLOPE (other)
Slope Class:	Level (0 degrees)
Aspect:	N
Soil Type:	Sandy Loam
Soil Colour:	Red
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - E - Excellent
Disturbance:	None
Fire:	3 years
Habitat:	Low shrubland over Triodia grassland

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	0.3		0.5
Acacia inaequilatera	1		3
Acacia sericophylla	1.5		
Bonamia erecta	0.3		5
Corchorus parviflorus	0.3		1
Eragrostis eriopoda	0.3		4
Indigofera monophylla	0.3		0.1
Senna glutinosa subsp. *x luerssenii*	1		0.1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.4		1
Triodia lanigera	0.2		15
Triodia schinzii	0.2		15

PHOTOS

Site Name:	MD32
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/03/2022
GPS Location:	GDA94 Zone 50 651819E 7687200N
Community:	10
Landform Type:	Other, PLAIN/LOWERSLOPE (other)
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	N
Soil Type:	Sandy Loam
Soil Colour:	Red
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Grazing
Fire:	3-5 years
Habitat:	Very open shrubland with occasional trees

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	0.4		0.3
Acacia inaequilatera	1		0.5
Acacia stellaticeps	0.2		0.1
Arivela viscosa	0.2		0.1
Bonamia alatisemina	0.1		0.1
Cassytha capillaris			
Corchorus parviflorus	0.5		0.4
Corymbia zygophylla	2.5		
Pluchea tetranthera	0.4		0.3
Ptilotus astrolasius	0.3		0.2
Ptilotus fusiformis	0.2		0.1
Senna notabilis	0.2		0.2
Stemodia sp.	0.4		0.2
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.4		1
Triodia lanigera	0.3		35
Triumfetta ramosa	0.3		0.2

PHOTOS

Site Name:	MD47
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/03/2022
GPS Location:	GDA94 Zone 50 658696E 7690750N
Community:	10
Landform Type:	Plain
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	N
Soil Type:	Sandy Loam
Soil Colour:	Red
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Grazing
Fire:	?<5 years
Habitat:	Open shrubland over Triodia grassland
Comments:	Recently burnt

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	0.3		0.3
Acacia inaequilatera	1.5		0.5
Acacia sericophylla	1		3
Bonamia alatisemina	0.1		0.1
Bonamia erecta	0.2		0.2
Corchorus parviflorus	0.3		0.1
Corymbia hamersleyana	1		0.4
Gossypium australe	0.2		0.2
Indigofera monophylla	0.4		0.3
?*Lamiaceae* sp.	0.4		0.1
Pimelea ammocharis	0.4		0.3
Pluchea tetranthera	0.1		0.1
Ptilotus astrolasius	0.4		0.1
Ptilotus calostachyus	0.3		0.1
Senna glutinosa subsp. *glutinosa*	0.5		0.1
Senna notabilis	0.2		0.1
Sida ?*echinocarpa*	0.1		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.3		0.2

Trigastrotheca molluginea	0.1		0.1
Triodia schinzii	0.3		45

PHOTOS

Site Name:	MD48
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/03/2022
GPS Location:	GDA94 Zone 50 658326E 7690655N
Community:	10
Landform Type:	Plain
Slope Class:	Level (0 degrees)
Aspect:	N
Soil Type:	Sandy Loam
Soil Colour:	Red
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Grazing
Fire:	?<5 years
Habitat:	Shrubland over Triodia grassland
Comments:	Recently burnt

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	0.3		2
Acacia colei	1.5		
Acacia inaequilatera	1.5		0.4
Acacia sericophylla	1.5		0.3
Acacia stellaticeps	0.3		0.3
Bonamia erecta	0.3		0.5
Corymbia zygophylla	0.5		0.2
Hakea lorea subsp. *lorea*	1		0.2
Indigofera monophylla	0.3		
Senna notabilis	0.2		0.1
Sida arenicola	0.4		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.3		0.1
Solanum lasiophyllum	0.3		0.1
Triodia schinzii	0.3		50

PHOTOS

Site Name:	MD49
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/03/2022
GPS Location:	GDA94 Zone 50 657907E 7691452N
Community:	10
Landform Type:	Plain
Slope Class:	Very Gently Inclined (1 degree)
Aspect:	N
Soil Type:	Sandy Loam
Soil Colour:	Red
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Northern Vegetation Condition - VG - Very Good
Disturbance:	Grazing
Fire:	?>5 years
Habitat:	Shrubland over Triodia grassland with occasional trees
Comments:	Recently burnt

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1		1.5
Acacia colei	0.8		0.2
Acacia inaequilatera	1		0.3
Acacia sericophylla	1		1.6
Acacia stellaticeps	0.5		0.2
Bonamia alatisemina	0.3		0.5
Bonamia erecta	0.3		0.5
Cassytha capillaris			0.3
Corymbia hamersleyana	1.5		1
Dodonaea coriacea	0.6		0.1
Pluchea tetranthera	0.3		0.3
Senna symonii	0.6		0.1
Sida ?echinocarpa	0.4		0.1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)			
Triodia epactia	0.3		15
Triodia schinzii	0.4		35

PHOTOS

Site Name:	M21001
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/03/2022
GPS Location:	GDA94 Zone 50 644053.41E 7689914.29N
Community:	4
Fire:	>5 years
Habitat:	Sandplain
Comments:	Base of Gregory Land System dunes

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia stellaticeps	0.7		10
Aristida holathera var. *holathera*	0.4		0.5
Arivela viscosa	0.4		0.5
Bonamia alatisemina	0.1		0.5
Bulbostylis barbata	0.1		0.5
Cassytha capillaris	0.3		0.5
Chrysopogon fallax	1		0.5
Corchorus parviflorus	1		0.5
Eriachne pulchella subsp. *dominii*	0.2		0.5
Eucalyptus victrix	1		0.5
Euphorbia vaccaria var. *vaccaria*	0.1		0.5
Goodenia lamprosperma	0.4		0.5
Panicum australiense var. *australiense*	0.1		0.5
Pluchea ferdinandi-muelleri	0.6		0.5
Pluchea tetranthera	0.4		0.5
Portulaca oleracea	0.1		0.5
Ptilotus axillaris	0.1		0.5
Ptilotus calostachyus	0.3		0.5
Ptilotus fusiformis	0.3		0.5
Synaptantha tillaeacea var. *tillaeacea*	0.1		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia epactia	0.5		35

Site Name: M21002

Site Type: QUADRAT

Survey Date: 14/03/2022

GPS Location: GDA94 Zone 50 645249.35E 7690155.35N

Community: 17

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia sabulosa	2.5		20
Aristida holathera var. *holathera*	0.4		0.5
Bonamia alatisemina	0.2		0.5
Bonamia erecta	0.4		0.5
Corchorus incanus subsp. *incanus*	0.6		3
Dodonaea coriacea	0.7		0.5
Eragrostis eriopoda	0.4		0.5
Gyrostemon tepperi	2		0.5
Indigofera monophylla	0.5		2
Panicum australiense var. *australiense*	0.1		0.5
Ptilotus arthrolasius	0.4		2
Scaevola parvifolia subsp. *pilbarae*	0.3		0.5
Sida arenicola	2		4
Triodia lanigera	0.5		15
Triodia schinzii	1		1
Triumfetta deserticola	1.5		0.5

Site Name: M21003

Site Type: QUADRAT

Survey Date: 14/03/2022

GPS Location: GDA94 Zone 50 645111.79E 7690141.27N

Community: 17

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	3		1
Acacia sabulosa	2.5		10
Aristida holathera var. *holathera*	0.4		0.5
Bonamia alatisemina	0.1		0.5
Bonamia erecta	0.4		0.5
Corchorus incanus subsp. *incanus*	0.7		5
Crotalaria cunninghamii	1		0.5
Dodonaea coriacea	1		0.5
Eragrostis eriopoda	0.4		0.5
Gyrostemon tepperi	1.5		0.5
Hibiscus leptocladus	0.3		0.5
Panicum australiense var. *australiense*	0.1		0.5
Ptilotus arthrolasius	0.4		3
Scaevola parvifolia subsp. *pilbarae*	0.2		0.5
Sida arenicola	2		5
Tribulus hirsutus	0.1		0.5
Triodia lanigera	0.8		2
Triodia schinzii	0.8		6
Triumfetta deserticola	0.5		0.5

Site Name:	M21004
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/03/2022
GPS Location:	GDA94 Zone 50 645125.84E 7690609.43N
Community:	10
Fire:	>5 years
Habitat:	Sandplain
Comments:	Base of Gregory LS dunes

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2		15
Aristida holathera var. *holathera*	0.4		0.5
Arivela uncifera	0.4		0.5
Bonamia alatisemina	0.2		0.5
Bonamia erecta	0.3		0.5
Cassytha capillaris	0.3		0.5
Corchorus parviflorus	0.5		5
Dodonaea coriacea	0.3		0.5
Eragrostis eriopoda	0.4		2
Eriachne pulchella subsp. *dominii*	0.1		0.5
Goodenia microptera	0.4		0.5
Goodenia stobbsiana	0.4		0.5
Gossypium australe	0.5		0.5
Hibiscus brachychlaenus	0.2		0.1
Pimelea ammocharis	0.5		0.5
Portulaca oleracea	0.1		0.1
Ptilotus astrolasius	0.4		0.5
Ptilotus axillaris	0.1		0.5
Ptilotus fusiformis	0.4		0.5
Sida arenicola	1.8		0.5
Solanum phlomoides	0.4		0.5
Tribulopis angustifolia	0.1		0.5
Tribulus hirsutus	0.1		0.5
Trigastrotheca molluginea	0.2		0.5
Triodia lanigera	0.5		10
Triodia schinzii	0.5		15
Triumfetta ramosa	0.5		0.5

Site Name:	M21005
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/03/2022
GPS Location:	GDA94 Zone 50 658377.26E 7691757.23N
Community:	14
Fire:	>10 years
Habitat:	Flat
Comments:	Recently burnt

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia			
Acacia ancistrocarpa	1.5		15
Acacia colei	1.5		9.5
Acacia inaequilatera	1.7		2
Acacia sericophylla	2		0.5
Acacia sp.	1		0.5
Acacia stellaticeps	0.7		1
Acacia synchronicia			
Aristida holathera var. *holathera*	0.6		0.5
Bonamia alatisemina	0.2		0.5
Cassytha capillaris	0		1
Corchorus parviflorus	0.3		0.5
Corymbia hamersleyana			
Grevillea wickhamii	1		0.5
Indigofera monophylla	0.3		0.5
Paraneurachne muelleri	0.5		0.5
Pimelea ammocharis	0.3		0.5
Scaevola parvifolia subsp. *pilbarae*	0.25		0.5
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.3		0.5
Triodia epactia	0.4		0.5
Triodia schinzii	0.4		0.5

Site Name:	M21006
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	08/03/2021
GPS Location:	GDA94 Zone 50 659503.216E 7693051.034N
Community:	14
Fire:	>5 years
Habitat:	Sandplain

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia colei	2		0.5
Acacia inaequilatera	1		0.5
Acacia stellaticeps	0.5		10
Aristida contorta	0.4		0.5
Bonamia erecta	0.4		0.5
Corchorus parviflorus	0.4		0.5
Fimbristylis dichotoma	0.3		0.5
Grevillea wickhamii	2		0.5
Pluchea tetranthera	0.4		0.5
Senna notabilis	0.1		0.5
Triodia epactia	0.4		55

Site Name:	M21007
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/03/2022
GPS Location:	GDA94 Zone 50 658438.51E 7693808.55N
Community:	14
Fire:	>5 years
Habitat:	Sandplain
Comments:	Recently burnt

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2.5		2
Acacia colei	2.5		0.5
Acacia inaequilatera	2.5		1
Acacia stellaticeps	0.5		2
Bonamia alatisemina	0.2		0.5
Bonamia erecta	0.4		0.5
Cassytha capillaris	0		0.5
Cullen lachnostachys	1		0.5
Indigofera monophylla	0.4		0.5
Pimelea ammocharis	0.5		0.5
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.5		0.5
Triodia epactia	0.5		65

Site Name:	M21008
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	08/03/2021
GPS Location:	GDA94 Zone 50 659051.897E 7693742.508N
Community:	14
Rock Outcrop:	Quartz
Fire:	>5 years
Habitat:	Sandplain

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia stellaticeps	0.5		0.5
Fimbristylis dichotoma	0.3		0.5
Pluchea tetranthera	0.4		0.5
Senna notabilis	0.3		0.5
Triodia epactia	0.5		35

Site Name:	M21009
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/03/2022
GPS Location:	GDA94 Zone 50 657874.2E 7693527.81N
Community:	14
Fire:	>5 years
Habitat:	Sandplain

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	2		0.5
Acacia ancistrocarpa	2.5		6
Acacia colei	2.5		3
Acacia inaequilatera	2.5		3
Acacia stellaticeps	0.5		0.5
Bonamia alatisemina	0.2		0.5
Bonamia erecta	0.4		0.5
Corchorus incanus subsp. *incanus*	0.5		0.5
Grevillea pyramidalis subsp. *leucadendron*	2		0.5
Indigofera monophylla	0.5		0.5
Senna notabilis	0.3		0.5
Triodia epactia	0.5		40

Site Name:	M21011
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/03/2022
GPS Location:	GDA94 Zone 50 651484.04E 7692564.68N
Community:	10
Fire:	>5 years
Habitat:	Flat
Comments:	Drill pad now in eastern part of the quadrat

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1.7		15
Acacia inaequilatera	0.6		0.5
Acacia stellaticeps	0.7		25
Bonamia alatisemina	0.3		0.5
Cassytha capillaris	0.4		0.5
Corchorus parviflorus	0.3		0.5
Eragrostis eriopoda	0.3		0.5
Eriachne pulchella subsp. *dominii*	0.1		0.5
Indigofera monophylla	0.2		0.5
Pluchea tetranthera	0.2		0.5
Ptilotus astrolasius	0.3		0.5
Ptilotus calostachyus	0.5		0.5
Senna artemisioides subsp. *oligophylla*	0.5		0.5
Senna glutinosa subsp. *glutinosa*	1.5		0.5
Sida arenicola	0.2		0.5
Trigastrotheca molluginea	0.2		0.5
Triodia epactia	2		0.5
Triodia lanigera	0.8		8
Triodia schinzii	1		8
Triumfetta ramosa	0.3		0.5

Site Name:	M21012
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/03/2022
GPS Location:	GDA94 Zone 50 649000.56E 7690085.36N
Community:	10
Fire:	>10 years
Habitat:	Flat
Comments:	Includes drill pad and track near southeast

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon otocarpum	2		0.5
Acacia ancistrocarpa	2		2
Acacia inaequilatera	1		0.5
Acacia stellaticeps	1		10
Aristida holathera var. *holathera*	0.3		0.5
Bonamia alatisemina	0.2		0.5
Bonamia erecta	0.5		0.5
Cassytha capillaris	0.5		0.5
Corchorus parviflorus	0.5		0.5
Corymbia hamersleyana	3		0.5
Eriachne pulchella subsp. *dominii*	0.1		0.5
Evolvulus alsinoides var. *villosicalyx*	0.2		0.5
Goodenia lamprosperma	0.3		0.5
Grevillea wickhamii	3		0.5
Melaleuca lasiandra	2		2
Pluchea tetranthera	0.4		0.5
Ptilotus calostachyus	0.4		0.5
Senna glutinosa subsp. *glutinosa*	3		0.5
Sida arenicola	0.5		0.5
Trigastrotheca molluginea	0.3		0.5
Triodia epactia	0.7		1
Triodia lanigera	1.2		0.5
Triodia schinzii	1		35

Site Name: M21013

Site Type: QUADRAT

Dimensions: 50m x 50m

Survey Date: 14/03/2022

GPS Location: GDA94 Zone 50 647710.88E 7688875.28N

Community: 10

Fire: >10 years

Habitat: Flat

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2		0.5
Acacia sericophylla	2		0.5
Aristida holathera var. *holathera*	0.4		0.5
Arivela viscosa	0.3		0.5
Boerhavia coccinea	0.1		0.5
Bonamia alatisemina	0.2		0.5
Bonamia erecta	0.2		0.5
Bulbostylis barbata	0.1		0.5
Cassytha capillaris	1		0.5
Cassytha filiformis	1.5		0.5
Clerodendrum tomentosum var. *tomentosum*	0.2		0.5
Corchorus parviflorus	1		0.5
Corymbia hamersleyana	5		2
Corymbia zygophylla	4		1
Cucumis variabilis	1		0.5
Eriachne pulchella subsp. *dominii*	0.1		0.5
Evolvulus alsinoides var. *villosicalyx*	0.2		0.5
Goodenia lamprosperma	0.3		0.5
Goodenia microptera	0.3		0.5
Hakea lorea subsp. *lorea*	3		2
Indigofera monophylla	0.5		0.5
Melaleuca lasiandra	1.5		0.5
Paspalidium clementii	0.1		0.5
Pluchea tetranthera	0.2		0.5
Polygala galeocephala	0.2		0.5
Portulaca oleracea	0.1		0.5
Pterocaulon sphacelatum	0.2		0.5
Ptilotus astrolasius	0.2		0.5
Ptilotus axillaris	0.1		0.5
Ptilotus fusiformis	0.4		0.5
Sida arenicola	0.4		0.5
Solanum cleistogamum	0.2		0.5

Stemodia grossa	0.3		0.5
Tribulus hirsutus	0.1		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia epactia	0.8		0.5
Triodia lanigera	1		2
Triodia schinzii	1		30

Site Name: M21014

Site Type: QUADRAT

Dimensions: 50m x 50m

Survey Date: 09/03/2021

GPS Location: GDA94 Zone 50 652759.013E 7689653.329N

Community: 10

Habitat: Flat

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	1.2		5
Acacia ancistrocarpa	1.3		5
Acacia sericophylla	0.5		0.5
Bonamia alatisemina	0.1		0.5
Cassytha capillaris	0.3		1
Corchorus parviflorus	0.2		0.5
Goodenia microptera	0.2		0.5
Indigofera monophylla	0.4		0.5
Ptilotus astrolasius	0.3		0.5
Senna symonii	0.5		0.5
Sida arenicola	0.3		1
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0		0.5
Solanum lasiophyllum	0.4		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia lanigera	0.3		10
Triodia schinzii	0.3		25

Site Name:	M21015
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	09/03/2021
GPS Location:	GDA94 Zone 50 648340.563E 7693821.894N
Community:	10
Fire:	<5 years
Habitat:	Flat

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1		0.5
Acacia inaequilatera	2		0.5
Acacia stellaticeps	0.5		5
Aristida holathera var. *holathera*	0.4		0.5
Bonamia alatisemina	0.1		0.5
?*Cynodon prostratus*	0.1		0.5
Dampiera candicans	0.5		0.5
Dodonaea coriacea	0.6		0.5
Eriachne pulchella subsp. *dominii*	0.1		0.5
Goodenia microptera	0.3		0.5
Hakea lorea subsp. *lorea*	1.5		0.5
Indigofera monophylla	0.3		0.5
Melaleuca lasiandra	2.5		2
Pluchea tetranthera	0.2		0.5
Ptilotus astrolasius	0.2		0.5
Ptilotus calostachyus	0.5		0.5
Ptilotus incanus	0.2		0.5
Sida arenicola	0.2		0.5
Solanum cleistogamum	0.1		0.5
Stemodia grossa	0.2		0.5
Trigastrotheca molluginea	0.2		0.5
Triodia lanigera	0.8		1
Triodia schinzii	1		20

Site Name:	M21016
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/03/2022
GPS Location:	GDA94 Zone 50 646661.94E 7692887.83N
Community:	10
Fire:	<5 years
Habitat:	Flat
Comments:	Drill pad is now located within this quadrat. Not all taxa recorded by Ecoscape could be relocated.

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2		1
Acacia inaequilatera	2		0.5
Acacia sericophylla	2		0.5
Acacia sphaerostachya	1.3		0.5
Acacia stellaticeps	0.5		30
Aristida holathera var. *holathera*	0.3		0.5
Arivela viscosa	0.2		0.5
Bonamia alatisemina	0.1		0.5
Cassytha capillaris	0.5		0.5
Codonocarpus cotinifolius	1		0.5
Corchorus parviflorus	0.6		0.5
Dodonaea coriacea	0.4		0.5
Eragrostis eriopoda	0.3		0.5
Eriachne pulchella subsp. *dominii*	0.2		0.5
Goodenia microptera	0.5		0.5
Indigofera monophylla	0.3		0.5
Panicum australiense var. *australiense*	0.1		0.5
Ptilotus astrolasius	0.3		0.5
Ptilotus axillaris	0.2		0.5
Ptilotus calostachyus	0.5		0.5
Ptilotus incanus	0.4		0.5
Scaevola parvifolia subsp. *pilbarae*	0.3		0.5
Tribulus hirsutus	0.1		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia lanigera	0.8		10
Triodia schinzii	1		0.5
Triumfetta ramosa	0.5		1

Site Name:	M21017
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/03/2022
GPS Location:	GDA94 Zone 50 655336.33E 7694090.03N
Community:	10
Fire:	>5 years
Habitat:	Sandplain
Comments:	Partially burnt

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon otocarpum	0.2		0.1
Acacia ancistrocarpa	2		0.5
Acacia colei	2		0.5
Acacia inaequilatera	2.5		3
Acacia sericophylla	2.5		0.5
Acacia stellaticeps	0.6		4
Aristida holathera var. *holathera*	0.4		0.5
Bonamia alatisemina	0.2		0.5
Cassytha capillaris	0.3		0.5
Clerodendrum tomentosum var. *tomentosum*	0.5		0.5
Corchorus incanus subsp. *incanus*	0.5		0.5
Corymbia zygophylla	4		3
Cucumis variabilis	0.5		0.5
Eragrostis eriopoda	0.4		0.5
Hakea lorea subsp. *lorea*	2		0.5
Indigofera monophylla	0.4		0.5
Paraneurachne muelleri	0.4		0.5
Tinospora smilacina	0.5		0.5
Trigastrotheca molluginea	0.2		0.5
Triodia epactia	0.8		25
Triodia schinzii	0.8		25

Site Name:	M21019
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	07/03/2021
GPS Location:	GDA94 Zone 50 660447.38E 7694764.454N
Community:	14
Fire:	>5 years
Habitat:	Flat

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2		1
Acacia sphaerostachya	1.5		0.5
Acacia stellaticeps	0.8		15
Aristida holathera var. *holathera*	0.4		0.5
Bonamia alatisemina	0.3		0.5
Corchorus incanus subsp. *incanus*	0.4		0.5
Dodonaea coriacea	0.5		0.5
Fimbristylis dichotoma	0.3		0.5
Hibiscus leptocladus	0.3		0.5
Senna notabilis	0.1		0.5
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.4		0.5
Triodia epactia	0.5		55
Triodia lanigera	0.5		15

Site Name: M21023

Site Type: QUADRAT

Survey Date: 14/03/2022

GPS Location: GDA94 Zone 50 661437.9E 7694658.18N

Community: 16

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Crotalaria cunninghamii	0.5		0.1
Cyperus ixiocarpus	0.8		0.5
Cyperus vaginatus	1		1
Eriachne benthamii	1		1
Eulalia aurea	1		0.5
Goodenia lamprosperma	0.3		0.1
Gymnanthera cunninghamii (P3)	1.8	3	0.1
Melaleuca argentea	5		10
Melaleuca glomerata			
Ptilotus fusiformis	0.3		0.1
Sesbania cannabina	0.5		0.5

Site Name: M21051

Site Type: QUADRAT

Survey Date: 02/05/2022

GPS Location: GDA94 Zone 50 656767.96E 7699304.92N

Community: 13

Comments: Soil quite clayey, crossing an ecotone

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	1.8		4
Acacia ancistrocarpa	1.8		5
Acacia colei	2.5		0.5
Acacia inaequilatera	2		0.5
Acacia tumida var. *pilbarensis*	3		0.5
Bonamia alatisemina	0.3		0.5
Cassytha capillaris	0.3		0.5
Chrysopogon fallax	1		0.5
Corymbia candida subsp. *candida*	3		2
Corymbia hamersleyana	3		4
Hakea lorea subsp. *lorea*	1.5		0.5
Indigofera monophylla	0.4		0.5
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.4		0.5
Tinospora smilacina	1		0.5
Triodia epactia	0.5		70

Site Name: M21052

Site Type: QUADRAT

Survey Date: 03/03/2021

GPS Location: GDA94 Zone 50 655123.006E 7698513.469N

Community: 12

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia inaequilatera	1		0.5
Acacia tumida var. *pilbarensis*	1.5		0.5
Bonamia pilbarensis	0.1		0.5
Cassytha capillaris	0.3		0.5
Eriachne pulchella subsp. *dominii*	0.1		0.5
Goodenia stobbsiana	0.4		0.5
Ptilotus astrolasius	0.4		0.5
Ptilotus calostachyus	0.5		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia epactia	0.4		35

Site Name: M21053

Site Type: QUADRAT

Survey Date: 02/05/2022

GPS Location: GDA94 Zone 50 655407.41E 7698604.61N

Community: 12

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2.5		0.5
Aristida holathera var. *holathera*	0.4		0.5
Bonamia pilbarensis	0.1		0.5
Cassytha capillaris	0.3		0.5
Solanum lasiophyllum	0.4		0.5
Trigastrotheca molluginea	0.2		0.5
Triodia epactia	0.5		35
Triodia lanigera	0		0.5

Site Name:	M21084
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/03/2022
GPS Location:	GDA94 Zone 50 641524.04E 7689435.42N
Community:	4
Fire:	>5 years
Habitat:	Sandplain

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia stellaticeps	0.6		10
Aristida holathera var. *holathera*	0.4		0.5
Arivela viscosa	0.3		0.5
Bonamia alatisemina	0.1		0.5
Bulbostylis barbata	0.1		0.5
Byblis pilbarana	0.1		0.5
Calandrinia stagnensis	0.1		0.5
Corchorus parviflorus	0.6		0.5
Eriachne obtusa	0.4		0.5
Eriachne pulchella subsp. *dominii*	0.2		0.5
Grona filiformis	0.1		0.5
Indigofera monophylla	0.4		0.5
Mitrasacme connata	0.4		0.5
Panicum australiense var. *australiense*	0.1		0.5
Pimelea ammocharis	0.5		0.5
Pluchea tetranthera	0.3		1
Polycarpaea corymbosa var. *corymbosa*	0.2		0.5
Polygala galeocephala	0.2		0.5
Portulaca oleracea	0.1		0.5
Ptilotus astrolasius	0.4		0.5
Stackhousia intermedia	0.2		0.5
Trachymene oleracea subsp. *oleracea*	0.3		0.5
Tribulus hirsutus	0.1		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia lanigera	0.6		40
Triumfetta ramosa	0.5		0.5
Zornia muelleriana subsp. *congesta*	0.2		0.5

Site Name:	M2109
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	12/03/2022
GPS Location:	GDA94 Zone 50 645756.19E 7693984.63N
Community:	10
Habitat:	Flat

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon otocarpum	0.4		0.5
Acacia ancistrocarpa	3		0.5
Acacia stellaticeps	1		10
Aristida holathera var. *holathera*	0.3		0.5
Bonamia alatisemina	0.1		0.5
Cassytha capillaris	0.3		0.5
Cucumis variabilis	0.3		0.5
Eragrostis eriopoda	0.3		0.5
Eriachne obtusa	0.3		0.5
Euphorbia psilosperma	0.1		0.5
Euphorbia tannensis subsp. *eremophila*	0.1		0.1
Evolvulus alsinoides var. *villosicalyx*	0.15		0.5
Hibiscus brachychlaenus	0.3		0.5
Melaleuca lasiandra	2		2
Panicum australiense var. *australiense*	0.1		0.5
Pluchea tetranthera	0.2		0.5
Ptilotus astrolasius	0.4		0.1
Senna notabilis	0.2		0.5
Sida arenicola	0.4		0.6
Sida echinocarpa	0.4		0.5
Solanum cleistogamum	0.4		1
Trigastrotheca molluginea	0.12		0.5
Triodia lanigera	0.4		30

Site Name: M21091

Site Type: QUADRAT

Survey Date: 10/03/2021

GPS Location: GDA94 Zone 50 638413.064E 7714920.213N

Community: 5

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia inaequilatera	2		2
Acacia stellaticeps	0.5		0.5
Acacia synchronicia	1.5		0.5
Aristida holathera var. *holathera*	0.4		0.5
Arivela viscosa	0.4		0.5
Bonamia alatisemina	0.3		0.5
Bulbostylis barbata	0.1		0.5
Cassytha capillaris	0.3		0.5
Eragrostis eriopoda	0.4		0.5
Eriachne aristidea	0.4		0.5
Evolvulus alsinoides var. *villosicalyx*	0.3		0.5
Fimbristylis dichotoma	0.3		0.5
Indigofera linifolia	0.3		0.5
Pluchea tetranthera	0.4		0.5
Portulaca oleracea	0.1		0.5
Ptilotus astrolasius	0.4		0.5
Senna artemisioides subsp. *oligophylla*	1.5		0.5
Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	0.4		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia epactia	0.5		45

Site Name: M21092

Site Type: QUADRAT

Survey Date: 19/07/2021

GPS Location: GDA94 Zone 50 642499.59E 7709293.14N

Community: 8

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon lepidum	0.5		0.5
Acacia acradenia	2.5		3
Acacia bivenosa	2.5		5
Acacia stellaticeps	0.6		0.5
Acacia trachycarpa	2.5		3
Bonamia pilbarensis	0.3		0.5
Cassytha capillaris	0.3		0.5
Codonocarpus cotinifolius	0.3		0.5
Corchorus elachocarpus	0.4		0.5
Corymbia hamersleyana	4		0.5
Cucumis variabilis	0.5		0.5
Goodenia microptera	0.4		0.5
Goodenia stobbsiana	0.1		0.5
Hakea lorea subsp. *lorea*	2.5		1
Petalostylis labicheoides	2		0.5
Ptilotus astrolasius	0.4		0.5
Ptilotus axillaris	0.1		0.5
Ptilotus calostachyus	0.5		0.5
Scaevola amblyanthera var. *centralis*	0.4		0.5
Senna symonii	0.5		0.5
Tribulus hirsutus	0.1		0.5
Trigastrotheca molluginea	0.2		0.5
Triodia epactia	0.4		35

Site Name: M21093

Site Type: QUADRAT

Survey Date: 19/07/2021

GPS Location: GDA94 Zone 50 644416.81E 7704358.02N

Community: 4

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2		2
Acacia colei	3		0.5
Acacia sericophylla	2.5		3
Acacia stellaticeps	0.6		0.5
Acacia trachycarpa	0		0.5
Acacia trudgeniana			
Bonamia alatisemina	0.3		0.5
Bonamia erecta	0.4		0.5
Cassytha capillaris	0.3		0.5
Corchorus elachocarpus	0.4		0.5
Corymbia zygophylla	4		4
Cucumis variabilis	0.3		0.5
Eragrostis eriopoda	0.4		0.5
Goodenia microptera	0.4		0.5
Hakea lorea subsp. *lorea*	2.5		0.5
Indigofera monophylla	0.5		0.5
Ptilotus astrolasius	0.4		0.5
Ptilotus calostachyus	0.5		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia epactia	0.5		5
Triodia lanigera	0.6		5
Triodia schinzii	0.6		40

Site Name: M21094

Site Type: QUADRAT

Survey Date: 18/07/2021

GPS Location: GDA94 Zone 50 646960.13E 7701328.96N

Community: 4

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1.8		2
Acacia inaequilatera	2		1
Acacia stellaticeps	0.8		25
Acacia tumida var. *pilbarensis*	2		0.5
Aristida holathera var. *holathera*	0.4		0.5
Bonamia erecta	0.4		0.5
Cassytha capillaris	0.3		0.5
Hakea lorea subsp. *lorea*	2		0.5
Pluchea tetranthera	0.3		0.5
Ptilotus calostachyus	0.4		0.5
Senna notabilis	0.3		0.5
Sida arenicola	0.5		0.1
Trigastrotheca molluginea	0.2		0.5
Triodia epactia	0.4		0.5

Site Name: M21096

Site Type: QUADRAT

Survey Date: 18/07/2021

GPS Location: GDA94 Zone 50 647795.55E 7700030.49N

Community: 10

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	2.5		1
Acacia ancistrocarpa	2.5		0.5
Acacia inaequilatera	3		3
Acacia sericophylla	2		0.5
Acacia stellaticeps	0.5		5
Bonamia alatisemina	0.2		0.5
Bonamia erecta	0.4		0.5
Cassytha capillaris	0.3		0.5
Corchorus elachocarpus	0.3		0.5
Euphorbia australis var. *subtomentosa*	0.2		0.5
Euploca pachyphylla	0.3		0.5
Goodenia microptera	0.3		0.5
Indigofera monophylla	0.3		0.5
Ptilotus astrolasius	0.3		0.5
Ptilotus calostachyus	0.5		0.5
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.3		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia epactia	0.5		20
Triodia lanigera	0.5		30

Site Name: M21106

Site Type: QUADRAT

Survey Date: 19/07/2021

GPS Location: GDA94 Zone 50 643046.77E 7708229.65N

Community: 8

Comments: Site in a slight ecotone between adjacent plain and calcrete

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	2.5		5
Acacia bivenosa	2		5
Acacia stellaticeps	0.6		15
Bonamia alatisemina	0.2		0.5
Bonamia erecta	0.3		0.5
Cassytha capillaris	0.3		0.5
Clerodendrum tomentosum	1		0.5
Corchorus elachocarpus	0.3		0.5
Corymbia zygophylla	4		0.5
Goodenia microptera	0.3		0.5
Grevillea wickhamii	3		0.2
Hakea lorea subsp. *lorea*	2		0.5
Ptilotus axillaris	0.1		0.5
Ptilotus calostachyus	0.4		0.5
Ptilotus fusiformis	0.3		0.5
Scaevola amblyanthera var. *centralis*	0.3		0.5
Tribulus hirsutus	0.2		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia epactia	0.5		45

Site Name:	M21131
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	08/03/2021
GPS Location:	GDA94 Zone 50 653003.295E 7694067.113N
Community:	10
Fire:	<5 years
Habitat:	Sandplain
Comments:	Cattle nearby

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1.5		10
Acacia colei	1.8		15
Acacia inaequilatera	1.3		4
Acacia sericophylla	2		2
Acacia stellaticeps	0.5		2
Aristida holathera var. *holathera*	0.35		1
Boerhavia coccinea	0.5		0.5
Bonamia alatisemina	0.5		1
Bonamia erecta	0.1		0.5
Cassytha capillaris	0.2		0.5
Eragrostis eriopoda	0.2		0.5
Euphorbia vaccaria var. *vaccaria*	0.1		0.5
Evolvulus alsinoides var. *villosicalyx*	0.1		0.5
Goodenia stobbsiana	0.5		0.5
Indigofera monophylla	0.4		5.5
Pimelea ammocharis	0.4		0.5
Pluchea tetranthera	0.5		3
Ptilotus calostachyus	0.2		0.5
Senna notabilis	0.3		0.5
Solanum lasiophyllum	0.3		0.5
Triodia lanigera	0.3		0.5
Triodia schinzii	0.3		5

Site Name:	M21132
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	09/03/2021
GPS Location:	GDA94 Zone 50 654079.176E 7691051.081N
Community:	10
Fire:	>5 years
Habitat:	Flat
Comments:	Cattle tracks

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia stellaticeps	0.4		2
Arivela uncifera	0.15		0.5
Bonamia erecta	0.2		2
Cassytha capillaris	0.3		2
Codonocarpus cotinifolius	3		0.5
Goodenia microptera	0.3		0.5
Hakea lorea subsp. *lorea*	1.5		1
Paraneurachne muelleri	0.2		0.5
Pimelea ammocharis	0.4		0.5
Pluchea tetranthera	0.1		0.5
Ptilotus astrolasius	0.3		1.5
Ptilotus fusiformis	0.3		0.5
Scaevola parvifolia subsp. *pilbarae*	0.2		0.5
Senna glutinosa subsp. *glutinosa*	1		0.5
Solanum lasiophyllum	0.2		0.5
Stemodia grossa	0.3		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia lanigera	0.3		0.5
Triodia schinzii	0.4		80
Triumfetta ramosa	0.3		0.5

Site Name:	M21133
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/03/2022
GPS Location:	GDA94 Zone 50 650004.92E 7688988.91N
Community:	10
Comments:	Approximately a third of the quadrat is now cleared - drill pad and track. Recently burnt.

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1		1
Acacia inaequilatera	1		0.5
Acacia sericophylla	1.5		3
Aristida holathera var. *holathera*	0.4		0.5
Cassytha capillaris	0.4		1
Corchorus parviflorus	0.3		0.5
Cucumis variabilis	1		0.5
Euphorbia vaccaria var. *vaccaria*	0.2		0.5
Goodenia microptera	0.15		0.5
Hibiscus brachychlaenus	0.4		0.5
Melaleuca lasiandra	1.2		3
Pluchea tetranthera	0.2		0.5
Ptilotus astrolasius	0.3		0.5
Senna glutinosa subsp. *glutinosa*	1		0.5
Sida arenicola	0.4		0.5
Solanum phlomoides	0.3		0.5
Stemodia grossa	0.3		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia lanigera	0.3		5
Triodia schinzii	0.3		32

Site Name:	M21134
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	18/07/2022
GPS Location:	GDA94 Zone 50 650844.89E 7690415.99N
Community:	9
Habitat:	Crest

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon lepidum	0.3		0.5
Acacia inaequilatera	1		1
Acacia sericophylla	1.5		0.5
Amaranthus undulatus	0.1		0.1
Aristida holathera var. *holathera*	0.3		0.1
Bulbostylis barbata	0.05		0.5
Cassytha capillaris	0.1		1
Codonocarpus cotinifolius	1		0.5
Corchorus parviflorus	0.3		0.5
Eriachne mucronata	0.2		15
Euphorbia trigonosperma	0.3		0.5
Fimbristylis simulans	0.1		0.5
Gomphrena cunninghamii	0.1		0.5
Grevillea wickhamii	1.5		1.5
Paspalidium clementii	0.1		0.1
Ptilotus calostachyus	0.35		0.5
Ptilotus exaltatus	0.15		0.5
Senna glutinosa subsp. *glutinosa*	1.5		0.5
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.5		0.1
Tephrosia sp. NW Eremaean (S. van Leeuwen et al. PBS 0356)	0.1		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia epactia	0.3		30

Site Name: M21135

Site Type: QUADRAT

Survey Date: 02/05/2022

GPS Location: GDA94 Zone 50 658125.78E 7700620.47N

Community: 13

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	2		3
Acacia ancistrocarpa	2		0.5
Acacia colei	2		0.5
Acacia inaequilatera	1.5		1
Acacia tumida var. *pilbarensis*	3		1
Bonamia alatisemina	0.2		0.5
Cajanus cinereus	1		0.5
Chrysopogon fallax	1		0.5
Corymbia hamersleyana	4		7
Eragrostis eriopoda	0.4		0.5
Grevillea wickhamii	1.5		0.5
Pluchea tetranthera	0.3		0.5
Rhynchosia minima	0.4		0.5
Tinospora smilacina	1		0.5
Trigastrotheca molluginea	0.2		0.5
Triodia epactia	0.5		65

Site Name: M21136

Site Type: QUADRAT

Survey Date: 02/05/2022

GPS Location: GDA94 Zone 50 658289.06E 7700359.32N

Community: 14

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia inaequilatera	1		0.5
Acacia stellaticeps	0.5		15
Aristida contorta	0.3		0.5
Aristida holathera var. *holathera*	0.4		0.5
Bulbostylis barbata	0.1		0.5
Eragrostis dielsii	0.1		0.5
Euphorbia australis var. *subtomentosa*	0.1		0.5
Fimbristylis dichotoma	0.3		0.5
Pluchea tetranthera	0.4		0.5
Portulaca oleracea	0.1		0.5
Senna notabilis	0.2		0.5
Sporobolus australasicus	0.1		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia epactia	0.5		25

Site Name: M21140

Site Type: QUADRAT

Survey Date: 02/05/2022

GPS Location: GDA94 Zone 50 657434.26E 7699875.03N

Community: 2

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Eriachne glauca var. *glauca*	0.4		50
Euphorbia vaccaria var. *vaccaria*	0.1		0.5
Goodenia lamprosperma	0.4		0.5
Marsilea hirsuta	0.1		2
Neptunia dimorphantha	0.1		0.5
Schoenoplectiella laevis	0.3		0.5
Senna notabilis	0.2		0.1

Site Name: M21142

Site Type: QUADRAT

Survey Date: 14/03/2022

GPS Location: GDA94 Zone 50 661282.12E 7695493.11N

Community: 16

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ampliceps	2		0.5
Acacia coriacea subsp. *pendens*	4		0.5
Acacia pyrifolia var. *pyrifolia*	2		0.5
Acacia trachycarpa	2.5		2
**Aerva javanica*	0.5		0.5
Afrohybanthus aurantiacus	0.4		0.5
Arivela viscosa	0.4		0.5
Bonamia pilbarensis			
Bulbostylis barbata	0.2		0.5
Cajanus cinereus	2		2
Calandrinia tepperiana	0.2		0.5
Corchorus incanus subsp. *incanus*	0.8		1
Crotalaria cunninghamii	1.5		0.5
Cynanchum floribundum	1		0.5
Cyperus conicus	0.6		0.5
Cyperus ixiocarpus			
Cyperus leptocarpus	0.3		0.5
Cyperus vaginatus	1		2
Dentella asperata	0.1		0.5
Drosera finlaysoniana	0.2		0.5
Eleocharis geniculata	0.1		0.5
Eragrostis cumingii	0.2		0.5
Eriachne aristidea	0.4		0.5
Eriachne benthamii	0.8		0.5
Eucalyptus camaldulensis subsp. *refulgens*	10		6
Eulalia aurea	1		0.5
Euphorbia australis var. *subtomentosa*	0.2		0.5
Euphorbia trigonosperma	0.3		0.5
Fimbristylis microcarya	0.4		0.5
Goodenia lamprosperma	0.4		0.5
Gymnanthera cunninghamii (P3)	1	1	0.5
Hibiscus austrinus var. *austrinus*	1.5		0.5
Hibiscus leptocladus	0.4		0.5
Ipomoea muelleri	0.3		0.5
Melaleuca argentea	8		7
Melaleuca glomerata	2		0.5
Melaleuca linophylla	2		2

Nellica maderaspatensis	0.4		0.5
Paspalidium reflexum			
Pluchea rubelliflora			
Pluchea tetranthera	0.3		0.5
Rhynchosia minima	0.4		0.5
Scleromitrion galioides	0.2		0.5
Solanum phlomoides	0.5		0.5
Stemodia grossa	0.4		0.5
Stemodia viscosa	0.4		0.5
Triodia epactia	0.4		0.5

Site Name:	M21144
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/03/2022
GPS Location:	GDA94 Zone 50 660600.32E 7694910.9N
Community:	14
Habitat:	Flat

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2		25
Acacia colei	2		1
Acacia inaequilatera	2		1
Acacia orthocarpa	2		2
Bonamia alatisemina	0.3		0.5
Paraneurachne muelleri	0.4		0.5
Ptilotus astrolasius	0		0.5
Senna notabilis	0.1		0.5
Triodia epactia	0.5		50
Triodia lanigera	0.5		5

Site Name: M21145

Site Type: QUADRAT

Survey Date: 14/03/2022

GPS Location: GDA94 Zone 50 644952.31E 7690154.72N

Community: 17

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia sabulosa	2.5		15
Acacia trachycarpa	1		0.5
Aristida holathera var. *holathera*	0.4		0.5
Bonamia erecta	0.3		0.5
Bonamia media	0.1		0.5
Cassytha capillaris	0.3		0.5
Corchorus incanus subsp. *incanus*	0.6		4
Eragrostis eriopoda	0.4		0.5
Gyrostemon tepperi	0.8		0.5
Indigofera monophylla	0.5		4
Ptilotus arthrolasius	0.4		3
Scaevola parvifolia subsp. *pilbarae*	0.2		0.5
Sida arenicola	2		5
Solanum phlomoides	0.3		0.5
Triodia lanigera	0.5		2
Triodia schinzii	0.6		5
Triumfetta deserticola	1		0.5

Site Name: M21147

Site Type: QUADRAT

Survey Date: 14/03/2022

GPS Location: GDA94 Zone 50 642476.98E 7689860.39N

Community: 10

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2		2
Acacia stellaticeps	0.6		15
Aristida holathera var. *holathera*	0.4		0.5
Arivela viscosa	0.3		0.5
Bonamia alatisemina	0.2		0.5
Bonamia erecta	0.3		0.5
Bulbostylis barbata	0.1		0.5
Corchorus parviflorus	0.6		0.5
Eragrostis eriopoda	0.4		0.5
Eriachne pulchella subsp. *dominii*	0.2		0.5
Eucalyptus victrix	4		1
Euphorbia psilosperma	0.2		0.5
Goodenia lamprosperma	0.3		0.5
Melaleuca lasiandra	1.8		10
Panicum australiense var. *australiense*	0.1		0.5
Pluchea tetranthera	0.3		0.5
Ptilotus axillaris	0.1		0.5
Ptilotus calostachyus	0.4		0.5
Ptilotus fusiformis	0.4		0.5
Trachymene oleracea subsp. *oleracea*	0.2		0.5
Trigastrotheca molluginea	0.2		0.5
Triodia lanigera	0.6		15

Site Name: M21149

Site Type: QUADRAT

Dimensions: 50m x 50m

Survey Date: 09/03/2021

GPS Location: GDA94 Zone 50 651324.636E 7695768.204N

Community: 10

Fire: >5 years

Habitat: Sandplain

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia inaequilatera	2		2
Acacia stellaticeps	0.5		2
Bonamia alatisemina	0.3		0.5
Cassytha capillaris	0.3		0.5
Hakea lorea subsp. *lorea*	2		1
Pluchea tetranthera	0.4		0.5
Ptilotus fusiformis	0.3		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia lanigera	0.8		10
Triodia schinzii	0.8		45

Site Name:	M21150
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	09/03/2021
GPS Location:	GDA94 Zone 50 649991.651E 7696483.057N
Community:	10
Fire:	>5 years
Habitat:	Sandplain

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2		0.5
Acacia inaequilatera	2		1
Acacia stellaticeps	0.5		15
Aristida holathera var. *holathera*	0.4		0.5
Arivela uncifera	0.3		0.5
Bonamia alatisemina	0.2		0.5
Bonamia erecta	0.4		0.5
Cassytha capillaris	0.3		0.5
Corymbia candida subsp. *candida*	3		0.5
Eriachne obtusa	0.4		0.5
Goodenia lamprosperma	0.4		0.5
Goodenia microptera	0.3		0.5
Hakea lorea subsp. *lorea*	2		0.5
Indigofera monophylla	0.4		0.5
Pluchea tetranthera	0.4		0.5
Ptilotus fusiformis	0.4		0.5
Senna notabilis	0.3		0.5
Senna symonii	0.8		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia epactia	0.5		3
Triodia lanigera	0.6		0.5
Triodia schinzii	0.6		50

Site Name: M21151

Site Type: QUADRAT

Survey Date: 19/07/2021

GPS Location: GDA94 Zone 50 645582.02E 7702591.01N

Community: 4

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon lepidum	0.7		0.5
Acacia acradenia	2.5		1
Acacia ancistrocarpa	2.5		2
Acacia sericophylla	2.5		2
Acacia stellaticeps	0.5		0.5
Acacia trachycarpa	2		0.5
Bonamia alatisemina	0.3		0.5
Cassytha capillaris	0.3		0.5
Chrysopogon fallax	0.3		0.1
Clerodendrum tomentosum	0.8		0.1
Corchorus elachocarpus	0.4		0.1
Corymbia hamersleyana	4		3
Corymbia zygophylla	4		1
Cucumis variabilis	0.5		0.5
Euphorbia trigonosperma	0.8	5	0.5
Goodenia lamprosperma	0.4		0.5
Pluchea tetranthera	0.3		0.5
Ptilotus fusiformis	0.4		0.5
Sida arenicola	0.5		0.1
Tinospora smilacina	0.8		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia epactia	0.6		5
Triodia lanigera	0.6		10
Triodia schinzii	0.6		30

Site Name: M21153

Site Type: QUADRAT

Survey Date: 09/03/2021

GPS Location: GDA94 Zone 50 640888.528E 7712106.492N

Community: 3

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	3		3
Acacia colei	4		6
Acacia inaequilatera	2		2
Afrohybanthus aurantiacus	0.4		0.5
Alternanthera nana	0.2		0.5
Aristida holathera var. *holathera*	0.4		10
Bonamia alatisemina	0.3		0.5
Bonamia erecta	0.3		0.5
Bonamia media	0.1		0.5
Carissa lanceolata	1.5		0.5
Cassytha capillaris	0.3		0.5
Chrysopogon fallax	0.6		0.5
Corchorus incanus subsp. *incanus*	0.5		1
Corymbia candida subsp. *candida*	10		5
Eriachne aristidea	0.4		0.5
Eriachne obtusa	0.4		0.5
Eulalia aurea	1		0.5
Goodenia lamprosperma	0.4		0.5
Goodenia microptera	0.3		0.5
Goodenia nuda	0.4	7	0.5
Indigofera colutea	0.4		0.5
Indigofera linifolia	0.4		0.5
Perotis rara	0.1		0.5
Pimelea ammocharis	0.5		0.5
Pluchea tetranthera	0.3		0.5
Portulaca oleracea	0.1		0.5
Senna artemisioides subsp. *helmsii*	1.2		4
Senna notabilis	0.5		0.5
Sida echinocarpa	1.8		0.5
Sida rohlenae subsp. *rohlenae*	0.6		0.5
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.6		0.5
Trichodesma zeylanicum var. *zeylanicum*	0.5		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia epactia	0.5		40
Waltheria indica	0.5		0.5
Zornia albiflora	0.2		0.5

Site Name: M21154

Site Type: QUADRAT

Survey Date: 10/03/2021

GPS Location: GDA94 Zone 50 639972.589E 7713459.878N

Community: 5

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon sp. Pritzelianum (S. van Leeuwen 5095) (P3)	0.5	1	0.5
Acacia inaequilatera	2		0.5
Acacia melleodora	1.8		0.5
Acacia pyrifolia var. *pyrifolia*	1.5		0.5
Acacia sphaerostachya	0.8		0.5
Acacia stellaticeps	0.7		15
Aristida contorta	0.3		0.5
Aristida holathera var. *holathera*	0.4		0.5
Bonamia alatisemina	0.2		0.5
Carissa lanceolata	0.8		0.5
Cassytha capillaris	0.3		0.5
**Cenchrus ciliaris*	0.5		0.5
Chrysopogon fallax	1		0.5
Corchorus incanus subsp. *incanus*	0.5		0.5
Eragrostis eriopoda	0.4		0.5
Evolvulus alsinoides var. *decumbens*	0.3		0.5
Goodenia microptera	0.3		0.5
Indigofera monophylla	0.5		0.5
Pluchea tetranthera	0.4		0.5
Rhynchosia minima	0.3		0.5
Senna notabilis	0.3		0.5
Sida rohlenae subsp. *rohlenae*	0.4		0.5
Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	0.3		0.5
Trigastrotheca molluginea	0.2		0.5
Triodia epactia	0.5		45
Triodia schinzii	0.7		3

Site Name: M21157

Site Type: QUADRAT

Survey Date: 10/03/2021

GPS Location: GDA94 Zone 50 638234.594E 7720116.946N

Community: 5

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2		0.5
Acacia inaequilatera	2		10
Bonamia alatisemina	0.2		0.5
Chrysopogon fallax	0.4		0.5
Corchorus incanus subsp. *incanus*	0.5		0.5
Grevillea pyramidalis subsp. *leucadendron*	2.5		0.5
Grona filiformis	0.2		0.5
Indigofera linifolia	0.3		0.5
Pimelea ammocharis	0.5		0.5
Sida echinocarpa	1		0.5
Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	0.4		0.5
Trigastrotheca molluginea	0.2		0.5
Triodia epactia	0.5		65

Site Name:	M21161
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	09/03/2021
GPS Location:	GDA94 Zone 50 656997.544E 7690556.964N
Community:	10
Fire:	>5 years
Habitat:	Flat

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	1.2		0.5
Acacia inaequilatera	2		1.5
Acacia sericophylla	1		0.5
Acacia stellaticeps	0.45		0.5
Arivela uncifera	0.15		0.5
Bonamia erecta	30		0.5
Cassytha capillaris	0.2		0.5
Corymbia hamersleyana	1		0.5
Indigofera monophylla	0.4		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia schinzii	0.4		65

Site Name:	M21165
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	13/03/2022
GPS Location:	GDA94 Zone 50 643943.14E 7690906.37N
Community:	10
Fire:	>5 years
Habitat:	Flat

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon lepidum	0.4		0.5
Acacia ancistrocarpa	1.2		15
Acacia inaequilatera	0.6		0.5
Acacia sabulosa	3		0.5
Acacia sericophylla	3		1
Acacia trachycarpa	1.2		1.5
Aristida holathera var. *holathera*	0.3		0.1
Arivela uncifera	0.15		0.5
Boerhavia coccinea	0.1		0.5
Bonamia alatisemina	0.1		0.5
Bonamia media	0.1		0.1
Corchorus incanus subsp. *incanus*	0.5		0.5
Corchorus parviflorus	0.2		0.5
Corymbia zygophylla	3		0.5
Crotalaria ramosissima	0.1		0.5
Cucumis variabilis	0.2		0.5
Dodonaea coriacea	0.4		0.5
Eragrostis eriopoda	0.4		0.5
Euphorbia psilosperma	0.15		0.5
Evolvulus alsinoides var. *villosicalyx*	0.2		0.5
Goodenia microptera	0.2		0.5
Hakea lorea subsp. *lorea*	1.5		0.5
Hibiscus leptocladus	0.2		0.5
Indigofera monophylla	0.4		0.5
Ipomoea muelleri	1		0.5
Panicum australiense var. *australiense*	0.16		0.5
Paraneurachne muelleri	0.3		0.5
Ptilotus astrolasius	0.5		0.5
Ptilotus axillaris	0		0.5
Ptilotus calostachyus	0.5		0.5
Ptilotus fusiformis	0.3		0.5
Rhynchosia minima	0.05		0.5
Scaevola parvifolia subsp. *pilbarae*	0.2		0.5

Sida arenicola	0.4		0.1
Sida sp. Pindan (B.G. Thomson 3398)	0.4		0.1
Trianthema pilosum	0.1		0.5
Tribulus hirsutus	0.1		0.1
Trigastrotheca molluginea	0.15		0.5
Triodia lanigera	0.35		20
Triodia schinzii	0.35		5

Site Name: M21166

Site Type: QUADRAT

Survey Date: 13/03/2022

GPS Location: GDA94 Zone 50 643798.28E 7690479.75N

Community: 17

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia sabulosa	3.5		15
Aristida holathera var. *holathera*	0.35		0.5
Bonamia media	0.2		0.5
Corchorus incanus subsp. *incanus*	0.4		2
Crotalaria cunninghamii	1.3		0.5
Eragrostis eriopoda	0.3		0.5
Eriachne helmsii	0.5		0.5
Eriachne obtusa	0.35		0.5
Euphorbia myrtoides	0.13		0.5
Gyrostemon tepperi	0.15		0.5
Ptilotus arthrolasius	0.15		0.5
Sida arenicola	1.2		0.5
Triodia epactia	0.3		0.2
Triodia lanigera	0.3		0.5
Triodia schinzii	0.8		0.5
Triumfetta deserticola	0.4		0.5

Site Name:	M21167
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	13/03/2022
GPS Location:	GDA94 Zone 50 644287.34E 7689076.68N
Community:	10
Fire:	>5 years
Habitat:	Flat

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1.8		2
Acacia stellaticeps	0.4		50
Acacia tumida var. *pilbarensis*	0.2		0.5
Chrysopogon fallax	0.5		0.5
Corymbia hamersleyana	2.5		0.5
Dodonaea coriacea	0.15		0.5
Eragrostis eriopoda	0.2		0.5
Eriachne obtusa	0.4		1.5
Eriachne pulchella subsp. *dominii*	0.08		0.5
Grevillea wickhamii	1.5		0.5
Melaleuca lasiandra	1.8		0.5
Pluchea tetranthera	0.3		0.5
Trigastrotheca molluginea	0.3		0.5
Triodia lanigera	0.3		3
Triodia schinzii	0.3		2

Site Name:	M21168
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/03/2022
GPS Location:	GDA94 Zone 50 644506.2E 7688064.51N
Community:	10
Fire:	>5 years
Habitat:	Flat

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon otocarpum	0.4		0.5
Acacia ancistrocarpa	2		35
Acacia colei	1.5		0.5
Acacia inaequilatera	2		2
Acacia sericophylla	1.2		0.1
Acacia sphaerostachya	0.3		0.5
Acacia stellaticeps	0.4		0.5
Aristida holathera var. *holathera*	0.5		0.5
Bonamia alatisemina	0.3		0.5
Cassytha capillaris	0.2		0.5
Codonocarpus cotinifolius	2.5		0.5
Corchorus parviflorus	0.4		0.5
Corymbia zygophylla	3		0.5
Dodonaea coriacea	0.2		0.5
Eragrostis eriopoda	0.2		0.5
Euphorbia vaccaria var. *vaccaria*	0.2		0.5
Goodenia stobbsiana	0.2		0.5
Paraneurachne muelleri	0.6		0.5
Ptilotus calostachyus	0.4		0.5
Senna glutinosa subsp. *glutinosa*	1.5		0.5
Sida arenicola	0.5		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia lanigera	0.4		20
Triodia schinzii	0.3		0.5

Site Name:	M21169
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	12/03/2021
GPS Location:	GDA94 Zone 50 645517.351E 7688028.712N
Community:	10
Fire:	>5 years
Habitat:	Flat

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1.3		1
Acacia stellaticeps	0.5		35
Aristida holathera var. *holathera*	0.35		0.5
Bonamia alatisemina	0.2		0.5
Corchorus parviflorus	0.3		0.5
Dodonaea coriacea	0.3		0.5
Eragrostis eriopoda	0.2		0.5
Melaleuca lasiandra	1		0.5
Pluchea tetranthera	0.2		0.5
Sida arenicola	1		0.5
Solanum diversiflorum	0.2		0.5
Triodia lanigera	0.4		2
Triodia schinzii	0.4		0.5
Triumfetta ramosa	0.4		0.5

Site Name:	M21170
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	12/03/2022
GPS Location:	GDA94 Zone 50 645263.68E 7687281.12N
Community:	10
Fire:	>5 years
Habitat:	Flat

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1.5		15
Acacia stellaticeps	0.8		20
Bonamia alatisemina	0.1		0.5
Corchorus parviflorus	0.5		0.5
Eragrostis eriopoda	0.3		0.5
Euphorbia psilosperma	0.15		0.5
Melaleuca lasiandra	0.8		0.5
Ptilotus astrolasius	0.5		0.5
Ptilotus calostachyus	0.4		0.5
Rhynchosia minima	0.2		0.5
Senna glutinosa subsp. *glutinosa*	1		0.5
Trigastrotheca molluginea	0.15		0.5
Triodia lanigera	0.35		10
Triodia schinzii	0.35		0.5
Triumfetta ramosa	0.2		0.5

Site Name:	M21171
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/03/2022
GPS Location:	GDA94 Zone 50 646573.95E 7690423.54N
Community:	10
Fire:	>10 years
Habitat:	Flat

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2		8
Acacia inaequilatera	2.2		5
Acacia sericophylla	1.5		0.5
Acacia stellaticeps	0.5		5
Aristida holathera var. *holathera*	0.6		0.5
Arivela uncifera	0.2		0.5
Boerhavia coccinea	0.1		0.5
Bonamia alatisemina	0.1		0.5
Cassytha capillaris	0.5		0.5
Corchorus parviflorus	1		0.5
Eriachne pulchella subsp. *dominii*	0.1		0.5
Gossypium australe	0.4		0.5
Hakea lorea subsp. *lorea*	2		0.5
Indigofera monophylla	0.4		2
Paraneurachne muelleri	0.2		0.5
Ptilotus astrolasius	0.3		0.5
Scaevola parvifolia subsp. *pilbarae*	0.3		0.5
Senna artemisioides subsp. *oligophylla*	0.6		0.5
Sida arenicola	0.4		0.5
Tribulus hirsutus	0.1		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia lanigera	1		20
Triumfetta ramosa	0.5		0.5

Site Name:	M21172
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/03/2022
GPS Location:	GDA94 Zone 50 645842.71E 7689156.06N
Community:	10
Fire:	>10 years
Habitat:	Flat

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1.5		1
Acacia stellaticeps	1		20
Aristida holathera var. *holathera*	0.4		0.5
Bonamia alatisemina	0.1		1
Corchorus incanus subsp. *incanus*	0.7		0.5
Corchorus parviflorus	0.8		0.5
Dodonaea coriacea	0.6		0.5
Eragrostis eriopoda	0.3		0.5
Euphorbia tannensis subsp. *eremophila*	0.3		0.5
Evolvulus alsinoides var. *villosicalyx*	0.2		0.5
Goodenia lamprosperma	0.3		0.5
Melaleuca lasiandra	4		5
Paraneurachne muelleri	0.3		0.5
Pluchea tetranthera	0.3		0.5
Sida arenicola	0.6		0.5
Tribulus hirsutus	0.1		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia lanigera	1		10
Triodia schinzii	1		2
Triumfetta ramosa	0.3		0.5

Site Name:	M21173
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	09/03/2021
GPS Location:	GDA94 Zone 50 650378.771E 7691874.324N
Community:	10
Fire:	>10 years
Habitat:	Flat

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2		2
Acacia inaequilatera	1.5		0.5
Acacia sericophylla	1.5		0.5
Acacia stellaticeps	0.5		0.5
Aristida holathera var. *holathera*	0.5		0.5
Arivela uncifera	0.3		0.5
Bonamia alatisemina	0.1		0.5
Cassytha capillaris	0.5		0.5
Corchorus parviflorus	0.5		0.5
Corymbia zygophylla	4		1
Dodonaea coriacea	0.3		0.5
Euphorbia vaccaria var. *vaccaria*	0.2		0.5
Goodenia lamprosperma	0.3		0.5
Goodenia microptera	0.4		0.5
Indigofera monophylla	0.4		0.5
Melaleuca lasiandra	2		0.5
Pluchea tetranthera	0.2		0.5
Ptilotus astrolasius	0.3		0.5
Ptilotus axillaris	0.2		0.5
Solanum lasiophyllum	0.1		0.5
Stemodia grossa	0.2		0.5
Streptoglossa macrocephala	0.3		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia lanigera	1		5
Triodia schinzii	1		25

Site Name:	M21174
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/03/2022
GPS Location:	GDA94 Zone 50 651368.76E 7694626.86N
Community:	10
Fire:	>10 years
Habitat:	Flat

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2.5		3
Acacia inaequilatera	2		0.5
Acacia sphaerostachya	1.8		1
Acacia stellaticeps	1		20
Aristida holathera var. *holathera*	0.4		0.5
Arivela uncifera	0.3		0.5
Bonamia alatisemina	0.1		0.5
Cassytha capillaris	0.5		0.5
Corchorus elachocarpus	0.5		0.5
Dampiera candicans	0.4		0.5
Dodonaea coriacea	0.4		0.5
Euphorbia vaccaria var. *vaccaria*	0.2		0.5
Goodenia lamprosperma	0.3		1
Goodenia microptera	0.3		0.5
Gossypium australe	0.5		0.5
Indigofera monophylla	0.4		0.5
Melaleuca lasiandra	2		0.5
Panicum australiense var. *australiense*	0.1		0.5
Paraneurachne muelleri	0.2		0.5
Pimelea ammocharis	0.2		0.5
Pluchea tetranthera	0.3		0.5
Ptilotus astrolasius	0.3		0.5
Ptilotus axillaris	0.2		0.5
Ptilotus calostachyus	0.6		0.5
Senna notabilis	0.1		0.5
Sida arenicola	0.2		0.5
Solanum lasiophyllum	0.3		0.5
Stemodia grossa	0.2		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia lanigera	1		20
Triodia schinzii	1		

Site Name:	M21175
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	12/03/2021
GPS Location:	GDA94 Zone 50 641295.098E 7689329.086N
Community:	10
Fire:	<5 years
Habitat:	Flat

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1.8		10
Acacia inaequilatera	1.5		0.5
Acacia sphaerostachya	1.3		1
Acacia stellaticeps	0.6		30
Aristida holathera var. *holathera*	0.5		0.5
Bonamia alatisemina	2		0.5
Bulbostylis barbata	0.1		0.5
Corchorus parviflorus	0.4		0.5
Dodonaea coriacea	0.5		0.5
Eriachne pulchella subsp. *dominii*	0.1		0.5
Hakea lorea subsp. *lorea*	0.3		0.5
Indigofera monophylla	0.3		0.5
Ptilotus astrolasius	0.5		0.5
Ptilotus calostachyus	5		0.5
Sida arenicola	0.4		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia lanigera	0.6		15
Triumfetta ramosa	0.4		0.5

Site Name: M21176

Site Type: QUADRAT

Survey Date: 14/03/2022

GPS Location: GDA94 Zone 50 641306.11E 7690003.61N

Community: 12

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon lepidum	0.3		0.5
Acacia acradenia	1		0.5
Acacia ancistrocarpa	1.2		0.5
Acacia inaequilatera	1.5		2
Afrohybanthus aurantiacus	0.3		1
Amaranthus ?undulatus	0.5		0.5
Boerhavia coccinea	0.1		0.5
Bonamia pilbarensis	0.3		0.5
Bulbostylis barbata	0.2		0.5
Corchorus parviflorus	0.3		0.5
Corymbia zygophylla	3		0.5
Eriachne mucronata	0.2		0.5
Eriachne sp.	0.2		0.5
Fimbristylis simulans	0.2		0.5
Goodenia stobbsiana	0.3		0.5
Grevillea wickhamii	2		10
Hakea lorea subsp. *lorea*	2		0.5
Indigofera monophylla	0.3		0.5
Indigofera trita	0.4		0.5
Paraneurachne muelleri	0.2		0.5
Portulaca filifolia	0.3		0.5
Portulaca oleracea	0.1		0.5
Ptilotus axillaris	0.1		0.5
Ptilotus calostachyus	0.6		0.5
Senna symonii	0.6		0.5
Sida rohlenae subsp. *rohlenae*	0.4		0.5
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.3		0.5
Solanum lasiophyllum	0.3		0.5
Trachymene oleracea subsp. *oleracea*	0.1		0.5
Tribulopis angustifolia	0.1		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia epactia	0.5		30

Site Name: M21177

Site Type: QUADRAT

Survey Date: 12/03/2021

GPS Location: GDA94 Zone 50 641203.947E 7690225.882N

Community: 12

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon lepidum	0.4		0.5
Acacia acradenia	1.3		0.5
Acacia ancistrocarpa	1.3		0.5
Acacia inaequilatera	1.5		0.5
Acacia trachycarpa	1		0.5
Afrohybanthus aurantiacus	0.3		1.5
Amaranthus cuspidifolius	0.4		0.5
Arivela viscosa	0.3		0.5
Boerhavia coccinea	0.1		0.5
Bulbostylis barbata	0.1		0.5
Corchorus parviflorus	0.6		0.5
Eriachne mucronata	0.2		0.5
Eriachne pulchella subsp. *dominii*	0		0.5
Eriachne sp.	0.4		0.5
Fimbristylis simulans	0.3		0.5
Goodenia stobbsiana	0.3		0.5
Gossypium australe	0.7		0.5
Grevillea wickhamii	2		10
Hakea lorea subsp. *lorea*	1.5		0.5
Indigofera trita	0.2		0.5
Panicum australiense var. *australiense*	0.2		0.5
Polymeria mollis	0.1		0.5
Portulaca oleracea	0.1		0.5
Ptilotus calostachyus	0.5		0.5
Senna symonii	0.6		0.5
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.2		0.5
Tinospora smilacina	0.3		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia epactia	0.5		35

Site Name: M21178

Site Type: QUADRAT

Survey Date: 12/03/2022

GPS Location: GDA94 Zone 50 641337.83E 7690532.17N

Community: 12

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon lepidum	0.4		0.5
Acacia acradenia	1.5		0.5
Acacia ancistrocarpa	1.5		5
Acacia inaequilatera	2		0.5
Acacia stellaticeps	0.6		1
Acacia trachycarpa	1		0.5
Corchorus parviflorus	0.5		0.5
Corymbia hamersleyana	3		0.5
Goodenia microptera	0.3		0.5
Goodenia muelleriana	0.3		0.5
Goodenia stobbsiana	0.4		0.5
Grevillea wickhamii	2.5		10
Polymeria mollis	0.4		0.5
Ptilotus astrolasius	0.4		0.5
Ptilotus axillaris	0.1		0.5
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.5		0.5
Solanum cleistogamum	0.3		0.5
Solanum phlomoides	0.4		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia epactia	0.6		30
Triodia wiseana	0.6		5

Site Name:	M21179
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	12/03/2022
GPS Location:	GDA94 Zone 50 641518.77E 7691517N
Community:	10
Fire:	>10 years
Habitat:	Flat

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	2		5
Acacia ancistrocarpa	2		25
Acacia stellaticeps	5		0.5
Aristida holathera var. *holathera*	0.6		0.5
Arivela uncifera	0.3		0.5
Bonamia alatisemina	0.1		0.5
Bonamia erecta	0.4		0.5
Bulbostylis barbata	0.1		0.5
Corchorus parviflorus	0.6		0.5
Corymbia zygophylla	4		1
Dodonaea coriacea	5		0.5
Eragrostis eriopoda	0.3		0.5
Eriachne pulchella subsp. *dominii*	0.1		0.5
Euphorbia psilosperma	0.2		0.5
Euphorbia tannensis subsp. *eremophila*	3		0.5
Panicum australiense var. *australiense*	0.2		0.5
Paraneurachne muelleri	0.3		0.5
Pimelea ammocharis	0.3		0.5
Ptilotus calostachyus	0.5		0.5
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.4		0.5
Tribulus hirsutus	1		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia lanigera	0.5		20
Triumfetta ramosa	0.4		0.5

Site Name: M21180

Site Type: QUADRAT

Survey Date: 13/03/2022

GPS Location: GDA94 Zone 50 643574.91E 7690541.67N

Community: 17

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia sabulosa	2.5		15
Aristida holathera var. *holathera*	0.5		1
Bonamia media	0.1		0.5
Cassytha capillaris	1		0.5
Corchorus incanus subsp. *incanus*	0.8		5
Crotalaria cunninghamii	2.5		0.5
Eragrostis eriopoda	0.3		0.5
Eriachne helmsii	0.4		0.1
Eriachne obtusa	0.3		0.5
Euphorbia myrtoides	0.1		0.5
Euphorbia psilosperma	0.2		0.5
Gyrostemon tepperi	1.5		0.5
Indigofera monophylla	0.4		0.1
Panicum australiense var. *australiense*	0.1		0.5
Paraneurachne muelleri	0.3		0.5
Ptilotus arthrolasius	0.4		1
Senna notabilis	0.4		0.5
Sida arenicola	1.8		5
Solanum phlomoides	0.3		0.5
Triodia epactia	0.6		0.5
Triodia lanigera	0.6		0.1
Triodia schinzii	0.4		0.1
Triumfetta deserticola	0.6		0.1

Site Name:	M21182
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	12/03/2021
GPS Location:	GDA94 Zone 50 650307.237E 7694975.294N
Community:	10
Fire:	>5 years
Habitat:	Sandplain

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1.3		0.5
Acacia stellaticeps	0.6		20
Aristida holathera var. *holathera*	0.3		0.5
Arivela uncifera	0.3		0.5
Bonamia alatisemina	0.2		0.5
Cassytha capillaris	0.3		0.5
Dampiera candicans	0.4		0.5
Dodonaea coriacea	0.5		0.5
Grevillea wickhamii	1.5		0.5
Pluchea tetranthera	0.3		0.5
Ptilotus astrolasius	0.3		0.5
Ptilotus calostachyus	0.6		0.5
Senna notabilis	0.4		0.5
Sida arenicola	1		0.5
Streptoglossa macrocephala	0.4		0.5
Trigastrotheca molluginea	0.2		0.5
Triodia lanigera	0.6		20
Triodia schinzii	0.6		25

Site Name:	M21183
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	12/03/2021
GPS Location:	GDA94 Zone 50 648859.288E 7695246.165N
Community:	10
Fire:	>5 years
Habitat:	Sandplain

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia inaequilatera	1.8		0.5
Acacia sphaerostachya	1.5		0.5
Acacia stellaticeps	0.6		30
Cassytha capillaris	0.3		0.5
Goodenia microptera	0.3		0.5
Hakea lorea subsp. *lorea*	1.2		0.5
Ptilotus astrolasius	0.4		0.5
Ptilotus calostachyus	0.4		0.5
Senna symonii	1		0.5
Triodia lanigera	0.6		20
Triodia schinzii	0.6		30

Site Name:	M21184
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/03/2022
GPS Location:	GDA94 Zone 50 647142.55E 7695560.67N
Community:	10
Fire:	>5 years
Habitat:	Sandplain
Comments:	Recently burnt

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Abutilon sp. Pilbara (W.R. Barker 2025)	0.3		0.5
Acacia ancistrocarpa	1.7		2
Acacia colei	2		0.5
Acacia sphaerostachya	1.5		0.5
Acacia stellaticeps	0.6		20
Aristida holathera var. *holathera*	0		0.5
Boerhavia coccinea	0.3		0.5
Bonamia alatisemina	0.3		0.5
Cassytha capillaris	0.3		0.5
Corchorus parviflorus	0.4		0.5
Dodonaea coriacea	0.3		0.5
Goodenia microptera	0.3		0.5
Indigofera monophylla	0.4		0.5
Melaleuca lasiandra	1.6		0.5
Pluchea tetranthera	0.4		0.5
Ptilotus astrolasius	0.4		0.5
Ptilotus calostachyus	0.5		0.5
Senna notabilis	0.4		0.5
Sida arenicola	0.5		0.5
Solanum phlomoides	0		0.5
Trigastrotheca molluginea	0.2		0.5
Triodia lanigera	0.5		30
Triodia schinzii	0.5		10

Site Name:	M21186
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/03/2022
GPS Location:	GDA94 Zone 50 646672.57E 7695052.34N
Community:	10
Fire:	>5 years
Habitat:	Sandplain
Comments:	Partially burnt

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2		0.5
Acacia inaequilatera	1.5		0.5
Acacia stellaticeps	0.5		25
Aristida holathera var. *holathera*	0.4		0.5
Arivela uncifera	0.4		0.5
Bonamia alatisemina	0.2		0.5
Cassytha capillaris	0.4		0.5
Corchorus parviflorus	0.5		0.5
Dampiera candicans	0.4		0.5
Dodonaea coriacea	0.4		0.5
Eragrostis eriopoda	0.4		0.5
Goodenia lamprosperma	0.3		0.5
Grevillea wickhamii	2		0.5
Indigofera monophylla	0.5		0.5
Melaleuca lasiandra	1.8		0.5
Pluchea tetranthera	0.3		0.5
Polygala galeocephala	0.2		0.5
Ptilotus astrolasius	0.4		0.5
Ptilotus calostachyus	0.5		0.5
Ptilotus fusiformis	0.4		0.5
Senna notabilis	0.4		0.5
Senna symonii	1		0.5
Sida arenicola	0.4		0.5
Trigastrotheca molluginea	0.2		0.5
Triodia lanigera	0.5		30

Site Name:	M21187
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	14/03/2022
GPS Location:	GDA94 Zone 50 650200.89E 7693526.33N
Community:	10
Fire:	>5 years
Habitat:	Sandplain
Comments:	Burnt very recently.

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2.5		1
Acacia inaequilatera	2.5		3
Acacia sclerosperma subsp. *sclerosperma*	1.5		0.5
Acacia stellaticeps	0.5		5
Aristida holathera var. *holathera*	0.4		0.5
Arivela uncifera	0.4		0.5
Bonamia alatisemina	0.3		0.5
Cassytha capillaris	0.3		0.3
Corchorus parviflorus	0.5		0.5
Cucumis variabilis	0.8		0.5
Dodonaea coriacea	0.3		0.5
Euphorbia psilosperma	0.1		0.1
Goodenia lamprosperma	0.3		0.5
Goodenia microptera	0.3		0.5
Grevillea wickhamii	2		0.5
Hakea lorea subsp. *lorea*	3		1
Indigofera monophylla	0.3		0.5
Pluchea tetranthera	0.4		0.5
Polygala galeocephala	0.2		0.5
Ptilotus astrolasius	0.4		0.5
Ptilotus calostachyus	0.5		0.5
Senna symonii	1		0.5
Sida arenicola	1		0.5
Solanum lasiophyllum	0.4		0.5
Stemodia grossa	0.4		0.5
Trigastrotheca molluginea	0.2		0.5
Triodia lanigera	0.6		0.5
Triodia schinzii	0.5		35

Site Name:	M21188
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	13/03/2022
GPS Location:	GDA94 Zone 50 653200.02E 7695197.96N
Community:	10
Fire:	>5 years
Habitat:	Sandplain
Comments:	Drill lines have been put through this quadrat

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2.5		4
Acacia colei	3		0.5
Acacia inaequilatera	2.5		1
Acacia sericophylla	2		0.5
Acacia sphaerostachya	1.5		0.5
Acacia stellaticeps	0.5		35
Aristida holathera var. *holathera*	0.4		0.5
Bonamia alatisemina	0.3		0.5
Bonamia erecta	0.3		0.5
Cassytha capillaris	0.3		2
Corchorus elachocarpus	0.4		0.5
Dodonaea coriacea	0.5		0.5
Goodenia microptera	0.4		0.5
Hakea lorea subsp. *lorea*	2		0.3
Indigofera monophylla	0.4		0.5
Pluchea tetranthera	0.3		0.5
Polygala galeocephala	0.3		0.5
Ptilotus calostachyus	0.5		0.5
Senna notabilis	0.4		0.5
Senna symonii	1.2		0.2
Sida arenicola	0.5		0.5
Triodia epactia	0.4		20
Triodia lanigera	0.4		10

Site Name:	M21189
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	12/03/2021
GPS Location:	GDA94 Zone 50 654932.949E 7694945.113N
Community:	14
Fire:	>5 years
Habitat:	Sandplain

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2.5		2
Acacia colei	3		1
Acacia inaequilatera	2.5		2
Acacia stellaticeps	0.5		0.5
Aristida holathera var. *holathera*	0.4		0.5
Corymbia hamersleyana	3.5		0.5
Cucumis variabilis	0.4		0.5
Eriachne obtusa	0.4		0.5
Pluchea tetranthera	0.4		0.5
Ptilotus axillaris	0.1		0.5
Ptilotus fusiformis	0.4		0.5
Senna notabilis	0.3		0.5
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.4		0.5
Solanum lasiophyllum	0.4		0.5
Trigastrotheca molluginea	0.2		0.5
Triodia epactia	0.5		5
Triodia lanigera	0.4		4
Triodia schinzii	0.5		40

Site Name: M21191

Site Type: QUADRAT

Dimensions: 50m x 50m

Survey Date: 12/03/2022

GPS Location: GDA94 Zone 50 644351.21E 7691751.62N

Community: 10

Fire: >10 years

Habitat: Flat

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	1.5		0.5
Acacia ancistrocarpa	2.2		35
Acacia inaequilatera	2		0.5
Acacia sericophylla	1.6		0.5
Acacia stellaticeps	0.7		20
Acacia trachycarpa	2.2		2
Afrohybanthus aurantiacus	0.3		0.5
Aristida holathera var. *holathera*	0.5		0.5
Arivela uncifera	0.2		0.5
Bonamia alatisemina	0.1		0.5
Clerodendrum tomentosum var. *tomentosum*	1		0.5
Corchorus parviflorus	0.8		1
Corymbia zygophylla	4		5
Cucumis variabilis	1		0.5
Eragrostis eriopoda	0.3		0.5
Eriachne pulchella subsp. *dominii*	0.1		0.5
Euphorbia psilosperma	0.3		0.5
Evolvulus alsinoides var. *villosicalyx*	0.3		0.5
Goodenia microptera	0.3		0.5
Indigofera monophylla	0.3		0.5
Panicum australiense var. *australiense*	0.1		0.5
Paraneurachne muelleri	0.3		0.5
Pimelea ammocharis	0.4		0.5
Ptilotus astrolasius	0.6		0.5
Ptilotus calostachyus	0.5		0.5
Senna symonii	0.7		2
Sida arenicola	4		0.5
Solanum lasiophyllum	0		0.5
Tinospora smilacina	0.4		0.5
Triodia lanigera	0.5		20

Site Name: M21206

Site Type: QUADRAT

Dimensions: 50m x 50m

Survey Date: 16/03/2021

GPS Location: GDA94 Zone 50 641863.562E 7687629.407N

Community: 10

Fire: >5 years

Habitat: Flat

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1.8		40
Acacia inaequilatera	1		0.5
Acacia stellaticeps	0.4		3
Aristida holathera var. *holathera*	0.36		0.5
Bonamia erecta	0.3		0.5
Bulbostylis barbata	0.03		0.5
Corchorus parviflorus	0.8		0.5
Eragrostis eriopoda	0.35		0.5
Eriachne pulchella subsp. *dominii*	0.1		0.5
Euphorbia australis var. *subtomentosa*	0.01		0.5
Euphorbia psilosperma	0.2		0.5
Panicum australiense var. *australiense*	0.25		0.5
Pimelea ammocharis	0.4		0.5
Portulaca oleracea	0.02		0.5
Tribulopis angustifolia	0.2		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia lanigera	0.4		20
Triumfetta ramosa	0.4		0.5

Site Name: M21207

Site Type: QUADRAT

Dimensions: 50m x 50m

Survey Date: 16/03/2021

GPS Location: GDA94 Zone 50 642926.187E 7689018.085N

Community: 10

Fire: >5 years

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia stellaticeps	0.4		35
Aristida holathera var. *holathera*	0.3		0.5
Bulbostylis barbata	0.05		0.5
Codonocarpus cotinifolius	1.8		0.5
Eriachne obtusa	0.1		0.5
Eriachne pulchella subsp. *dominii*	0.15		0.5
Euphorbia psilosperma	0.15		0.5
Panicum australiense var. *australiense*	0.1		0.5
Pluchea tetranthera	0.3		0.5
Poaceae sp.	0.1		0.5
Ptilotus calostachyus	0.4		0.5
Tribulus hirsutus	0.1		0.5
Triodia lanigera	0.3		15

Site Name:	M21208
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	16/03/2021
GPS Location:	GDA94 Zone 50 643299.128E 7688082.656N
Community:	10
Fire:	>5 years
Habitat:	Flat

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	1.5		25
Acacia inaequilatera	1		0.5
Aristida holathera var. *holathera*	0.3		0.5
Bonamia erecta	0.3		0.5
Cassytha capillaris	0.3		0.5
Corchorus parviflorus	0.7		1
Eriachne pulchella subsp. *dominii*	0.15		0.5
Goodenia stobbsiana	0.45		0.5
Grevillea wickhamii	0.8		0.5
Indigofera monophylla	0.4		0.5
Panicum australiense var. *australiense*	0.15		0.5
Ptilotus astrolasius	0.4		0.5
Senna artemisioides subsp. *oligophylla*	0.5		0.5
Tribulus hirsutus	0.03		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia lanigera	0.4		20
Triumfetta ramosa	0.4		0.5

Site Name: M21210

Site Type: QUADRAT

Survey Date: 12/03/2022

GPS Location: GDA94 Zone 50 645634.15E 7693365.75N

Community: 10

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	1		0.5
Acacia ancistrocarpa	1.7		10
Acacia inaequilatera	1.2		3
Acacia stellaticeps	0.4		20
Bonamia alatisemina	0.2		0.5
Cassytha capillaris	0.2		0.5
Corchorus parviflorus	0.2		0.5
Corymbia zygophylla	1.8		0.5
Eragrostis eriopoda	0.2		0.5
Euphorbia tannensis subsp. *eremophila*	0.3		0.1
Grevillea wickhamii	2.5		0.2
Indigofera monophylla	0.2		0.5
Ptilotus astrolasius	0.2		0.5
Ptilotus calostachyus	0.4		0.5
Senna symonii	0.7		0.5
Sida arenicola	0.6		0.1
Solanum lasiophyllum	0.3		0.5
Tinospora smilacina			0.1
Trigastrotheca molluginea	0.1		0.5
Triodia lanigera	0.2		15

Site Name: M21220

Site Type: QUADRAT

Survey Date: 12/03/2022

GPS Location: GDA94 Zone 50 645465.74E 7693109.38N

Community: 12

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	1		1
Acacia ancistrocarpa	1.2		0.5
Acacia inaequilatera	1.5		1
Acacia stellaticeps	0.4		0.5
Bonamia alatisemina	0.15		0.5
Cassytha capillaris	0.3		0.5
Corchorus parviflorus	0.1		0.5
Dampiera candicans	0.6		0.1
Eriachne pulchella subsp. *dominii*	0.15		0.5
Euploca pachyphylla	0.15		0.5
Goodenia stobbsiana	0.4		2
Hakea lorea subsp. *lorea*	1		0.5
Paraneurachne muelleri	0.2		0.5
Ptilotus astrolasius	0.4		0.5
Ptilotus calostachyus	0.4		0.5
Senna glutinosa subsp. *glutinosa*	0.2		0.5
Senna symonii	0.8		0.1
Trigastrotheca molluginea	0.1		0.5
Triodia wiseana	0.4		35

Site Name:	M21221
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	12/03/2022
GPS Location:	GDA94 Zone 50 645327.46E 7693038.52N
Community:	10
Fire:	>5 years

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	1.7		5
Acacia ancistrocarpa	1.7		10
Acacia colei	2.5		0.2
Acacia inaequilatera	1.8		0.1
Acacia sericophylla	2		1
Acacia stellaticeps	0.4		0.5
Acacia trachycarpa	1.5		0.5
Acacia tumida var. *pilbarensis*	4		0.5
Aristida holathera var. *holathera*	0.3		0.5
Arivela viscosa	0.15		0.5
Boerhavia coccinea	0.05		0.5
Bonamia alatisemina	0		0.5
Corchorus incanus subsp. *incanus*	0.5		3
Corymbia zygophylla	3.5		2
Dodonaea coriacea	0.15		0.5
Eragrostis eriopoda	0.3		0.5
Eriachne pulchella subsp. *dominii*	0.1		0.5
Euphorbia vaccaria var. *vaccaria*	0.05		0.5
Goodenia microptera	0.1		0.5
Goodenia stobbsiana	0.05		0.5
Indigofera monophylla	0.3		0.5
Panicum australiense var. *australiense*	0.1		0.5
Paraneurachne muelleri	0.15		0.5
Polymeria mollis	0.1		0.1
Ptilotus astrolasius	0.2		0.5
Ptilotus axillaris	0.02		0.5
Ptilotus calostachyus	0.3		0.5
Scaevola parvifolia subsp. *pilbarae*	0.2		0.1
Sida arenicola	1.5		0.1
Sida rohlenae subsp. *rohlenae*	0.2		0.5
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.1		0.5
Solanum lasiophyllum	0.3		0.5
Tinospora smilacina			0.1
Trianthema pilosum	0.05		0.5

Trigastrotheca molluginea	0.1		0.5
Triodia lanigera	0.3		20

Site Name: M21222

Site Type: QUADRAT

Survey Date: 12/03/2022

GPS Location: GDA94 Zone 50 645550.41E 7693260.42N

Community: 10

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	1		55
Acacia ancistrocarpa	1		0.5
Acacia inaequilatera	2		1
Acacia sericophylla	0.5		0.5
Acacia stellaticeps	0.5		0.1
Arivela viscosa	0.1		0.5
Bonamia alatisemina	0.1		0.5
Cassytha capillaris	0.3		0.5
Corchorus parviflorus	0.3		0.5
Eragrostis eriopoda	0.3		0.5
Eriachne pulchella subsp. *dominii*	0.1		0.5
Goodenia stobbsiana	0.2		0.5
Indigofera monophylla	0.4		0.5
Paraneurachne muelleri	0.3		0.5
Pimelea ammocharis	0.4		0.5
Polymeria mollis	0.15		0.5
Ptilotus arthrolasius	0.3		0.5
Ptilotus astrolasius	0.4		0.5
Ptilotus calostachyus	0.4		0.5
Sida arenicola	1.2		0.1
Trigastrotheca molluginea	15		0.5
Triodia lanigera	0.4		30
Triumfetta ramosa	0.3		0.5

Site Name:	M21230
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	17/03/2021
GPS Location:	GDA94 Zone 50 652857.986E 7692434.177N
Community:	10
Rock Outcrop:	Ironstone
Fire:	>10 years
Habitat:	Flat
Comments:	Appears to be senescent

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia ancistrocarpa	2		2
Acacia sphaerostachya	1.5		0.5
Acacia stellaticeps	0.6		30
Bonamia alatisemina	0.2		0.5
Bonamia erecta	0.2		0.5
Cassytha capillaris	0.3		0.5
Cassytha filiformis	0.3		0.5
Dampiera candicans	0.5		0.5
Goodenia microptera	0.2		0.5
Goodenia stobbsiana	0.3		0.5
Ptilotus calostachyus	0.6		0.5
Senna glutinosa subsp. *glutinosa*	1.8		0.5
Triodia lanigera	0.6		20
Triodia schinzii	0.6		2

Site Name:	M21231
Site Type:	QUADRAT
Dimensions:	50m x 50m
Survey Date:	15/03/2022
GPS Location:	GDA94 Zone 50 655109.55E 7689117.99N
Community:	10
Fire:	>10 years
Habitat:	Flat

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive
Acacia acradenia	2		3
Acacia ancistrocarpa	2.2		10
Acacia inaequilatera	0		0.5
Acacia sericophylla	4		1
Acacia stellaticeps	0.8		5
Aristida holathera var. *holathera*	0.3		0.5
Bonamia alatisemina	0.3		0.5
Bonamia erecta	0.4		2
Cassytha capillaris			5.5
Codonocarpus cotinifolius	2		0.5
Eriachne obtusa	0.3		0.5
Euphorbia australis var. *subtomentosa*	0.1		0.5
Euploca mutica (P3)	0.3		0.5
Goodenia microptera	0.3		0.5
Grevillea wickhamii	3		2
Hakea lorea subsp. *lorea*	2.5		0.5
Indigofera monophylla	0.3		0.5
Leptosema anomalum	0.3		0.1
Ptilotus calostachyus	0.5		0.1
Scaevola parvifolia subsp. *pilbarae*	0.2		0.1
Solanum phlomoides	0.3		0.5
Trigastrotheca molluginea	0.1		0.5
Triodia lanigera	0.4		0.5
Triodia schinzii	0.4		25

APPENDIX G

Location Details of Significant Flora Taxa Recorded by the 2022 and 2024 Surveys

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

All locations are in GDA2020 Zone 50.

Taxon	Status (WA)	Abundance	Easting	Northing
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	645606	7686881
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	60	659900	7694166
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	20	660317	7695372
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	646682	7691385
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	646666	7691400
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	643506	7694597
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	643664	7693816
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	657109	7695677
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	657298	7696329
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	7	657317	7696262
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	657299	7696256
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	657264	7696024
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	657899	7696324
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	658095	7696266
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658303	7696005
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658296	7696300
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658900	7696068
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	658907	7695876
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658917	7695866
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	659215	7695717
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	12	655639	7695015
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	655630	7695003
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	656059	7694707
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	656244	7694859
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	656260	7694867
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	650082	7691461
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	648498	7690277
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	647652	7689962
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	35	656149	7696204
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	657356	7696194
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	657341	7696259
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	657543	7696181
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	657958	7696324
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	6	657951	7696184
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658161	7695973
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658144	7696058

Taxon	Status (WA)	Abundance	Easting	Northing
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658280	7696292
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658553	7696451
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	659154	7695717
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	9	659164	7695713
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	659162	7695696
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	655724	7694879
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	650224	7692504
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	657252	7696038
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	5	657448	7696314
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	658062	7696253
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	20	658045	7695832
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658247	7695877
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	658257	7696243
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658265	7696311
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	655590	7694894
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	647555	7690448
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	657414	7696266
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658396	7696078
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	655956	7694743
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	650200	7692410
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	650073	7692136
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	649509	7691821
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	12	658640	7700520
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	657290	7699396
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658145	7700452
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	22	658165	7700454
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	12	658610	7700522
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	658614	7700442
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658569	7700468
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	658212	7700442
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	5	658178	7700432
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	658145	7700403
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	7	658210	7700925
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	658408	7701635
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	15	658596	7701143
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	19	658596	7701070
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	21	658581	7701200
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	8	658573	7701295

Taxon	Status (WA)	Abundance	Easting	Northing
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	10	658562	7701364
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	658555	7701490
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	658541	7701579
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	658503	7701625
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	8	658522	7701520
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658530	7701451
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	658550	7701210
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	9	658559	7701129
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	10	658697	7699863
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	11	658701	7699801
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	31	658729	7699513
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	17	658736	7699453
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	21	658746	7699339
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	658748	7699305
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	137	658729	7699272
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	112	658724	7699302
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	44	658722	7699339
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	59	658706	7699415
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	15	658709	7699467
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	36	658696	7699524
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	23	658700	7699565
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658779	7698985
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	658765	7699097
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	13	658761	7699140
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	6	658758	7699195
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	7	658756	7699219
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	118	658729	7699259
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	44	658735	7699195
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	21	659694	7696906
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	76	659758	7696790
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	659987	7696385
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	660098	7696169
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	660120	7696096
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	660257	7695574
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	660298	7695442
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	22	660310	7695395
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	660330	7695335
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	9	660359	7695322

Taxon	Status (WA)	Abundance	Easting	Northing
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	660335	7695405
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	660314	7695476
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	660287	7695564
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	660266	7695630
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	15	660223	7695684
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	21	660450	7695032
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	660438	7695074
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	9	660438	7695074
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	660415	7695142
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	18	660391	7695221
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	660368	7695304
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	62	660338	7695306
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	39	660351	7695253
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	16	660379	7695174
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	20	658499	7701683
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	658532	7701655
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	13	658532	7701655
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	25	658531	7701672
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	14	658520	7701720
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	45	658508	7701771
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	7	658503	7701823
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	72	658357	7702437
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	20	658363	7702510
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	18	658371	7702470
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	647955	7691649
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	646594	7692521
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	647410	7692658
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	647094	7691878
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	647067	7692305
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	656686	7695666
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	13	656881	7694025
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	656891	7694001
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	6	656608	7694075
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	660531	7694066
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	660681	7694095
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	660532	7694086
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	660449	7694064
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	660290	7693885

Taxon	Status (WA)	Abundance	Easting	Northing
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	649317	7692173
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	648617	7692841
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	646660	7692638
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	646551	7692531
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	649570	7692572
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	648672	7693049
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	648740	7692741
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	648621	7692580
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	648729	7692472
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	648751	7692472
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	648752	7692478
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	648743	7692478
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	648230	7692544
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	648049	7692908
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	648036	7692820
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	656151	7695800
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	648909	7692818
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	648524	7692947
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	648599	7692339
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	646657	7692319
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658639	7700472
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	7	658640	7700502
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	25	658624	7699739
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	658037	7700413
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	657415	7699716
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658628	7701143
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	6	658641	7701119
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658645	7701091
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658638	7701059
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	5	658593	7701009
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	6	658601	7700989
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	658596	7700968
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	23	658602	7700950
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	6	658604	7700923
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	658607	7700935
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	658610	7700875
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	10	658613	7700859
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	24	658609	7700841

Taxon	Status (WA)	Abundance	Easting	Northing
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	658616	7700799
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	7	658621	7700781
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	15	658620	7700736
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	658622	7700707
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	658621	7700689
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	21	658627	7700657
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	10	658627	7700618
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	8	658629	7700576
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	658635	7700543
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	7	658615	7700546
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	658611	7700560
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	658595	7700759
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	6	658575	7700802
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	658586	7700856
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658696	7699876
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	658693	7699903
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	7	658689	7700006
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	9	658683	7700032
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	658684	7700069
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	8	658678	7700103
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	7	658679	7700122
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	658674	7700177
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658666	7700227
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658655	7700308
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	22	658654	7700338
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	18	658649	7700402
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	5	658648	7700428
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	658626	7700434
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	25	658642	7700232
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658653	7700117
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658650	7700086
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	658661	7700000
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	18	658663	7699970
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	658666	7699944
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658670	7699921
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	658671	7699907
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658676	7699883
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	6	658669	7699870

Taxon	Status (WA)	Abundance	Easting	Northing
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	10	658679	7699824
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	658679	7699806
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	13	658679	7699794
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	28	658685	7699764
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	7	658677	7699741
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	6	658691	7699685
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658696	7699650
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	659391	7697479
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	658741	7699137
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	9	658741	7699150
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	659762	7696785
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	660068	7696188
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	36	660078	7696152
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	660085	7696131
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	660246	7695699
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	660222	7695767
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	660236	7695756
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	7	660217	7695779
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	660209	7695812
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	660207	7695843
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	8	660195	7695861
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	660146	7695927
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	7	660148	7695916
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	7	660153	7695890
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	660162	7695874
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	15	660166	7695858
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	6	660168	7695846
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	9	660176	7695831
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	11	660181	7695814
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	20	660187	7695795
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	16	660193	7695781
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	39	660200	7695762
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	5	660204	7695741
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	660207	7695722
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	660589	7694570
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	14	660612	7694431
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	9	660598	7694466
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	660580	7694523

Taxon	Status (WA)	Abundance	Easting	Northing
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	20	660571	7694550
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	6	660559	7694584
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	660578	7694601
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	6	660588	7694588
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	10	660422	7695042
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	17	660414	7695074
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	13	660402	7695101
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	34	660393	7695122
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	9	660387	7695146
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	45	658477	7701956
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	658475	7701979
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	7	658465	7702005
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	32	658459	7702028
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	9	658453	7702082
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	6	658444	7702105
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	12	658443	7702123
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	17	658437	7702147
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	37	658431	7702169
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	33	658427	7702190
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	20	658421	7702221
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	8	658414	7702256
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	10	658412	7702274
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	23	658404	7702299
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	10	658397	7702333
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	30	658384	7702293
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	66	658391	7702259
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	39	658396	7702234
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	150	658402	7702207
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	70	658411	7702175
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	60	658414	7702146
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	5	658480	7701933
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	7	658484	7701916
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	16	658486	7701894
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	658487	7701876
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	25	658362	7702413
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	30	658344	7702399
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	8	658375	7702354
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	5	658388	7702372

Taxon	Status (WA)	Abundance	Easting	Northing
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	15	658387	7702395
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	40	658383	7702410
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	658377	7702444
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	658834	7699173
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	658627	7701583
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	637965	7721196
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638214	7720451
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638352	7720002
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	639113	7717302
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639124	7717296
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639110	7717334
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	639104	7717398
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	8	639109	7717410
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	639089	7717431
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639088	7717468
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	6	639059	7717544
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	639046	7717553
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639052	7717575
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	8	639035	7717631
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	5	639046	7717645
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	8	639043	7717661
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	639028	7717656
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	639012	7717651
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	639009	7717686
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	9	639023	7717698
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638995	7717709
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638983	7717748
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	638972	7717770
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638994	7717777
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638975	7717875
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638935	7717965
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638882	7718159
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638876	7718170
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	8	638832	7718366
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	638792	7718451
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	638079	7721011
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	6	638141	7720752
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638210	7720604

Taxon	Status (WA)	Abundance	Easting	Northing
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	7	638751	7718761
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638733	7718724
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	638777	7718638
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	638820	7718578
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	638801	7718563
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	638807	7718535
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639187	7717370
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	639131	7717475
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639144	7717513
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639095	7717593
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	19	639062	7717659
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	21	639054	7717700
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	9	639073	7717733
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	639033	7717745
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	639055	7717763
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	7	639028	7717821
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	639002	7717923
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	638924	7718099
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	7	638869	7718305
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	13	638843	7718395
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	648968	7697412
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	648667	7697892
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	648666	7697906
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	638823	7713657
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	638531	7714571
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	638528	7714584
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638522	7714602
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638512	7714610
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638475	7714736
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638455	7714815
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	7	638433	7714835
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	638433	7714844
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	638753	7718389
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	638784	7718360
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	638764	7718357
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	638760	7718361
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	638752	7718359
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638739	7718355

Taxon	Status (WA)	Abundance	Easting	Northing
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	638738	7718350
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638778	7718315
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638781	7718302
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638796	7718275
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638821	7718205
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	5	638838	7718189
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	638833	7718168
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	638826	7718151
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	638815	7718145
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	638840	7718120
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	5	638850	7718109
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638848	7718089
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	638860	7718092
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	638839	7718061
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638879	7717981
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638900	7717914
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638930	7717860
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638941	7717847
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638935	7717829
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	638935	7717802
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	6	638939	7717793
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	638947	7717800
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	638955	7717751
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	638956	7717738
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	638966	7717742
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	5	638959	7717731
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638946	7717724
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	638954	7717722
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638966	7717718
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	638973	7717694
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638976	7717666
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	638987	7717655
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	638986	7717643
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	638991	7717605
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	6	639003	7717543
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639024	7717526
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639014	7717479
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639054	7717438

Taxon	Status (WA)	Abundance	Easting	Northing
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639062	7717385
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639056	7717330
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639105	7717239
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	639105	7717216
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639118	7717174
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639133	7717146
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	639134	7717131
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639173	7717030
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639173	7717019
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639161	7716975
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639207	7716899
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	639213	7716887
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	639202	7716878
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	639216	7716872
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639201	7716821
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639605	7711915
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	639525	7712045
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	11	639306	7712415
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	5	639281	7712462
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639280	7712476
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639272	7712484
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	639243	7712499
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639236	7712537
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639202	7712574
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	640864	7709931
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	641130	7709483
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	641122	7709472
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	641109	7709470
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	8	641184	7709388
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	641203	7709379
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	641200	7709370
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	641582	7708776
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	644009	7704917
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	644003	7704854
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	644618	7704029
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	646094	7701796
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	641101	7711768
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	641097	7711746

Taxon	Status (WA)	Abundance	Easting	Northing
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	640263	7713437
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	640281	7713251
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	640295	7713223
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	640291	7713147
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	640316	7713078
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	6	640334	7713044
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	640406	7712926
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	640455	7712847
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	640481	7712802
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	640644	7712508
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	7	640410	7713629
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	13	640367	7713610
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	65	640315	7713561
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	114	638479	7714867
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	5	638514	7714789
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	12	638567	7714598
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	13	639559	7716220
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	639607	7716118
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	639619	7716067
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639629	7715994
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	20	639753	7715747
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639273	7712553
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	10	641683	7708711
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	5	641199	7709453
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	645387	7702953
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	646965	7700617
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	8	648020	7699020
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	6	648746	7697841
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	5	644001	7706410
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	5	643801	7707290
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	642492	7709091
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	643243	7707750
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	643415	7707482
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	643424	7707463
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	643441	7707458
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	643517	7707266
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	643592	7707224
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	641532	7710746

Taxon	Status (WA)	Abundance	Easting	Northing
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	641584	7710669
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	641673	7710546
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	641686	7710538
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	10	641809	7710906
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	641420	7710978
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	641143	7711458
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	641029	7711608
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	640966	7711725
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	640670	7712389
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	7	641707	7711078
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	6	641674	7711162
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	6	641580	7711313
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	640611	7712350
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	640601	7712376
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	640579	7712374
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	640564	7712451
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	15	640533	7712474
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	10	640527	7712502
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	640504	7712561
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	640432	7712690
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	12	640382	7712726
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	8	640364	7712768
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	640339	7712828
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	7	640276	7712932
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	8	640264	7712966
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	15	640243	7712982
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	640221	7713014
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	640198	7713084
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	640195	7713142
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	6	640188	7713245
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	7	640202	7713321
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	10	640175	7713370
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	640173	7713410
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	640166	7713467
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	8	640161	7713504
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	20	640243	7713634
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	5	640293	7713675
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	640203	7714176

Taxon	Status (WA)	Abundance	Easting	Northing
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	15	638455	7714865
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	639667	7715655
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	639654	7715681
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	639625	7715724
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	639618	7715761
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639618	7715761
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639618	7715761
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	639508	7716071
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	10	639484	7716144
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	639228	7716767
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	8	639203	7716814
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	10	639975	7711375
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	25	639994	7711323
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	15	640020	7711282
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	30	640035	7711264
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	50	640051	7711244
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	640174	7711064
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	150	640188	7711009
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	70	640226	7710943
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	20	640210	7710915
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	640264	7710900
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	15	640263	7710842
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	15	640305	7710845
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	40	640316	7710794
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	15	640338	7710760
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	640472	7710567
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	640783	7710048
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	640809	7709999
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	10	641707	7710564
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	641419	7711024
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	641321	7711249
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	641291	7711282
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	641070	7711712
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	641056	7711720
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	640336	7712956
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	640335	7712992
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	640255	7713083
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	640229	7713406

Taxon	Status (WA)	Abundance	Easting	Northing
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	640222	7713481
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	5	640215	7713501
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	640206	7713537
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	640214	7713557
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	20	640248	7713575
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	19	640287	7713604
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	640339	7713647
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	640403	7713703
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	17	638478	7714883
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	639527	7716189
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639616	7715961
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	639688	7715744
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639699	7715726
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639692	7715718
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	27	639701	7715694
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	639710	7715637
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	7	640862	7710024
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	640844	7710048
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	640314	7710902
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	640211	7711026
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	640210	7711057
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	21	640071	7711252
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	19	640068	7711287
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	640041	7711332
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	636829	7724395
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	6	643679	7701647
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1000	649182	7683486
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	10	640232	7688187
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	649903	7693953
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	6	648375	7692753
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	649649	7692938
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	636868	7724347
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	637204	7723399
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	640131	7712007
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	647148	7700959
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	648450	7692567
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	641823	7698824
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	642399	7699565

Taxon	Status (WA)	Abundance	Easting	Northing
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	641806	7699050
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	5	641798	7699032
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	10	641788	7699011
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	8	641782	7699033
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	641781	7699064
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	6	641680	7698874
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	15	641696	7698859
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	21	641703	7698846
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	21	641687	7698821
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	641649	7698550
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	4	636796	7724390
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	636829	7724359
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	636846	7724320
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	9	640203	7711932
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	3	640124	7711986
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	0	637777	7721546
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	33	640389	7712058
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	0	636964	7724490
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	658798	7700290
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	10	638980	7715624
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	641054	7703199
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	638472	7714673
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	639247	7716188
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	17	640979	7701673
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	31	640386	7703077
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	641494	7710595
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	643680	7693822
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	659293	7697182
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	0	639217	7712458
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	643720	7692638
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	15	641384	7698387
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	0	638891	7718241
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	0	639555	7715997
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	20	640006	7713383
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	20	639676	7713161
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	100	638815	7716154
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	652657	7693792
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	656442	7694073

Taxon	Status (WA)	Abundance	Easting	Northing
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	5	656596	7694068
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	9	656879	7694023
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	656895	7694054
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	660484	7694035
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	656890	7694000
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	660526	7694077
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	55	659892	7694153
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	7	638390	7692647
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	638427	7692655
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	1	660373	7694196
***Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)**	P3	2	638274	7695163
Euploca mutica	P3	1	656261	7689043
Euploca mutica	P3	1	655816	7689076
Euploca mutica	P3	1	655894	7689080
Euploca mutica	P3	1	658776	7691026
Euploca mutica	P3	1	655870	7694339
Euploca mutica	P3	10	656450	7694078
Euploca mutica	P3	4	655814	7694343
Euploca mutica	P3	6	655763	7694459
Euploca mutica	P3	1	654151	7688755
Euploca mutica	P3	1	654147	7689379
Euploca mutica	P3	1	654146	7689775
Euploca mutica	P3	1	655674	7689109
Euploca mutica	P3	1	655700	7689116
Euploca mutica	P3	1	656236	7689000
Euploca mutica	P3	5	656225	7688957
Euploca mutica	P3	2	654097	7689624
Euploca mutica	P3	1	654098	7689677
Euploca mutica	P3	1	657202	7694014
Euploca mutica	P3	1	655396	7689042
Euploca mutica	P3	1	655388	7689041
Euploca mutica	P3	1	654061	7689537
Euploca mutica	P3	1	654048	7689758
Euploca mutica	P3	1	653891	7689587
Euploca mutica	P3	3	653889	7689638
Euploca mutica	P3	3	653897	7689651
Euploca mutica	P3	2	653913	7689685
Euploca mutica	P3	1	653907	7689742

Taxon	Status (WA)	Abundance	Easting	Northing
Euploca mutica	P3	4	654976	7692714
Euploca mutica	P3	1	654833	7689603
Euploca mutica	P3	1	656332	7694077
Euploca mutica	P3	2	656443	7694056
Euploca mutica	P3	3	656290	7694030
Euploca mutica	P3	5	656293	7694024
Euploca mutica	P3	2	656299	7694021
Euploca mutica	P3	3	656333	7694019
Euploca mutica	P3	3	656347	7694027
Euploca mutica	P3	2	656351	7694024
Euploca mutica	P3	6	656382	7694016
Euploca mutica	P3	1	656390	7694021
Euploca mutica	P3	2	656488	7694011
Euploca mutica	P3	10	656502	7694006
Euploca mutica	P3	2	655906	7694040
Euploca mutica	P3	1	655136	7694002
Euploca mutica	P3	10	656132	7693953
Euploca mutica	P3	4	656127	7693945
Euploca mutica	P3	5	656061	7693936
Euploca mutica	P3	2	656042	7693937
Euploca mutica	P3	12	656004	7693931
Euploca mutica	P3	8	655973	7693949
Euploca mutica	P3	3	655848	7693970
Euploca mutica	P3	12	655582	7693998
Euploca mutica	P3	13	655566	7694004
Euploca mutica	P3	2	655531	7693976
Euploca mutica	P3	2	655482	7693990
Euploca mutica	P3	8	656525	7693919
Euploca mutica	P3	9	656509	7693911
Euploca mutica	P3	4	656497	7693920
Euploca mutica	P3	2	656470	7693918
Euploca mutica	P3	7	656362	7693928
Euploca mutica	P3	22	656315	7693924
Euploca mutica	P3	8	656191	7693932
Euploca mutica	P3	3	656162	7693936
Euploca mutica	P3	8	655460	7693898
Euploca mutica	P3	5	655476	7693886
Euploca mutica	P3	24	655592	7693937

Taxon	Status (WA)	Abundance	Easting	Northing
Euploca mutica	P3	10	655624	7693918
Euploca mutica	P3	3	655720	7693901
Euploca mutica	P3	6	655736	7693893
Euploca mutica	P3	1	655749	7693869
Euploca mutica	P3	2	655778	7693890
Euploca mutica	P3	10	655803	7693921
Euploca mutica	P3	16	655810	7693901
Euploca mutica	P3	10	655843	7693910
Euploca mutica	P3	7	655859	7693887
Euploca mutica	P3	14	656005	7693901
Euploca mutica	P3	3	656030	7693918
Euploca mutica	P3	2	656028	7693929
Euploca mutica	P3	13	656059	7693892
Euploca mutica	P3	5	656078	7693915
Euploca mutica	P3	1	656120	7693910
Euploca mutica	P3	2	656193	7693888
Euploca mutica	P3	10	656249	7693896
Euploca mutica	P3	1	656298	7693873
Euploca mutica	P3	2	656484	7693888
Euploca mutica	P3	2	656486	7693899
Euploca mutica	P3	2	656501	7693881
Euploca mutica	P3	1	656564	7693869
Euploca mutica	P3	4	656454	7693711
Euploca mutica	P3	11	656379	7693732
Euploca mutica	P3	21	656213	7693770
Euploca mutica	P3	21	656167	7693760
Euploca mutica	P3	7	656133	7693755
Euploca mutica	P3	4	656100	7693753
Euploca mutica	P3	7	656003	7693747
Euploca mutica	P3	5	655841	7693778
Euploca mutica	P3	30	655793	7693768
Euploca mutica	P3	2	655463	7693932
Euploca mutica	P3	11	655645	7693696
Euploca mutica	P3	4	655502	7693652
Euploca mutica	P3	7	655647	7693634
Euploca mutica	P3	20	655834	7693582
Euploca mutica	P3	8	655785	7693562
Euploca mutica	P3	1	655771	7693544

Taxon	Status (WA)	Abundance	Easting	Northing
Euploca mutica	P3	4	655754	7693577
Euploca mutica	P3	11	655698	7693533
Euploca mutica	P3	5	655689	7693519
Euploca mutica	P3	5	655696	7693506
Euploca mutica	P3	1	655756	7693524
Euploca mutica	P3	10	655946	7693474
Euploca mutica	P3	7	656027	7693415
Euploca mutica	P3	7	656022	7693390
Euploca mutica	P3	7	656100	7693368
Euploca mutica	P3	40	656141	7693992
Euploca mutica	P3	28	656138	7693976
Euploca mutica	P3	3	656133	7693986
Euploca mutica	P3	2	656123	7693986
Euploca mutica	P3	9	656122	7693991
Euploca mutica	P3	10	656110	7693992
Euploca mutica	P3	21	656119	7693997
Euploca mutica	P3	1	656123	7693993
Euploca mutica	P3	2	656117	7693991
Euploca mutica	P3	6	656110	7693984
Euploca mutica	P3	7	656102	7693985
Euploca mutica	P3	1	656099	7693986
Euploca mutica	P3	17	656095	7693992
Euploca mutica	P3	21	656089	7693997
Euploca mutica	P3	8	656087	7693989
Euploca mutica	P3	12	656083	7693984
Euploca mutica	P3	10	656072	7693984
Euploca mutica	P3	4	656064	7693984
Euploca mutica	P3	5	655991	7693992
Euploca mutica	P3	1	655978	7693994
Euploca mutica	P3	9	655970	7693993
Euploca mutica	P3	2	655962	7693993
Euploca mutica	P3	10	655954	7693996
Euploca mutica	P3	1	655956	7694001
Euploca mutica	P3	26	655637	7694018
Euploca mutica	P3	23	655567	7694017
Euploca mutica	P3	10	655553	7694011
Euploca mutica	P3	11	655544	7694007
Euploca mutica	P3	16	655535	7694005

Taxon	Status (WA)	Abundance	Easting	Northing
Euploca mutica	P3	1	655487	7694032
Euploca mutica	P3	1	655376	7694044
Euploca mutica	P3	3	656794	7693943
Euploca mutica	P3	3	656782	7693933
Euploca mutica	P3	3	656711	7693963
Euploca mutica	P3	4	656606	7693957
Euploca mutica	P3	5	656584	7693961
Euploca mutica	P3	1	656530	7693963
Euploca mutica	P3	3	656518	7693965
Euploca mutica	P3	4	656451	7693975
Euploca mutica	P3	1	656401	7693972
Euploca mutica	P3	2	656380	7693972
Euploca mutica	P3	10	656373	7693968
Euploca mutica	P3	1	656366	7693973
Euploca mutica	P3	5	656363	7693974
Euploca mutica	P3	1	656364	7693977
Euploca mutica	P3	10	656333	7693970
Euploca mutica	P3	5	656248	7693969
Euploca mutica	P3	1	656242	7693969
Euploca mutica	P3	20	656225	7693972
Euploca mutica	P3	3	656159	7693967
Euploca mutica	P3	1	656150	7693963
Euploca mutica	P3	1	656148	7693964
Euploca mutica	P3	2	656144	7693964
Euploca mutica	P3	7	655613	7693847
Euploca mutica	P3	4	655620	7693851
Euploca mutica	P3	18	655633	7693846
Euploca mutica	P3	3	655637	7693846
Euploca mutica	P3	3	655637	7693848
Euploca mutica	P3	12	655638	7693853
Euploca mutica	P3	3	655642	7693852
Euploca mutica	P3	8	655642	7693858
Euploca mutica	P3	4	655637	7693862
Euploca mutica	P3	1	655646	7693848
Euploca mutica	P3	2	655642	7693845
Euploca mutica	P3	5	655641	7693844
Euploca mutica	P3	4	655648	7693833
Euploca mutica	P3	3	655653	7693835

Taxon	Status (WA)	Abundance	Easting	Northing
Euploca mutica	P3	6	655725	7693836
Euploca mutica	P3	4	655733	7693835
Euploca mutica	P3	1	655818	7693821
Euploca mutica	P3	1	655834	7693840
Euploca mutica	P3	4	655840	7693831
Euploca mutica	P3	3	655851	7693818
Euploca mutica	P3	1	655857	7693813
Euploca mutica	P3	21	655950	7693815
Euploca mutica	P3	16	655965	7693815
Euploca mutica	P3	1	655975	7693810
Euploca mutica	P3	8	655979	7693800
Euploca mutica	P3	1	656005	7693805
Euploca mutica	P3	4	656019	7693803
Euploca mutica	P3	2	656018	7693800
Euploca mutica	P3	3	656018	7693797
Euploca mutica	P3	4	656028	7693810
Euploca mutica	P3	8	656025	7693814
Euploca mutica	P3	1	656026	7693817
Euploca mutica	P3	2	656027	7693813
Euploca mutica	P3	1	656157	7693807
Euploca mutica	P3	3	656169	7693804
Euploca mutica	P3	5	656174	7693809
Euploca mutica	P3	3	656169	7693814
Euploca mutica	P3	1	656167	7693817
Euploca mutica	P3	1	656168	7693820
Euploca mutica	P3	2	656221	7693799
Euploca mutica	P3	24	656280	7693790
Euploca mutica	P3	2	656286	7693794
Euploca mutica	P3	3	656290	7693794
Euploca mutica	P3	1	656339	7693789
Euploca mutica	P3	3	656345	7693784
Euploca mutica	P3	1	656364	7693772
Euploca mutica	P3	9	656387	7693766
Euploca mutica	P3	1	656398	7693772
Euploca mutica	P3	15	656431	7693798
Euploca mutica	P3	2	656455	7693807
Euploca mutica	P3	2	656422	7693696
Euploca mutica	P3	1	656362	7693699

Taxon	Status (WA)	Abundance	Easting	Northing
Euploca mutica	P3	2	656178	7693724
Euploca mutica	P3	3	656048	7693737
Euploca mutica	P3	6	655965	7693730
Euploca mutica	P3	2	655945	7693728
Euploca mutica	P3	2	655923	7693728
Euploca mutica	P3	1	655892	7693729
Euploca mutica	P3	6	656035	7693664
Euploca mutica	P3	5	656273	7693638
Euploca mutica	P3	4	656274	7693644
Euploca mutica	P3	1	656274	7693649
Euploca mutica	P3	1	656426	7693628
Euploca mutica	P3	1	656446	7693630
Euploca mutica	P3	12	656471	7693621
Euploca mutica	P3	1	656480	7693623
Euploca mutica	P3	4	656325	7693573
Euploca mutica	P3	4	656297	7693584
Euploca mutica	P3	10	655936	7693537
Euploca mutica	P3	1	655942	7693534
Euploca mutica	P3	3	655982	7693473
Euploca mutica	P3	8	655962	7693466
Euploca mutica	P3	5	655972	7693456
Euploca mutica	P3	20	655936	7693467
Euploca mutica	P3	10	655918	7693476
Euploca mutica	P3	5	655898	7693467
Euploca mutica	P3	2	655883	7693477
Euploca mutica	P3	3	655885	7693495
Euploca mutica	P3	1	655892	7693497
Euploca mutica	P3	1	655896	7693502
Euploca mutica	P3	2	664910	7688276
Gymnanthera cunninghamii	P3	3	661473	7694652
Gymnanthera cunninghamii	P3	7	661375	7694896
Gymnanthera cunninghamii	P3	1	661768	7693540
Gymnanthera cunninghamii	P3	1	661267	7695406
Gymnanthera cunninghamii	P3	1	661284	7695439
Gymnanthera cunninghamii	P3	1	661287	7695081
Gymnanthera cunninghamii	P3	1	661321	7695030
Gymnanthera cunninghamii	P3	1	661510	7694401
Gymnanthera cunninghamii	P3	1	661511	7694434

Taxon	Status (WA)	Abundance	Easting	Northing
Gymnanthera cunninghamii	P3	1	661500	7694387
Gymnanthera cunninghamii	P3	5	661491	7694312
Gymnanthera cunninghamii	P3	1	661548	7694245
Gymnanthera cunninghamii	P3	1	661596	7694247
Gymnanthera cunninghamii	P3	3	661721	7694240
Gymnanthera cunninghamii	P3	1	661731	7694262
Gymnanthera cunninghamii	P3	1	661619	7694153
Gymnanthera cunninghamii	P3	5	661637	7694133
Gymnanthera cunninghamii	P3	1	661647	7694132
Gymnanthera cunninghamii	P3	1	661706	7693943
Gymnanthera cunninghamii	P3	1	661711	7693931
Gymnanthera cunninghamii	P3	3	661703	7693927
Gymnanthera cunninghamii	P3	3	661725	7693766
Gymnanthera cunninghamii	P3	1	661788	7693589
Gymnanthera cunninghamii	P3	4	661564	7694001
Gymnanthera cunninghamii	P3	1	661554	7693985
Gymnanthera cunninghamii	P3	1	661623	7694029
Gymnanthera cunninghamii	P3	1	661526	7694209
Gymnanthera cunninghamii	P3	6	661374	7694855
Gymnanthera cunninghamii	P3	4	661471	7694649
Gymnanthera cunninghamii	P3	6	661551	7694684
Gymnanthera cunninghamii	P3	1	661506	7694359
Gymnanthera cunninghamii	P3	1	661384	7694371
Gymnanthera cunninghamii	P3	1	661560	7694279
Gymnanthera cunninghamii	P3	1	661563	7694273
Gymnanthera cunninghamii	P3	2	661564	7694306
Gymnanthera cunninghamii	P3	4	661567	7694316
Gymnanthera cunninghamii	P3	1	661579	7694258
Gymnanthera cunninghamii	P3	2	661673	7694066
Gymnanthera cunninghamii	P3	14	661706	7694033
Gymnanthera cunninghamii	P3	6	661776	7693757
Gymnanthera cunninghamii	P3	1	661787	7693731
Gymnanthera cunninghamii	P3	1	661798	7693734
Gymnanthera cunninghamii	P3	1	661791	7693647
Gymnanthera cunninghamii	P3	1	661852	7693641
Gymnanthera cunninghamii	P3	2	661696	7693940
Gymnanthera cunninghamii	P3	1	661684	7693933
Gymnanthera cunninghamii	P3	1	661652	7693891

Taxon	Status (WA)	Abundance	Easting	Northing
Gymnanthera cunninghamii	P3	1	661527	7694099
Gymnanthera cunninghamii	P3	3	661520	7694102
Gymnanthera cunninghamii	P3	2	661520	7694119
Gymnanthera cunninghamii	P3	1	661503	7694119
Polymeria sp. nov	Po	7	658858	7693908
Polymeria sp. nov	Po	3	658874	7693905
Polymeria sp. nov	Po	20	653924	7678922
Polymeria sp. nov	Po	20	650475	7694007
Polymeria sp. nov	Po	20	647280	7700043
Polymeria sp. nov	Po	2	659926	7694027
Polymeria sp. nov	Po	1	659634	7693980
Rothia indica subsp. *australis*	P3	50	637241	7723479
Rothia indica subsp. *australis*	P3	50	637221	7723525
Rothia indica subsp. *australis*	P3	30	637215	7723553
Rothia indica subsp. *australis*	P3	1	636992	7724304
Rothia indica subsp. *australis*	P3	1	635788	7726430
Rothia indica subsp. *australis*	P3	50	635759	7726470
Rothia indica subsp. *australis*	P3	100	635733	7726498
Rothia indica subsp. *australis*	P3	150	635701	7726537
Rothia indica subsp. *australis*	P3	100	635674	7726609
Rothia indica subsp. *australis*	P3	150	635659	7726643
Rothia indica subsp. *australis*	P3	20	635647	7726680
Rothia indica subsp. *australis*	P3	50	635632	7726717
Rothia indica subsp. *australis*	P3	75	635612	7726756
Rothia indica subsp. *australis*	P3	250	635602	7726796
Rothia indica subsp. *australis*	P3	100	635576	7726818
Rothia indica subsp. *australis*	P3	20	635565	7726842
Rothia indica subsp. *australis*	P3	20	635539	7726878
Rothia indica subsp. *australis*	P3	10	635520	7726929
Rothia indica subsp. *australis*	P3	10	635559	7726935
Rothia indica subsp. *australis*	P3	10	635557	7726952
Rothia indica subsp. *australis*	P3	100	636290	7726033
Rothia indica subsp. *australis*	P3	50	637139	7724278
Rothia indica subsp. *australis*	P3	15	635831	7726560
Rothia indica subsp. *australis*	P3	6	637109	7724279
Rothia indica subsp. *australis*	P3	52	637272	7723721
Rothia indica subsp. *australis*	P3	1	637310	7723572
Rothia indica subsp. *australis*	P3	10	635675	7726739

Taxon	Status (WA)	Abundance	Easting	Northing
Rothia indica* subsp. *australis	P3	50	635681	7726719
Rothia indica* subsp. *australis	P3	7	635742	7726614
Rothia indica* subsp. *australis	P3	100	635754	7726586
Rothia indica* subsp. *australis	P3	36	635778	7726565
Rothia indica* subsp. *australis	P3	22	635806	7726497
Rothia indica* subsp. *australis	P3	1	637236	7723646
Rothia indica* subsp. *australis	P3	10	635630	7726831
Rothia indica* subsp. *australis	P3	50	635635	7726822
Rothia indica* subsp. *australis	P3	35	635639	7726807
Rothia indica* subsp. *australis	P3	50	635655	7726786
Rothia indica* subsp. *australis	P3	150	635661	7726772
Rothia indica* subsp. *australis	P3	10	635667	7726755
Rothia indica* subsp. *australis	P3	1	635669	7726827
Rothia indica* subsp. *australis	P3	40	635668	7726833
Rothia indica* subsp. *australis	P3	60	635664	7726840
Rothia indica* subsp. *australis	P3	6	635658	7726847
Rothia indica* subsp. *australis	P3	40	635654	7726854
Rothia indica* subsp. *australis	P3	5	635873	7726665
Rothia indica* subsp. *australis	P3	40	636088	7726298
Rothia indica* subsp. *australis	P3	10	635634	7726843
Rothia indica* subsp. *australis	P3	50	635624	7726849
Rothia indica* subsp. *australis	P3	40	635620	7726857
Rothia indica* subsp. *australis	P3	100	635619	7726870
Rothia indica* subsp. *australis	P3	100	635608	7726886
Rothia indica* subsp. *australis	P3	50	635595	7726912
Rothia indica* subsp. *australis	P3	80	635597	7726926
Rothia indica* subsp. *australis	P3	20	635579	7726942
Rothia indica* subsp. *australis	P3	20	635582	7726961
Rothia indica* subsp. *australis	P3	100	635594	7726961
Rothia indica* subsp. *australis	P3	100	635607	7726959
Rothia indica* subsp. *australis	P3	80	635614	7726949
Rothia indica* subsp. *australis	P3	100	635622	7726935
Rothia indica* subsp. *australis	P3	100	635633	7726898
Rothia indica* subsp. *australis	P3	100	635635	7726885
Rothia indica* subsp. *australis	P3	100	635645	7726863
Rothia indica* subsp. *australis	P3	30	636149	7726271
Rothia indica* subsp. *australis	P3	50	635691	7726448
Rothia indica* subsp. *australis	P3	50	635706	7726463

Taxon	Status (WA)	Abundance	Easting	Northing
Rothia indica* subsp. *australis	P3	20	635673	7726466
Rothia indica* subsp. *australis	P3	20	635675	7726489
Rothia indica* subsp. *australis	P3	20	635669	7726503
Rothia indica* subsp. *australis	P3	20	635660	7726519
Rothia indica* subsp. *australis	P3	20	635648	7726544
Rothia indica* subsp. *australis	P3	5	635635	7726572
Rothia indica* subsp. *australis	P3	5	635623	7726602
Rothia indica* subsp. *australis	P3	100	635607	7726613
Rothia indica* subsp. *australis	P3	100	635596	7726632
Rothia indica* subsp. *australis	P3	100	635582	7726646
Rothia indica* subsp. *australis	P3	200	635569	7726662
Rothia indica* subsp. *australis	P3	100	635558	7726679
Rothia indica* subsp. *australis	P3	200	635566	7726703
Rothia indica* subsp. *australis	P3	100	635545	7726736
Rothia indica* subsp. *australis	P3	100	635519	7726766
Rothia indica* subsp. *australis	P3	20	637403	7723594
Rothia indica* subsp. *australis	P3	10	637395	7723606
Rothia indica* subsp. *australis	P3	20	637408	7723675
Rothia indica* subsp. *australis	P3	30	637282	7724126
Rothia indica* subsp. *australis	P3	5	635917	7725950
Rothia indica* subsp. *australis	P3	10	635650	7726454
Rothia indica* subsp. *australis	P3	5	635631	7726479
Rothia indica* subsp. *australis	P3	10	635570	7726590
Rothia indica* subsp. *australis	P3	10	635547	7726620
Rothia indica* subsp. *australis	P3	50	635521	7726665
Rothia indica* subsp. *australis	P3	500	635504	7726688
Rothia indica* subsp. *australis	P3	500	635495	7726724
Rothia indica* subsp. *australis	P3	50	635471	7726747
Rothia indica* subsp. *australis	P3	50	637407	7723572
Rothia indica* subsp. *australis	P3	50	637393	7723590
Rothia indica* subsp. *australis	P3	100	637381	7723612
Rothia indica* subsp. *australis	P3	10	637365	7723676
Rothia indica* subsp. *australis	P3	5	637190	7724246
Rothia indica* subsp. *australis	P3	5	637176	7724302
Rothia indica* subsp. *australis	P3	0	636051	7726472
Rothia indica* subsp. *australis	P3	200	635667	7727034
Rothia indica* subsp. *australis	P3	0	635651	7726554
Seringia exastia	T*	20	642552	7708971

Taxon	Status (WA)	Abundance	Easting	Northing
Seringia exastia	T*	200	645244	7688055
Triodia chichesterensis	P3	500	656968	7698881
Triodia chichesterensis	P3	200	656914	7698835
Triodia chichesterensis	P3	400	656903	7698799
Triodia chichesterensis	P3	800	656863	7698738
Triodia chichesterensis	P3	150	656808	7698692
Triodia chichesterensis	P3	100	656154	7698531
Triodia chichesterensis	P3	500	656110	7698599
Triodia chichesterensis	P3	400	656057	7698608
Triodia chichesterensis	P3	400	655993	7698596
Triodia chichesterensis	P3	300	655936	7698588
Triodia chichesterensis	P3	300	655939	7698533
Triodia chichesterensis	P3	300	655887	7698528
Triodia chichesterensis	P3	300	655871	7698492
Triodia chichesterensis	P3	700	655835	7698472
Triodia chichesterensis	P3	100	655982	7698622
Triodia chichesterensis	P3	300	656100	7698648
Triodia chichesterensis	P3	150	656141	7698635
Triodia chichesterensis	P3	500	656172	7698704
Triodia chichesterensis	P3	500	656211	7698709
Triodia chichesterensis	P3	700	656248	7698716
Triodia chichesterensis	P3	500	656711	7698703
Triodia chichesterensis	P3	500	656738	7698705
Triodia chichesterensis	P3	100	656800	7698788
Triodia chichesterensis	P3	800	656799	7698824
Triodia chichesterensis	P3	300	656796	7698862
Triodia chichesterensis	P3	500	656794	7698884
Triodia chichesterensis	P3	300	656802	7698907
Triodia chichesterensis	P3	50	656802	7698926
Triodia chichesterensis	P3	800	656705	7698895
Triodia chichesterensis	P3	800	656704	7698871
Triodia chichesterensis	P3	800	656701	7698840
Triodia chichesterensis	P3	800	656699	7698812
Triodia chichesterensis	P3	600	656702	7698783
Triodia chichesterensis	P3	200	656601	7698823
Triodia chichesterensis	P3	700	656604	7698850
Triodia chichesterensis	P3	150	656598	7698890
Triodia chichesterensis	P3	100	656575	7698905

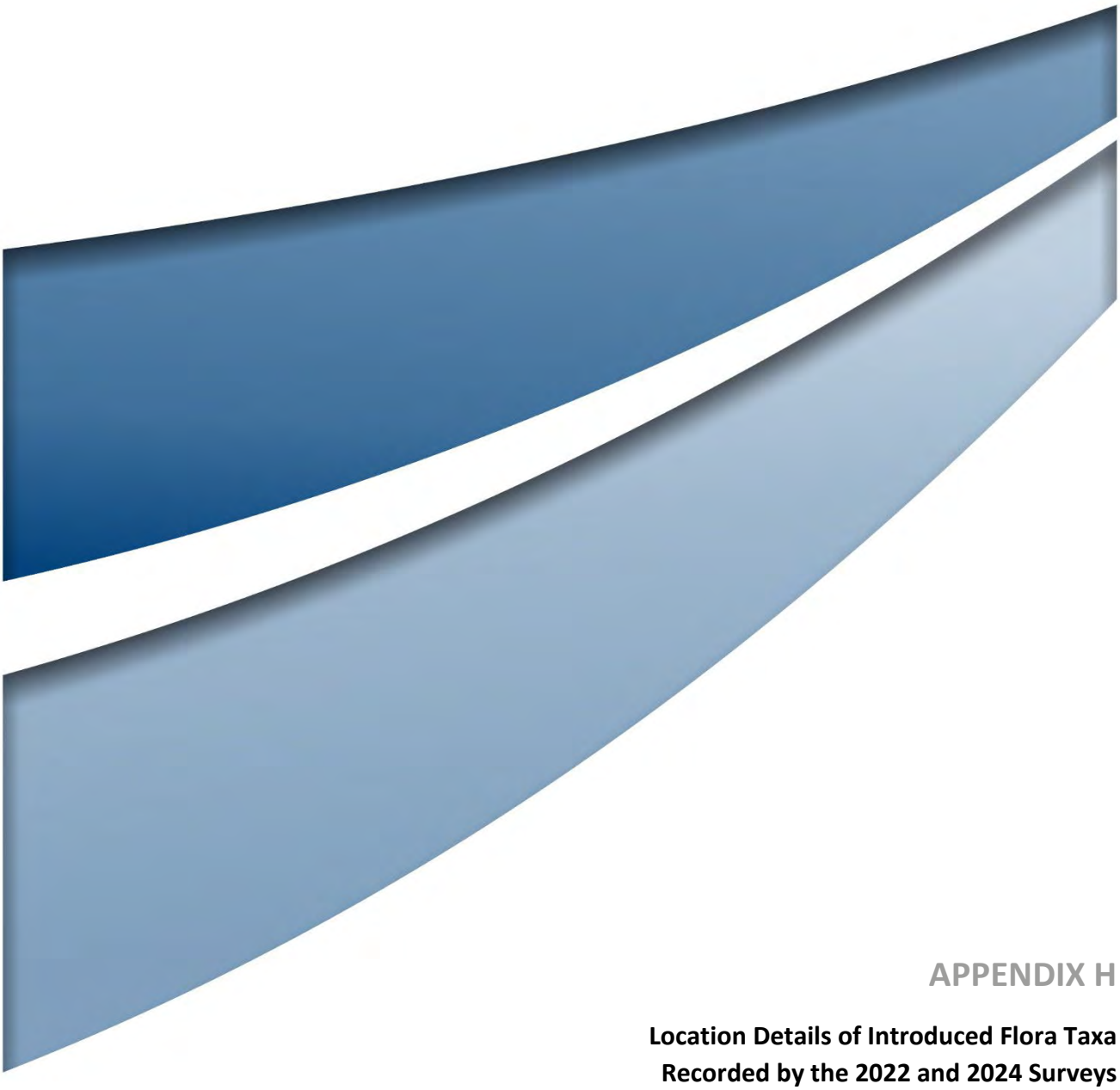
Taxon	Status (WA)	Abundance	Easting	Northing
Triodia chichesterensis	P3	250	656509	7698879
Triodia chichesterensis	P3	100	656424	7698781
Triodia chichesterensis	P3	150	656276	7698754
Triodia chichesterensis	P3	400	656234	7698752
Triodia chichesterensis	P3	400	656206	7698741
Triodia chichesterensis	P3	30	657100	7698734
Triodia chichesterensis	P3	350	657107	7698697
Triodia chichesterensis	P3	300	657109	7698662
Triodia chichesterensis	P3	350	657111	7698628
Triodia chichesterensis	P3	150	657134	7698610
Triodia chichesterensis	P3	700	657169	7698590
Triodia chichesterensis	P3	600	657207	7698580
Triodia chichesterensis	P3	500	657271	7698598
Triodia chichesterensis	P3	30	657279	7698638
Triodia chichesterensis	P3	200	657145	7698666
Triodia chichesterensis	P3	350	657137	7698700
Triodia chichesterensis	P3	500	657174	7698708
Triodia chichesterensis	P3	700	656845	7698877
Triodia chichesterensis	P3	150	656845	7698899
Triodia chichesterensis	P3	100	654858	7698318
Triodia chichesterensis	P3	350	654958	7698259
Triodia chichesterensis	P3	400	654963	7698232
Triodia chichesterensis	P3	200	654952	7698132
Triodia chichesterensis	P3	450	654950	7698110
Triodia chichesterensis	P3	250	654954	7698075
Triodia chichesterensis	P3	800	655054	7698083
Triodia chichesterensis	P3	30	655056	7698118
Triodia chichesterensis	P3	400	655047	7698165
Triodia chichesterensis	P3	200	655047	7698220
Triodia chichesterensis	P3	500	655046	7698264
Triodia chichesterensis	P3	50	655039	7698292
Triodia chichesterensis	P3	50	656742	7698671
Triodia chichesterensis	P3	500	656752	7698682
Triodia chichesterensis	P3	1000	656759	7698702
Triodia chichesterensis	P3	500	656777	7698715
Triodia chichesterensis	P3	500	656798	7698739
Triodia chichesterensis	P3	100	656816	7698759
Triodia chichesterensis	P3	1000	656825	7698779

Taxon	Status (WA)	Abundance	Easting	Northing
Triodia chichesterensis	P3	10	656836	7698810
Triodia chichesterensis	P3	1000	656858	7698822
Triodia chichesterensis	P3	50	656876	7698846
Triodia chichesterensis	P3	200	656181	7698551
Triodia chichesterensis	P3	200	656207	7698554
Triodia chichesterensis	P3	200	656437	7698560
Triodia chichesterensis	P3	1000	656473	7698545
Triodia chichesterensis	P3	200	656513	7698541
Triodia chichesterensis	P3	500	656642	7698595
Triodia chichesterensis	P3	200	656475	7698592
Triodia chichesterensis	P3	20	656319	7698635
Triodia chichesterensis	P3	200	656176	7698613
Triodia chichesterensis	P3	200	656173	7698594
Triodia chichesterensis	P3	500	656170	7698652
Triodia chichesterensis	P3	1000	656197	7698652
Triodia chichesterensis	P3	1000	656233	7698657
Triodia chichesterensis	P3	200	656280	7698655
Triodia chichesterensis	P3	500	656311	7698660
Triodia chichesterensis	P3	1000	656590	7698642
Triodia chichesterensis	P3	500	656626	7698651
Triodia chichesterensis	P3	1000	656678	7698665
Triodia chichesterensis	P3	500	656769	7698769
Triodia chichesterensis	P3	1000	656747	7698806
Triodia chichesterensis	P3	1000	656755	7698840
Triodia chichesterensis	P3	1000	656755	7698872
Triodia chichesterensis	P3	1000	656751	7698891
Triodia chichesterensis	P3	500	656748	7698921
Triodia chichesterensis	P3	500	656648	7698884
Triodia chichesterensis	P3	1000	656660	7698861
Triodia chichesterensis	P3	500	656645	7698836
Triodia chichesterensis	P3	1000	656655	7698814
Triodia chichesterensis	P3	500	656663	7698791
Triodia chichesterensis	P3	500	656663	7698771
Triodia chichesterensis	P3	1000	656554	7698831
Triodia chichesterensis	P3	100	656537	7698874
Triodia chichesterensis	P3	100	656543	7698895
Triodia chichesterensis	P3	500	656286	7698768
Triodia chichesterensis	P3	200	656212	7698778

Taxon	Status (WA)	Abundance	Easting	Northing
Triodia chichesterensis	P3	100	657065	7698730
Triodia chichesterensis	P3	100	657059	7698715
Triodia chichesterensis	P3	1000	657002	7698700
Triodia chichesterensis	P3	1000	656952	7698708
Triodia chichesterensis	P3	1000	656920	7698702
Triodia chichesterensis	P3	1000	656898	7698703
Triodia chichesterensis	P3	200	656914	7698737
Triodia chichesterensis	P3	1000	656927	7698752
Triodia chichesterensis	P3	1000	656961	7698761
Triodia chichesterensis	P3	1000	656976	7698787
Triodia chichesterensis	P3	1000	656959	7698819
Triodia chichesterensis	P3	1000	656989	7698847
Triodia chichesterensis	P3	200	657032	7698863
Triodia chichesterensis	P3	1000	657026	7698820
Triodia chichesterensis	P3	100	657022	7698806
Triodia chichesterensis	P3	1000	657002	7698755
Triodia chichesterensis	P3	1000	654906	7698313
Triodia chichesterensis	P3	500	655002	7698286
Triodia chichesterensis	P3	1000	655007	7698272
Triodia chichesterensis	P3	400	654999	7698240
Triodia chichesterensis	P3	200	655001	7698197
Triodia chichesterensis	P3	500	655008	7698150
Triodia chichesterensis	P3	1000	655105	7698092
Triodia chichesterensis	P3	100	655101	7698146
Triodia chichesterensis	P3	1000	655099	7698157
Triodia chichesterensis	P3	500	655093	7698190
Triodia chichesterensis	P3	200	655121	7698229
Triodia chichesterensis	P3	500	655110	7698252
Triodia chichesterensis	P3	500	655100	7698273
Triodia chichesterensis	P3	1000	647480	7699747
Triodia chichesterensis	P3	400	647544	7699663
Triodia chichesterensis	P3	30	647550	7699655
Triodia chichesterensis	P3	20	647555	7699644
Triodia chichesterensis	P3	10	647560	7699625
Triodia chichesterensis	P3	30	647547	7699622
Triodia chichesterensis	P3	6	646113	7699026
Triodia chichesterensis	P3	5	646121	7699006
Triodia chichesterensis	P3	250	647400	7699971

Taxon	Status (WA)	Abundance	Easting	Northing
Triodia chichesterensis	P3	450	647378	7700002
Triodia chichesterensis	P3	500	647358	7700043
Triodia chichesterensis	P3	600	647318	7700068
Triodia chichesterensis	P3	30	647324	7700103
Triodia chichesterensis	P3	300	647290	7700121
Triodia chichesterensis	P3	200	647402	7699954
Triodia chichesterensis	P3	40	645974	7699102
Triodia chichesterensis	P3	0	655051	7698207
Triodia chichesterensis	P3	0	655947	7698548
Triodia chichesterensis	P3	0	656665	7698862
Triodia chichesterensis	P3	200	647280	7700043

* *Seringia exastia* is no longer listed as Threatened under the WA BC Act, but remains listed under the Commonwealth EPBC Act.



APPENDIX H

Location Details of Introduced Flora Taxa Recorded by the 2022 and 2024 Surveys

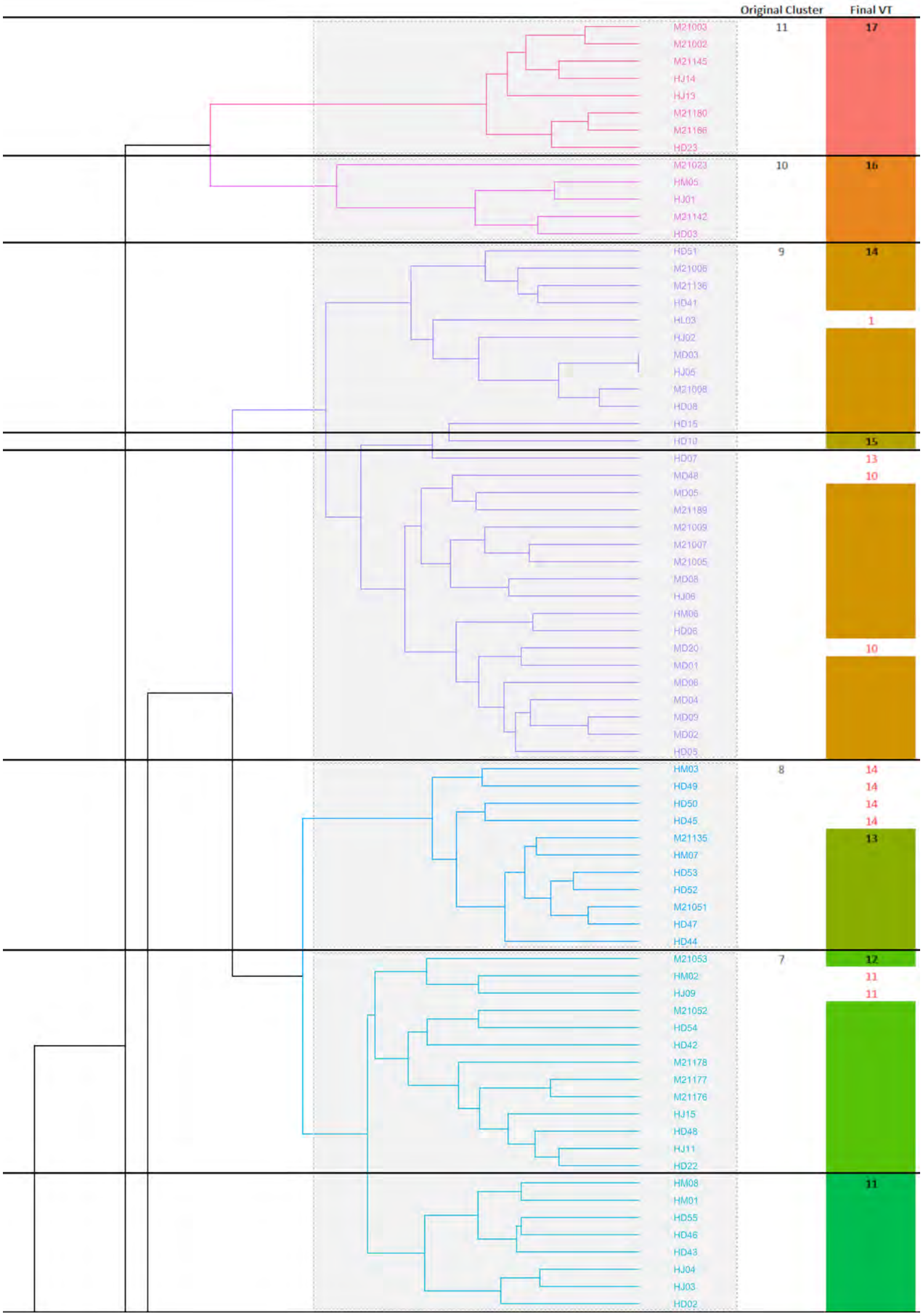
All locations are in GDA2020 Zone 50.

Taxon	Abundance	Easting	Northing
Aerva javanica		645648	7693134
Aerva javanica	1	647055	7691947
Aerva javanica	1	659718	7698465
Aerva javanica		643528	7690199
Aerva javanica		661768	7693540
Aerva javanica		643680	7693822
Aerva javanica		638980	7715624
Aerva javanica		660480	7697217
Aerva javanica		662393	7692559
Aerva javanica	6	659177	7700694
Aerva javanica		642640	7708432
Aerva javanica		639555	7715997
Calotropis procera	1	646801	7694650
Calotropis procera	5	659128	7700698
Calotropis procera	1	657723	7699999
Calotropis procera		640386	7703077
Calotropis procera	1	658567	7709228
Calotropis procera	3	661229	7694587
Calotropis procera	1	661252	7694624
Cenchrus ciliaris	30	636846	7724231
Cenchrus ciliaris		659177	7700694
Cenchrus ciliaris		639343	7717182
Cenchrus ciliaris		638980	7715624
Cenchrus ciliaris		660480	7697217
Cenchrus ciliaris		639297	7715122
Cenchrus ciliaris		638472	7714673
Cenchrus ciliaris		640919	7701952
Cenchrus ciliaris		641054	7703199
Cenchrus ciliaris		639555	7715997
Cenchrus ciliaris		639247	7716188
Cenchrus ciliaris		662393	7692559
Cenchrus ciliaris		661768	7693540
Cenchrus ciliaris		641705	7709894
Cenchrus ciliaris		641776	7710484
Cenchrus ciliaris		640386	7703077
Cenchrus ciliaris		641806	7702966
Cenchrus ciliaris		635587	7726855
Cenchrus ciliaris		636591	7725175
Cenchrus ciliaris		636964	7724490

Taxon	Abundance	Easting	Northing
Cenchrus ciliaris		638891	7718241
Cenchrus ciliaris		638117	7715815
Cenchrus ciliaris		637159	7723303
Cenchrus ciliaris		637321	7722809
Cenchrus ciliaris		637777	7721546
Cenchrus ciliaris		640979	7701673
Cenchrus setiger		639043	7717661
Cenchrus setiger		638117	7715815
Cenchrus setiger		639297	7715122
Cenchrus setiger		640386	7703077
Cenchrus setiger		636964	7724490
Cenchrus setiger		660480	7697217
Cenchrus setiger		661768	7693540
Cenchrus setiger		640919	7701952
Cenchrus setiger		636051	7726472
Cenchrus setiger		636591	7725175
Citrullus amarus	2	661850	7693338
Citrullus amarus	1	661352	7694285
Citrullus colocynthis	2	646325	7692620
Citrullus colocynthis		660480	7697217
Citrullus colocynthis		659177	7700694
Citrullus colocynthis		661768	7693540
Digitaria ciliaris		639555	7715997
Echinochloa colona		635587	7726855
Malvastrum americanum		660480	7697217
Malvastrum americanum		639555	7715997
***Opuntia* sp.**		660480	7697217
***Opuntia* sp.**	1	659875	7713923
***Opuntia* sp.**	20	659851	7713832
***Opuntia* sp.**	1	661791	7693560
Passiflora foetida* var. *hispida		661768	7693540
Passiflora foetida* var. *hispida		640919	7701952

APPENDIX I

Classification Analysis Dendrogram of Survey Area Quadrats


Original Cluster
Final VT
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M21002
M21145
HJ14
HJ13
M21180
M21166
HD23
11
17
M21023
HM05
HJ01
M21142
HD03
10
16
HD51
M21006
M21136
HD41
HL03
HJ02
MD03
HJ05
M21008
HD08
HD15
HD10
HD07
MD48
MD05
M21189
M21009
M21007
M21005
MD08
HJ06
HM06
HD06
MD20
MD01
MD08
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MD09
MD02
HD05
9
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1
15
13
10
10
HM03
HD49
HD50
HD45
M21135
HM07
HD53
HD52
M21051
HD47
HD44
8
14
14
14
13
M21053
HM02
HJ09
M21052
HD54
HD42
M21178
M21177
M21176
HJ15
HD48
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12
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HD46
HD43
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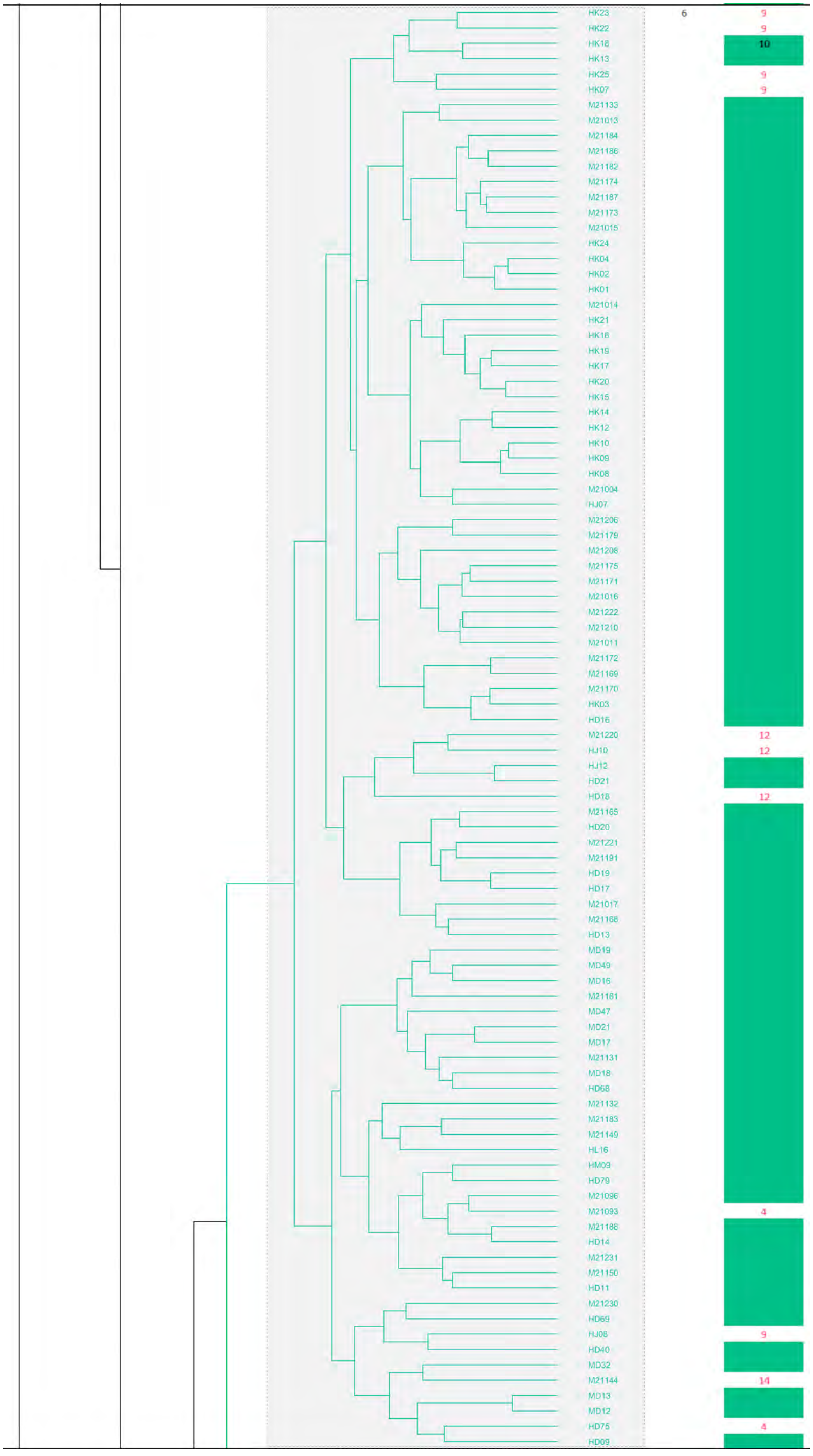
HJ03
HD02
11


HK23
HK22
HK18
HK13
HK25
HK07
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M21015
HK24
HK04
HK02
HK01
M21014
HK21
HK16
HK19
HK17
HK20
HK15
HK14
HK12
HK10
HK09
HK08
M21004
HJ07
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M21171
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M21222
M21210
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M21172
M21169
M21170
HK03
HD16
M21220
HJ10
HJ12
HD21
HD18
M21165
HD20
M21221
M21191
HD19
HD17
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M21168
HD13
MD19
MD49
MD16
M21161
MD47
MD21
MD17
M21131
MD18
HD68
M21132
M21183
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HL16
HM09
HD79
M21096
M21093
M21188
HD14
M21231
M21150
HD11
M21230
HD69
HJ08
HD40
MD32
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HD09
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9
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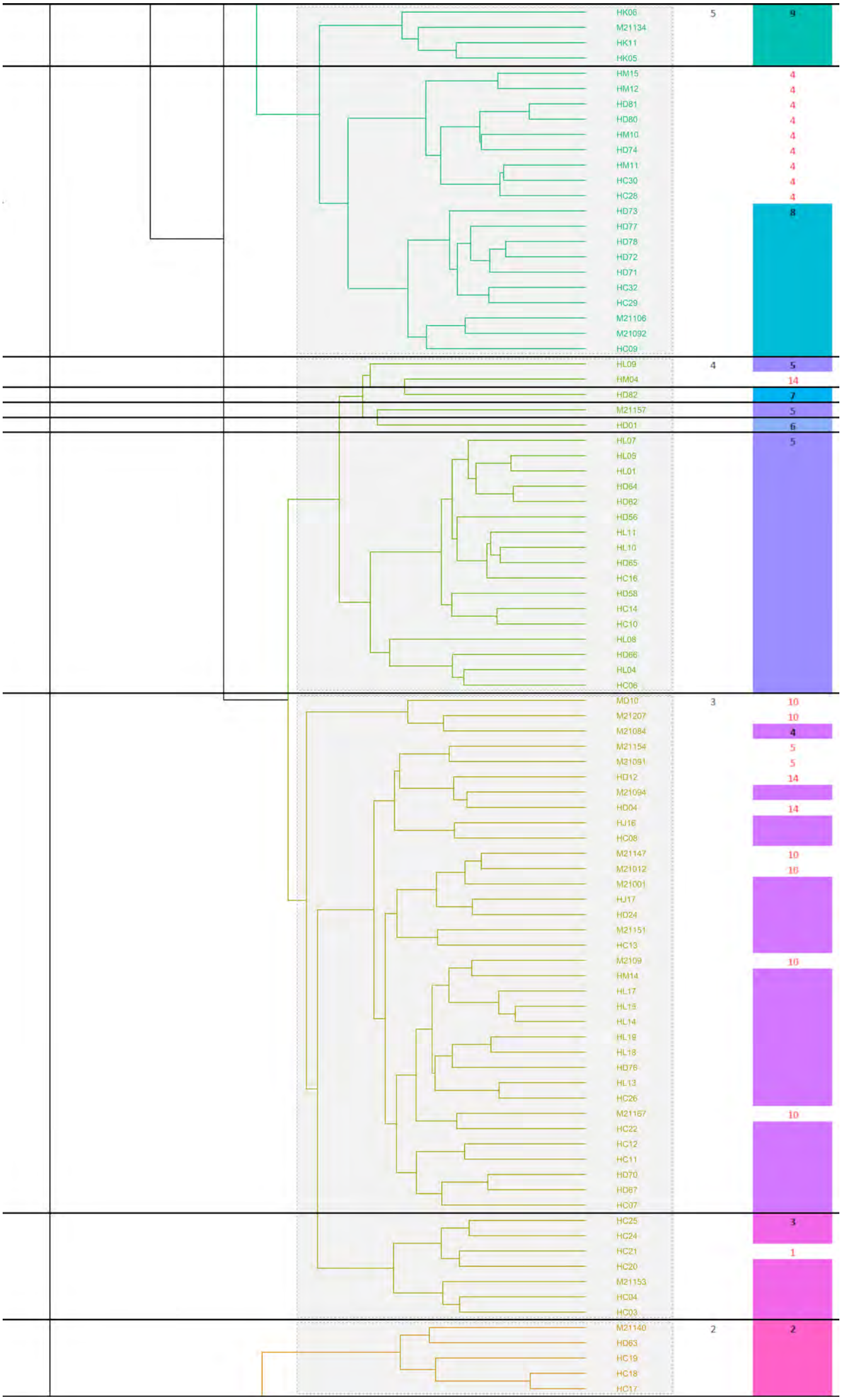
4
9
14
4


HK06
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HK11
HK05
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HM15
HM12
HD81
HD80
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HD74
HM11
HC30
HC28
HD73
HD77
HD78
HD72
HD71
HC32
HC29
M21106
M21092
HC09
8
HL09
HM04
HD82
M21157
HD01
4
5
14
7
5
6
HL07
HL05
HL01
HD64
HD62
HD56
HL11
HL10
HD65
HC16
HD58
HC14
HC10
HL08
HD66
HL04
HC06
5
MD10
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M21084
M21154
M21091
HD12
M21094
HD04
HJ16
HC08
M21147
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M21001
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HD24
M21151
HC13
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HM14
HL17
HL15
HL14
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HD70
HD67
HC07
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10
10
4
5
5
14
14
10
10
10
10
HC25
HC24
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HC03
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HC18
HC17
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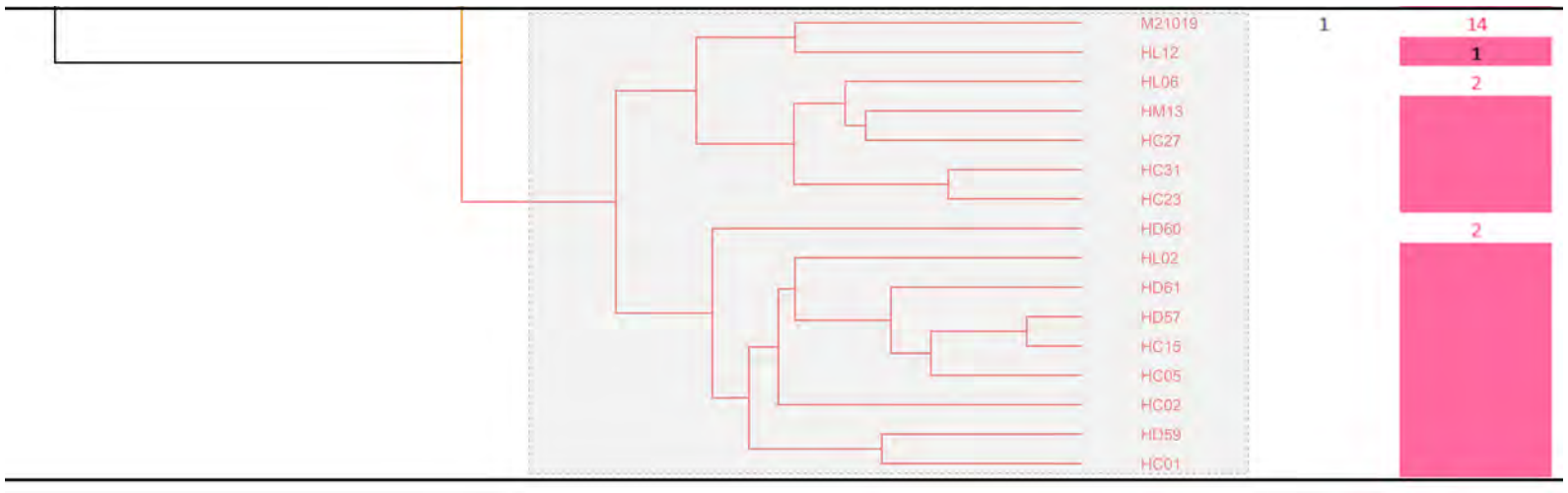
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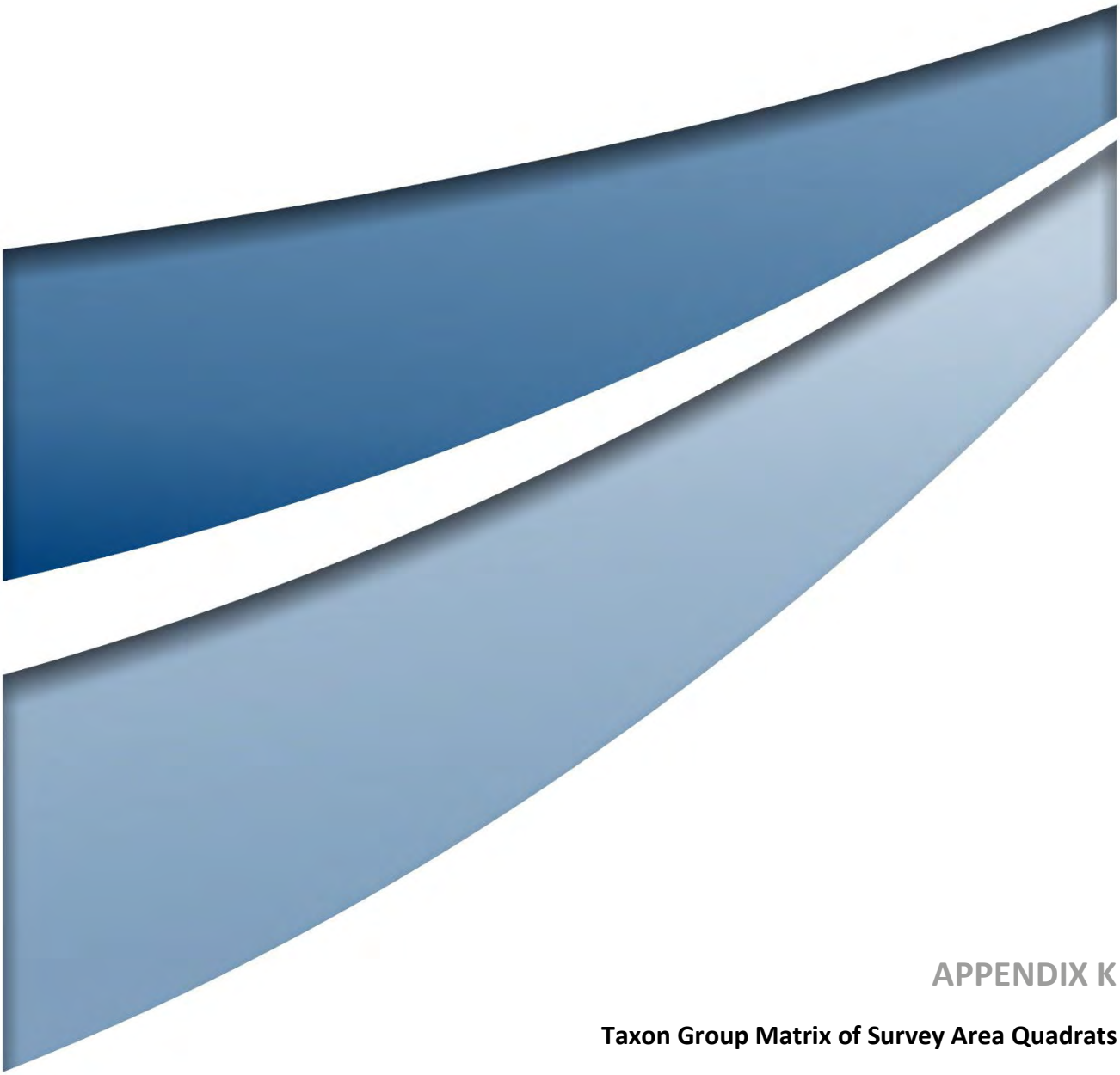
HC23
HD60
HL02
HD61
HD57
HC15
HC05
HC02
HD59
HC01
1
14
1
2
2

APPENDIX J

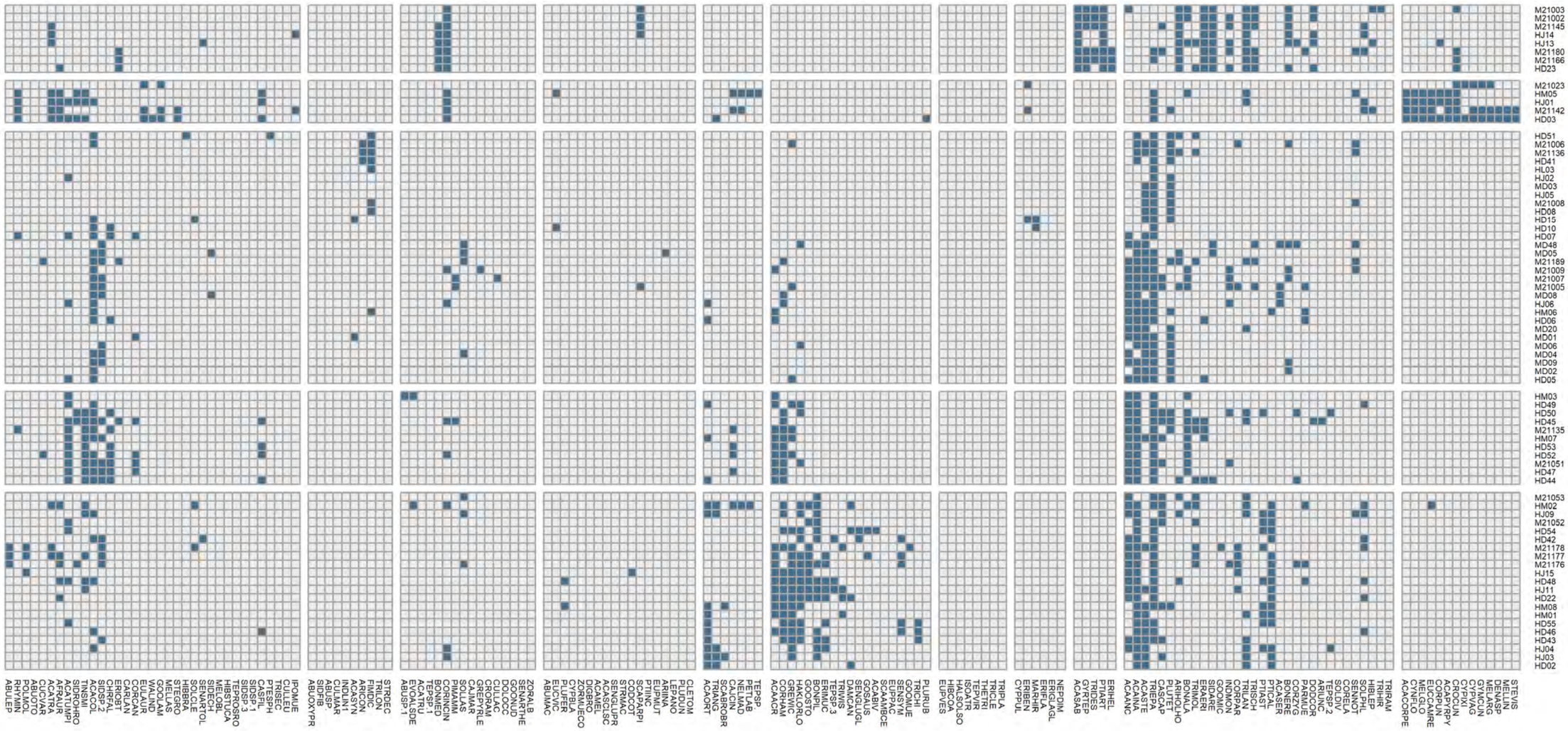
Cluster Plot of Survey Area Quadrats

Dim2 (13.8%)
Dim1 (38.1%)
10
0
-10
-40
-20
0
20
cluster
1
2
3
4
5
6
7
8
9
10
11



APPENDIX K

Taxon Group Matrix of Survey Area Quadrats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HJ14
HJ13
M21180
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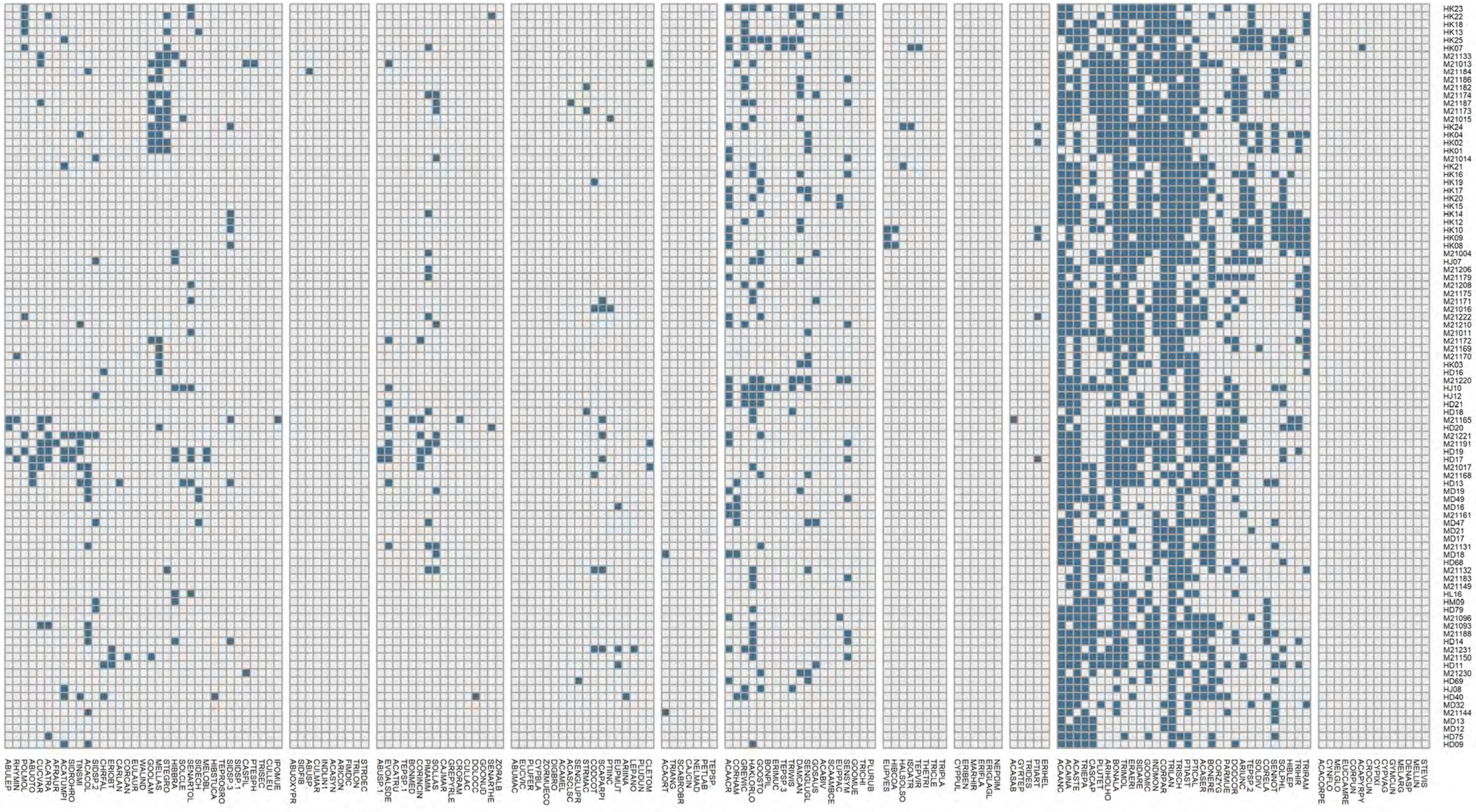
HD23
M21023
HM05
HJ01
M21142
HD03
HD51
M21006
M21136
HD41
HL03
HJ02
MD03
HJ05
M21008
HD08
HD15
HD10
HD07
MD48
MD05
M21189
M21009
M21007
M21005
MD08
HJ06
HM06
HD06
MD20
MD01
MD06
MD04
MD09
MD02
HD05
HM03
HD49
HD50
HD45
M21135
HM07
HD53
HD52
M21051
HD47
HD44
M21053
HM02
HJ09
M21052
HD54
HD42
M21178
M21177
M21176
HJ15
HD48
HJ11
HD22
HM08
HM01
HD55
HD46
HD43
HJ04
HJ03
HD02
IPOMUE
CLILLEU
PTESPH
TRISEC
CASFIL
SIDSP_1
SIDSP_3
TEPROSRO
HIBSTUCA
MELOBL
SIDECH
SENARTOL
SIDCLE
HIBBEC
STEGRO
MELLAS
GOOLAM
WALND
EULAUR
CARLAN
CHRFAL
ERICBT
SIDSP_2
ACACCL
ABUOTO
CLICVAR
ACATRA
AFRAUR
ACATUMPI
TINSMI
DIANGUIRO
RHYMIN
ABULEP
STRDEC
TRILON
FIMDIC
ARICON
ACAGSTN
INDLIN1
CULMAR
ABUSP
SIDFIB
ABUOXYPR
CLETOM
PLUDUN
LEPDUN
ARIMNA
EUPMUT
PTINC
SCAPARPI
CDCCT
SENGLUPR
ACASCLSC
ACAMEL
DIGBRO
ZORMUEGO
CYPPUL
PLUFEA
EUCVIC
ABUMAC
ZORALB
SENARTHE
CDCUNU
DOLCOC
CULLAC
CRORAM
GREPYRLE
CAJMAR
PRIAMA
SALLAS
CORINCIN
BONMED
TEPSP_1
ACATRU
EVOALSDE
ABUSP_1
TEPSP
PETLAB
NELMAD
CASUNI
SCAERROBR
TRIANG
ACAORT
PLURUB
TRICHI
GOOMUE
SENSYN
SCAAMBGE
ACABIV
GOSAUS
SENGLUGL
DAMCAN
TEPSP_3
TRIAMB
BONPIL
GOOSTO
ERIMUC
HAKLORLO
CREWIC
ACAACR
TRIPLA
TRICLE
THETRI
TEPVIR
ISOATR
HALSOLSO
EUPVES
HIBCVES
NEPDIM
BERGUAGL
ERIFLA
MARHIR
ERIBEN
CYPPUL
ERIHEL
PTIART
TRIDES
GYRTEP
ACASAB
TRIRAM
TRIHIR
HIBLEP
SOLPHL
SENNOT
CORELA
SOLDIV
TEPSP_2
ABUNC
DODCOR
PARMUE
CORZYG
BONERE
ACASER
PTIAST
TRISCH
TRILAN
CORPAR
INDMON
GOOMIC
SIDARE
ERAERI
TRIMOL
BONALA
ARIHOLHO
PLUTET
CASCAP
TRIEPA
ACASTE
ACAINA
ACAANC
STEVIS
MELIN
DIPMAC
MEMARC
GYMCUN
CYPVAG
CYPIXI
CROCUN
ACAPYRRY
CORPAU
EUCCAMRE
MELGLO
CYNFLO
ACACORPE
Present
Absent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HK24
HK04
HK02
HK01
M21014
HK21
HK16
HK19
HK17
HK20
HK15
HK14
HK12
HK10
HK09
HK08
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HJ07
M21206
M21179
M21208
M21175
M21171
M21016
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M21210
M21011
M21172
M21169
M21170
HK03
HD16
M21220
HJ10
HJ12
HD21
HD18
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HD20
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HD19
HD17
M21017
M21168
HD13
MD19
MD49
MD16
M21161
MD47
MD21
MD17
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MD18
HD68
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HL16
HM09
HD79
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HD14
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M21150
HD11
M21230
HD69
HJ08
HD40
MD32
M21144
MD13
MD12
HD75
HD09
STEVIS
MELLIN
DESMSP
MEMARB
GYMVIL
CYPIXI
CYPVAG
ACAPYRPY
CROCUN
EUCCAMRE
MELGLO
CYNFLO
ACACORPE
TRIRAM
TRIHIR
HIBLEP
SOLPHL
SENNOT
CORELA
SOLDIV
TEPSP.2
ARIUNC
DODCOR
PARMUE
CORZYG
BONERE
ACAPER
PTIASER
PTIAST
TRISCH
TRILAN
CORPAR
INDMON
GOOMUC
SIDARE
ERARERI
TRIMOL
BONALA
ARIHOLHO
PLURUB
CASCAP
TRIEPA
ACASTE
ACAINA
ACAANC
ERIHEL
PTIART
TRIDES
GYRTEP
ACASAB
NEPDIM
ERIGLAGL
ERIFLA
MARHIR
ERIBEN
CYPPUL
TRIPLA
TRICLE
THETRI
TEPVIR
ISOATR
HALSOLSO
EUPCES
PLURUB
TRICHI
GOOMUE
EUPSYK
SCAAMBCE
ACABIV
GOSAUS
SENGLUGL
DAMCAN
TRIMON
TEPSP.3
ERIMUC
BONPIL
GOOSTO
HAKLORLO
CRENUC
ACAAGR
PETLAB
NELMAD
CALLON
SCABROBR
TRIANG
ACAORT
CLETOM
PLURUB
LEPDVN
LEPDNN
ARIINA
EUPMUT
PTIINC
SCAPARPI
SODCOT
SENGLUPR
ACASCLSC
ACAMEL
DIGBRO
ZORMUECO
CYPPLA
PUPLEA
ELICVIC
ABUMAC
ZORALB
SENARTHE
GOOMUD
SIDECH
HIBSTUCA
MELOBL
SENARTOL
HIBBLE
STEGRO
MELLAS
GOOLAM
WALIND
EUCAUR
CORCAN
CARLAN
ERIOBT
CHRFAL
SIDSP.2
ACACOL
TRISEC
PTESPH
CASFIL
SIDSP.1
SIDSP.3
TEPROSRO
IPOMUE
CIULEU
ABUOXYPR
ABUSIDRHRO
ABUSP
SIDFIB
ABUSP.1
ACATUMPI
ACATRA
CUCVAR
ABUOTO
ABUCOL
RHYMIN
ABULEP
STRDEC
TRILON
FIMDIC
ARICON
ACASSTN
INDAUN1
CULMAR
ABUSP
ACACOL
TEPSP.
PETLAB
NELMAD
CALLON
SCABROBR
TRIANG
ACAORT
TEPSP.1
ACATRU
EVOALSDE
ABUSP.1
CORINCIN
BONMED
PIMAMA
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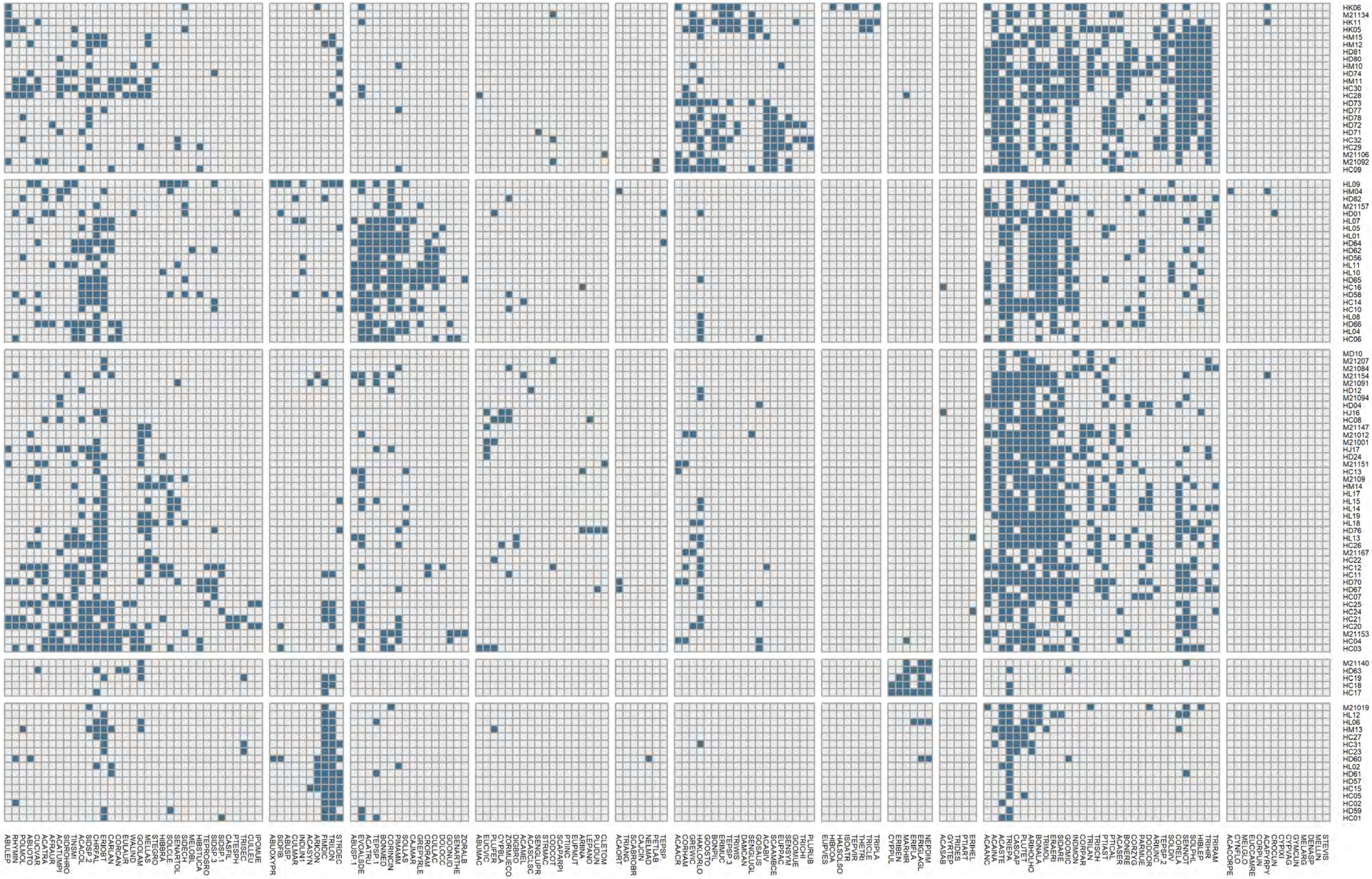
CAJMAR
CROPAM
GREPYRLE
CULLAC
DOLOCC
CROPAM
GOOMUD
SENARTHE
ZORALB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HC30
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HD72
HD71
HC32
HC29
M21106
M21092
HC09
HL09
HM04
HD82
M21157
HD01
HL07
HL05
HL01
HD64
HD62
HD56
HL11
HL10
HD65
HC16
HD58
HC14
HC10
HL08
HD66
HL04
HC06
MD10
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M21084
M21154
M21091
HD12
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HJ16
HC08
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HJ17
HD24
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HC13
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HM14
HL17
HL15
HL14
HL19
HL18
HD76
HL13
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HL02
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CULLEU
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TRISEC
CASFIL
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SIDSP.3
TEPROSRO
HIBSTUCA
MELOBL
SIDECH
SENARTOL
HIBGLE
STEGRO
MELLAS
GOOLAM
WALIND
EUCRAN
CARLAN
EULAUR
CORCAN
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ERI0BT
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CUCVAR
ACATRA
ACATUNPI
AFRAUR
RHYMIN
SIDRHOMRO
TINSIN
ABULEP
STRDEC
TRILON
FIMDIC
ACACON
ACACAYN
INDLIN
CULMAR
ABUSP.
SIDFIB
ABUOXYPR
ZORALB
SENARTHE
GOOMUD
ZORMUECO
CYPPEA
PLURUB
EUCVIC
ABUMAC
CLETOM
CLUDUN
LEPPAU
ARINA
EUPMUT
PTIINC
SCAPARPI
SODCOT
SENGLUPR
SENGLUGL
SCABARGOBR
TRIANG
ACAORT
TEPSP.
RETLAB
CALMAD
CALHIN
SCABARGOBR
ACAORT
PLURUB
TRICHI
GOOMUE
ESPSAC
SCAAMBCE
ACABIV
GOSAUS
SENGLUGL
DAMCAN
ACAACR
ABUMAC
TRIPLA
TRICLE
THETRI
TEPVIR
ISOATR
HALSOLSO
HIBTRIOLO
EUPVES
NEPPUM
ERIGLAGL
ERIFLA
ERIBEN
MARHIR
CYPPUL
ERHEL
PTIART
TRIDES
GYRTEP
ACASAB
TRIRAM
TRIHIR
HIBLEP
SOLPHL
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SOLCHW
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ARMUNC
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PARMUE
BONERE
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TRIMOL
ERAERI
SIDARE
GOMMOR
GOMMON
CORPAR
TRILAN
TRISCH
PTIAST
STEVIS
MELLIN
DIPMAG
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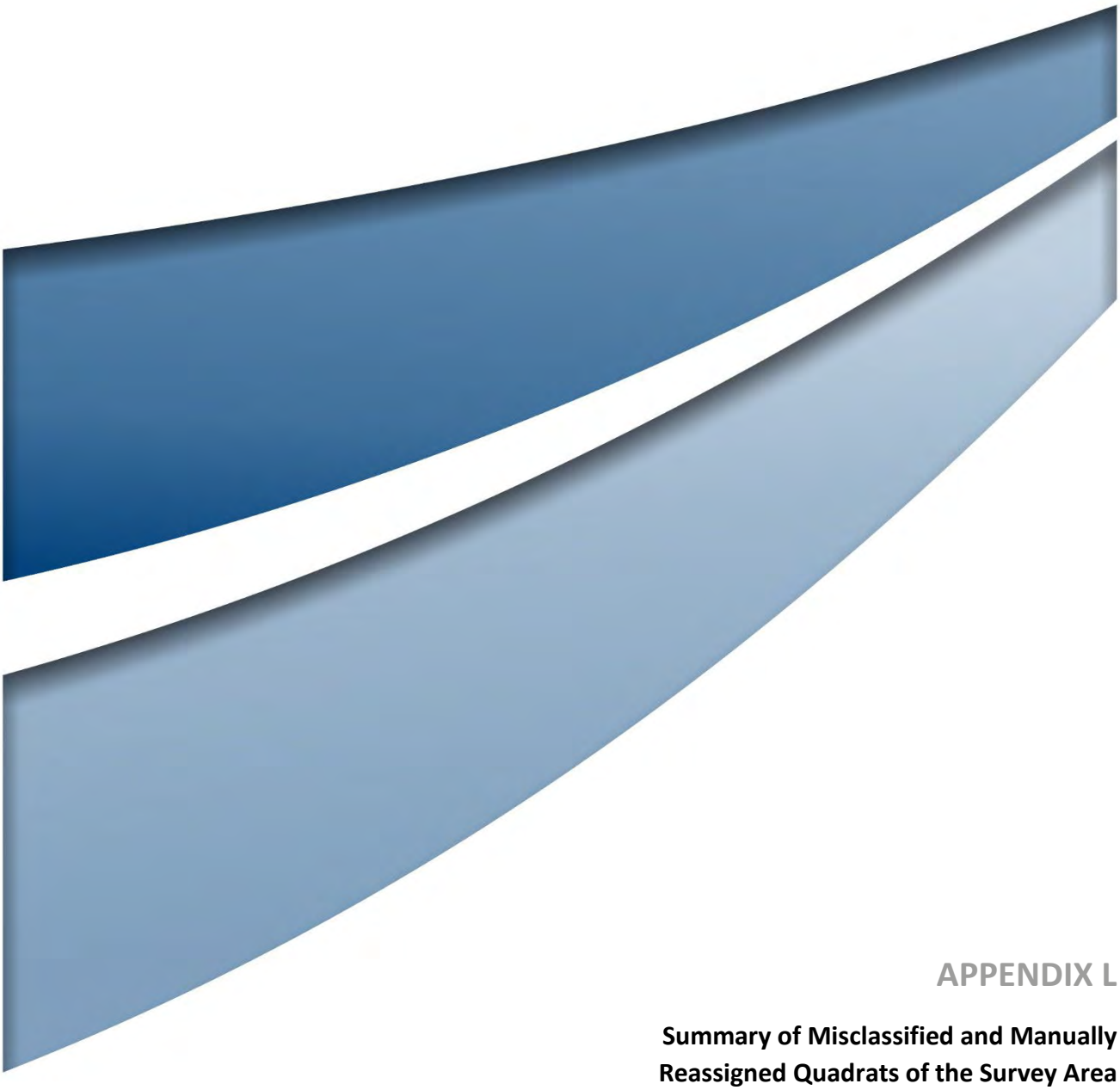


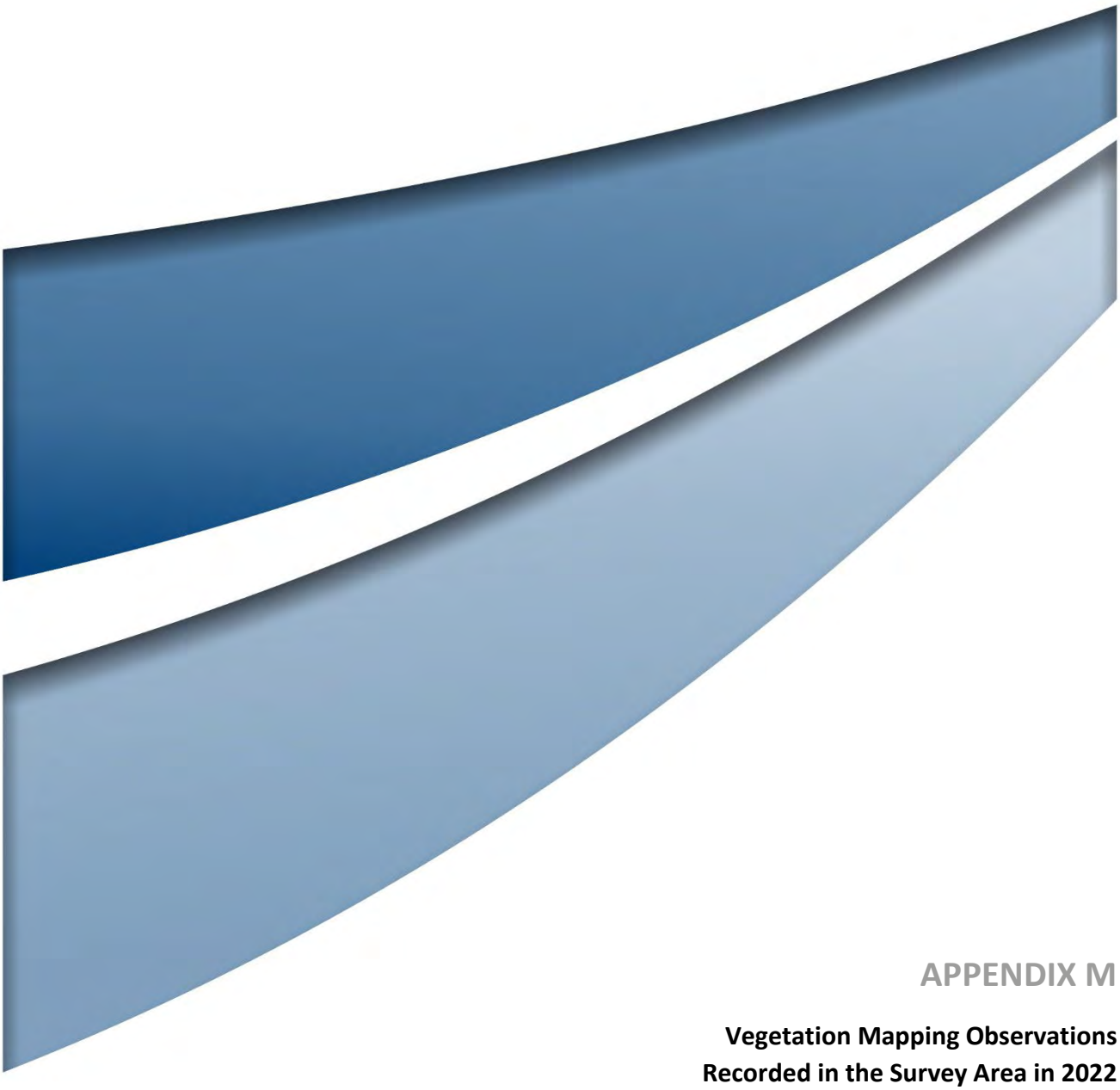
APPENDIX L

Summary of Misclassified and Manually Reassigned Quadrats of the Survey Area

Change	Quadrat	Original Cluster*	Reassigned VT	Reasoning
Creation of discrete VT	HD01	4	6	River island, habitat unique in dataset, further sampling required to resolve status
	HD10	9	15	*Eucalyptus victrix* woodland around clay pan
	HD82	4	7	Granite outcrop, habitat unique in dataset, further sampling would likely resolve this as discrete
Manual reallocation to different VT	HC21	3	1	Ecotone
	HC28	5	4	Ecotone, fire affected
	HC30	5	4	Ecotone, fire affected
	HD04	3	14	Ecotone
	HD07	9	13	Species poor
	HD12	3	14	Ecotone
	HD18	6	12	Ecotone
	HD45	8	14	Vegetation likely transitional in this area
	HD49	8	14	Site characteristics and species composition support reclassification
	HD50	8	14	Vegetation likely transitional in this area
	HD60	1	2	Ecotone
	HD74	5	4	Ecotone, fire affected
	HD75	6	4	Vegetation likely transitional in this area
	HD80	5	4	Ecotone, fire affected
	HD81	5	4	Ecotone, fire affected
	HJ08	6	9	Ecotone
	HJ09	7	11	Ecotone
	HJ10	6	12	Ecotone
	HK07	6	9	Ecotone, fire affected
	HK22	6	9	Ecotone
	HK23	6	9	Ecotone
	HK25	6	9	Ecotone, fire affected
	HL03	9	1	Very species poor
	HL06	1	2	Ecotone
	HM02	7	11	Ecotone
	HM03	8	14	Species poor, site characteristics and species composition support reclassification
	HM04	4	14	Ecotone
	HM10	5	4	Ecotone, fire affected
	HM11	5	4	Ecotone, fire affected
	HM12	5	4	Ecotone, fire affected
	HM15	5	4	Ecotone, fire affected
	M21012	3	10	Atypical location for *Triodia epactia*, otherwise similar to other quadrats in VT 10

Change	Quadrat	Original Cluster*	Reassigned VT	Reasoning
Manual reallocation to different VT	M21019	1	14	Road verge vegetation - likely influenced by disturbance. Cluster plot (**Appendix J**) supports reclassification of this site
	M2109	3	10	Ecotone
	M21091	3	5	Ecotone, erroneous ID of *Acacia inaequilatera*
	M21093	6	4	Vegetation likely transitional in this area
	M21147	3	10	Ecotone
	M21154	3	5	Ecotone, adjacent to highway (edge effects), erroneous identification of *Acacia inaequilatera*
	M21167	3	10	Ecotone
	M21207	3	10	Ecotone
	M21220	6	12	Ecotone
	MD10	3	10	Very species poor
	MD20	9	10	Very species poor
	MD21144	6	14	Vegetation likely transitional in this area
	MD48	9	10	Site characteristics and species composition support reclassification

* Original cluster as per classification analysis dendrogram (**Appendix I**).



APPENDIX M

Vegetation Mapping Observations Recorded in the Survey Area in 2022

All locations are in GDA2020 Zone 50.

Note	Date	Easting	Northing	Comment
VMN001	9/03/2022	660101	7697203	River channel: *Melaleuca argentea* over *Melaleuca linophylla* and *Cyperus vaginatus*
VMN002	9/03/2022	659344	7697179	Near quadrat HJ02. *Corymbia hamersleyana*, *Acacia ancistrocarpa*, *Acacia tumida* var. *pilbarensis* over *Acacia inaequilatera*, *Acacia acradenia*, *Acacia colei* over *Triodia epactia* on red-brown sandy clay loam
VMN003	10/03/2022	655988	7694782	*Acacia colei* (4 m) over *Acacia inaequilatera* (2.3 m) over *Acacia stellaticeps* (1.2 m) over *Triodia epactia* with some *Aristida inaequiglumis* and *Aristida holathera* var. *holathera* on red/red-brown sandy clay loam
VMN004	10/03/2022	655917	7694657	Similar to VMN003; *Acacia colei* and *Acacia ancistrocarpa* dominated
VMN005	10/03/2022	655918	7694613	*Acacia stellaticeps* over *Triodia epactia*, scattered taller Acacias
VMN006	10/03/2022	655926	7694465	*Acacia inaequilatera* and *Acacia ancistrocarpa* over *Acacia stellaticeps* over *Triodia epactia*
VMN007	10/03/2022	659568	7695400	Open variation of HJ06? *Acacia ancistrocarpa and Acacia orthocarpa* over *Acacia stellaticeps* over *Triodia epactia*; scattered lower *Acacia colei* and *Acacia inaequilatera*
VMN008	10/03/2022	659712	7695494	Still the same taxa, more *Acacia inaequilatera*, less of other Acacias; more open
VMN009	10/03/2022	659965	7695586	Open tall *Acacia tumida* var. *pilbarensis* and *Acacia ancistrocarpa* over *Acacia trachycarpa* over *Pimelea ammocharis* over *Triodia epactia* on red-brown sandy loam; some *Hakea lorea* subsp. *lorea* and *Bonamia erecta*
VMN010	11/03/2022	651452	7687486	*Acacia stellaticeps* over *Triodia lanigera* and *Pluchea tetranthera*; scattered *Acacia inaequilatera, Acacia acradenia* and *Acacia ancistrocarpa*
VMN011	11/03/2022	651347	7690300	Silicised chert (cap) ridge/outcrop, above HJ08; *Grevillea wickhamii* subsp. *aprica*, *Acacia inaequilatera* and *Acacia tumida* var. *pilbarensis* over *Triodia epactia*, *Triodia lanigera* and *Bonamia erecta*; some *Goodenia stobbsiana*, *Ptilotus astrolasius, Senna glutinosa* subsp. *glutinosa*, *Senna glutinosa* subsp. *pruinosa*, *Corchorus parviflorus* and *Ptilotus calostachyus*
VMN012	11/03/2022	646670	7686921	Recently burned (<1 year), some resprouting; *Grevillea wickhamii* subsp. *aprica* and *Acacia inaequilatera* over *Triodia schinzii*. Some *Indigofera monophylla*, *Hakea lorea* subsp. *lorea*, *Corymbia zygophylla*, B*onamia linearis, Tribulus hirsutus, Senna notabilis*, and *Trigastrotheca molluginea*. Chert (silica cap) outcropping and surface stones, also some calcareous rock outcrops/stones
VMN013	11/03/2022	646608	7686841	*Acacia ancistrocarpa* and *Acacia sericophylla* over *Triodia lanigera* on red sand

Note	Date	Easting	Northing	Comment
VMN014	12/03/2022	660065	7696487	*Triodia angusta, Triodia epactia* and *Triodia lanigera* on red-brown clay loam plain with <10 % surface stones. Scattered *Acacia orthocarpa, Acacia ancistrocarpa* and *Acacia stellaticeps*
VMN015	12/03/2022	660211	7696562	Same as HJ03
VMN016	12/03/2022	660164	7696534	Same as HJ09
VMN017	12/03/2022	660014	7696443	Not stony, red sandy clay loam plain; *Acacia colei, Acacia ancistrocarpa* over *Acacia stellaticeps* over *Triodia lanigera* and *Triodia epactia*, some *Dodonaea coriacea*
VMN018	12/03/2022	645594	7686882	Low rise with *Triodia lanigera* and *Corchorus incanus* subsp. *incanus*, *Corchorus parviflorus* and *Boerhavia coccinea* on red sandy loam; some *Acacia inaequilatera* and *Acacia acradenia*, 1x *Corymbia zygophylla, Senna artemisioides* subsp. *oligophylla,* and *Hakea lorea* subsp. *lorea*
VMN019	12/03/2022	645592	7686926	Change: dolomite with *Acacia acradenia* over *Triodia wiseana* to NE. SW is same as VMN018, dominated by *Triodia lanigera*
VMN020	13/03/2022	643036	7687013	North of HJ11. *Acacia ancistrocarpa, Acacia acradenia* and some *Acacia inaequilatera* over *Triodia epactia* on red-brown sandy clay loam
VMN021	13/03/2022	641956	7690944	Open mid shrubland of *Acacia trachycarpa* and *Acacia ancistrocarpa* over *Triodia lanigera* on red sand; *Bonamia alatisemina, Ipomoea muelleri, Arivela uncifera, Corchorus parviflorus*, and *Corchorus incanus* subsp. *incanus*
VMN022	13/03/2022	641932	7690810	Transition from VMN021 (N) to HJ14 (S); *Triumfetta ramosa* (2 m tall), *Bonamia erecta, Ptilotus arthrolasius, Sida arenicola* and *Acacia sabulosa*
VMN023	13/03/2022	641730	7690312	Change from HJ15 (E) to NW: *Acacia stellaticeps over Triodia lanigera* and *Pluchea tetranthera* on red sandy loam. To SW: *Acacia ancistrocarpa* and *Acacia acradenia* over *Corchorus parviflorus* over *Triodia lanigera* on red sand; some *Melaleuca lasiandra* and *Eucalyptus victrix*
VMN024	14/03/2022	644083	7689759	?Transition from M21001 (N) to typical sandplains - *Melaleuca lasiandra* over *Acacia stellaticeps* over *Triodia lanigera* and *Triodia epactia*, occasional *Eucalyptus victrix*
VMN025	14/03/2022	644210	7689545	Same as VMN024 but without *Triodia epactia*
VMN026	14/03/2022	643043	7690283	*Acacia stellaticeps* and *Pluchea tetranthera* (~5 % cover) over *Triodia lanigera* and *Aristida holathera* on red sandy loam. Occasional *Melaleuca lasiandra, Eucalyptus victrix*, and *Chrysopogon fallax*
VMN027	14/03/2022	642791	7690746	Same as HJ14
VMN028	14/03/2022	643134	7690126	*Eucalyptus victrix*, *Melaleuca lasiandra* and *Acacia ancistrocarpa* over *Acacia stellaticeps* over *Triodia lanigera* and *Aristida holathera*, *Corchorus tectus* and *Sida* sp. Pilbara (A.A. Mitchell PRP 1543) on red sandy loam
VMN029	14/03/2022	643636	7689896	South of HJ17, still red-brown sandy loam plain. *Acacia stellaticeps, Pluchea tetranthera* over *Triodia lanigera* and *Aristida holathera*; scattered *Eucalyptus victrix* and *Acacia ancistrocarpa* (<3 m tall)

Note	Date	Easting	Northing	Comment
VMN030	9/03/2022	653008	7696006	Small clay pan with no vegetation; does not appear to ever contain vegetation?
VMN031	9/03/2022	653083	7696075	Vegetation to S is sand plain dominated by mixed tall Acacias (*Acacia ancistrocarpa, Acacia acradenia, Acacia inaequilatera*) over *Triodia schinzii, Triodia lanigera* and *Triodia epactia*; transition zone with quadrat HD04
VMN032	10/03/2022	656661	7697358	Low lying flat area dominated by *Triodia epactia* with scattered *Acacia stellaticeps* and isolated *Acacia ancistrocarpa* and *Acacia colei*; clay loam red with gravel on surface
VMN033	10/03/2022	656521	7697316	Slightly higher than VMN032; plain with sandy loam red, no gravel. Tall shrubland of *Acacia ancistrocarpa* and *Acacia inaequilatera* over mixed low shrubland of *Acacia stellaticeps* over low hummock grassland of *Triodia epactia* and *Triodia lanigera*
VMN034	11/03/2022	651442	7696591	More recently burnt then quadrat M21149 but very similar species composition; *Acacia inaequilatera*, *Acacia ancistrocarpa* and occasional *Acacia sericophylla* over *Acacia stellaticeps* over *Triodia schinzii* with occasional *Triodia lanigera*
VMN035	12/03/2022	645522	7693215	Change to M21220 vegetation. Low stony rise; predominately *Acacia inaequilatera* over *Triodia wiseana*
VMN036	12/03/2022	645442	7693177	End of quadrat M21220 vegetation
VMN037	12/03/2022	645468	7693100	Change to quadrat M21220 vegetation
VMN038	12/03/2022	645501	7693170	End of quadrat M21220 vegetation
VMN039	13/03/2022	644723	7691218	Same as HD20 quadrat vegetation
VMN040	14/03/2022	645063	7689992	Vegetation changed from dune vegetation to sandplain vegetation. Vegetation to south is same as quadrat HD20; both *Triodia lanigera* and *Triodia schinzii*
VMN041	13/04/2022	644859	7692980	*Acacia inaequilatera* over *Triodia wiseana* on dolomite
VMN042	13/04/2022	645429	7693059	To E: *Acacia inaequilatera* over *Acacia acradenia* over *Triodia wiseana* on red shale. To W: *Acacia ancistrocarpa* over *Triodia lanigera* on red sand, some *Corymbia zygophylla*
VMN043	13/04/2022	645393	7693154	*Acacia acradenia* over *Triodia lanigera* on red sand (dune over rocks?) with occasional *Corymbia zygophylla* and *Senna artemisioides* subsp. *helmsii*
VMN044	13/04/2022	645396	7693297	*Acacia inaequilatera* and *Acacia acradenia* over *Triodia wiseana* on colluvium
VMN045	14/04/2022	644778	7692084	(?)Chert outcrop with *Triodia lanigera* and *Eriachne mucronata*
VMN046	14/04/2022	644834	7691999	Vegetation between here and VMN047: similar to dune, with *Acacia trachycarpa* (and some *Acacia ancistrocarpa*) over *Triodia lanigera*, with *Corchorus laniflorus*, *Indigofera monophylla* and *Tephrosia rosea* var. *rosea*

Note	Date	Easting	Northing	Comment
VMN047	14/04/2022	644947	7691944	Vegetation between here and VMN046: similar to dune, with *Acacia trachycarpa* (and some *Acacia ancistrocarpa*) over *Triodia lanigera*, with *Corchorus laniflorus, Indigofera monophylla* and *Tephrosia rosea* var. *rosea*
VMN048	13/04/2022	645648	7693134	*Acacia ancistrocarpa*, *Acacia acradenia, Corymbia zygophylla, Triodia lanigera, Corchorus laniflorus* and *Acacia trachycarpa* (only 1 small plant)
VMN049	13/04/2022	645455	7693350	*Triodia wiseana* on ironstone and quartz
VMN050	2/05/2022	653959	7697828	Very low stony rise with calcrete and quartz dominated by *Triodia epactia* with *Acacia inaequilatera/bivenosa*, occasional *Corymbia hamersleyana* and *Hakea lorea* subsp. *lorea.* Orange-brown sandy clay loam
VMN051	2/05/2022	654065	7697675	Typical sandplain vegetation: mixed tall Acacias (*Acacia ancistrocarpa, Acacia inaequilatera, Acacia colei, Acacia sericophylla*), predominantly over *Triodia lanigera*; scattered *Acacia stellaticeps*. Red sandy loam
VMN052	2/05/2022	655844	7697946	Same as HD041 vegetation. More clayey like parts surrounding HD041
VMN053	2/05/2022	656634	7699145	Same as HD044 vegetation
VMN054	2/05/2022	657119	7698699	Same as HD046 vegetation
VMN055	2/05/2022	655004	7698384	Low rocky hill, same as HD042
VMN056	28/04/2022	654097	7689059	Rocky patch
VMN057	1/05/2022	644647	7692905	*Acacia trachycarpa* (W) or *Acacia ancistrocarpa* (E) over *Triodia lanigera* on red sand, with *Corchorus laniflorus* and *Eragrostis eriopoda*
VMN058	1/05/2022	644463	7692901	Change from VMN057 54 (E) to *Acacia stellaticeps* over *Triodia lanigera* (W)
VMN059	1/05/2022	644168	7692906	*Melaleuca lasiandra* and *Acacia ancistrocarpa* over *Acacia stellaticeps* over *Triodia lanigera*.
VMN060	1/05/2022	645500	7693062	*Acacia inaequilatera* over *Triodia wiseana* on dolomite/colluvium (NW). *Acacia acradenia* over *Triodia lanigera* on red shale/colluvium (SE) with abundant *Goodenia stobbsiana* and occasional *Acacia inaequilatera*
VMN061	1/05/2022	645500	7693004	To S: back to *Acacia ancistrocarpa* over *Triodia lanigera* on red sand
VMN062	1/05/2022	644803	7692906	Change of vegetation to *Acacia inaequilatera* over *Triodia wiseana* on red shale rock and scattered quartz and dolerite
VMN063	1/05/2022	644747	7692956	Transition to *Acacia trachycarpa* over *Triodia lanigera* on red sand to N
VMN064	1/05/2022	644522	7692951	Transition to *Acacia ancistrocarpa* over *Triodia lanigera* on red sand to NNW
VMN065	2/05/2022	659683	7698474	South end of island; *Corymbia hamersleyana* over *Acacia inaequilatera* over *Triodia wiseana* on dolerite. *Acacia coriacea* subsp. *pendens*
VMN066	2/05/2022	659181	7698513	Pile of mulched *Melaleuca* from (?)flood
VMN067	2/05/2022	658999	7699345	Same as HM02

Note	Date	Easting	Northing	Comment
VMN068	3/05/2022	659100	7700481	River channel with *Eucalyptus camaldulensis*, *Melaleuca argentea* and *Melaleuca linophylla*
VMN069	3/05/2022	657878	7698735	*Corymbia hamersleyana* over *Acacia ancistrocarpa*, *Acacia acradenia* and *Acacia inaequilatera* over *Triodia epactia* on red-brown sandy clay loam
VMN070	2/05/2022	653959	7697828	Very low stony rise with calcrete and quartz dominated by *Triodia epactia* with *Acacia inaequilatera/bivenosa*, occasional *Corymbia hamersleyana* and *Hakea lorea* subsp. *lorea*. Orange-brown sandy clay loam
VMN071	19/07/2022	643904	7697536	Too narrow for quadrat. Vegetation predominantly on calcretic bedrock outcrop which runs NW to SE. Recently burnt, appears to have been previously tall open Acacia shrubs (small burnt ovate leaves, possibly *Acacia bivenosa*). Dominant species include: *Ptilotus axillaris*, *Corchorus elachocarpus*, *Hakea lorea* subsp. *lorea*, *Senna notabilis*, *Tribulus hirsutus*, *Petalostylis labicheoides* and *Corymbia hamersleyana*
VMN072	14/07/2022	639072	7717321	Same as HD56 for all parameters and condition. More bare ground than HD56. Still dominated by *Acacia trudgeniana* and *Triodia epactia* but with occasional other Acacias (*Acacia inaequilatera, Acacia ancistrocarpa, Acacia melleodora*). Other species include *Pimelea ammocharis, Bonamia media*, *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3), *Eriachne obtusa*, and very isolated *Corymbia zygophylla*
VMN073	15/07/2022	635557	7726952	Narrow band/island of vegetation surrounded by *Triodia longiceps/epactia* vegetation. Low open woodland of *Corymbia candida* subsp. *candida* and *Atalaya hemiglauca* with tall sparse shrubland of *Acacia colei, Acacia trudgeniana* and *Carissa lanceolata* over low shrubland mostly of *Corchorus incanus* subsp. *incanus* over mixed grassland of *Triodia epactia*, **Cenchrus ciliaris*,**Cenchrus setiger* and *Chrysopogon fallax* on red/brown clay-loam. Veg condition is good, showing signs of cattle disturbance under canopy. Unclear if discrete VT, but too small for quadrat, possibly a variant of HD58. Other species include: *Rothia indica* subsp. *australis* (P3)
VMN074	15/07/2022	635553	7726793	Primarily *Triodia longiceps* with some *Triodia epactia* VT. Other species include *Dichanthium sericeum* subsp. *humilius* and *Gomphrena affinis* subsp. *pilbarensis*
VMN075	15/07/2022	635794	7726768	Same as HD59 floristically and functionally, but with more bare ground (more open). Other species include *Streptoglossa decurrens*, *Aristida contorta*, *Iseilema dolichotrichum*, *Euphorbia vaccaria*, *Pluchea tetranthera*, *Eragrostis xerophila*, *Hibiscus sturtii* var. *campylochlamys*, *Dichanthium sericeum* subsp. *humilius*, *Trianthema triquetra*, *Sporobolus australasicus*, *Euphorbia trigonosperma*, *Polygala isingii* and *Euploca cunninghamii*
VMN076	15/07/2022	635894	7726319	Same as HD59 floristically but with fewer herbs. Soil more clay based with small surface stones. 250 m to SW: slight rise that is the same as HD58

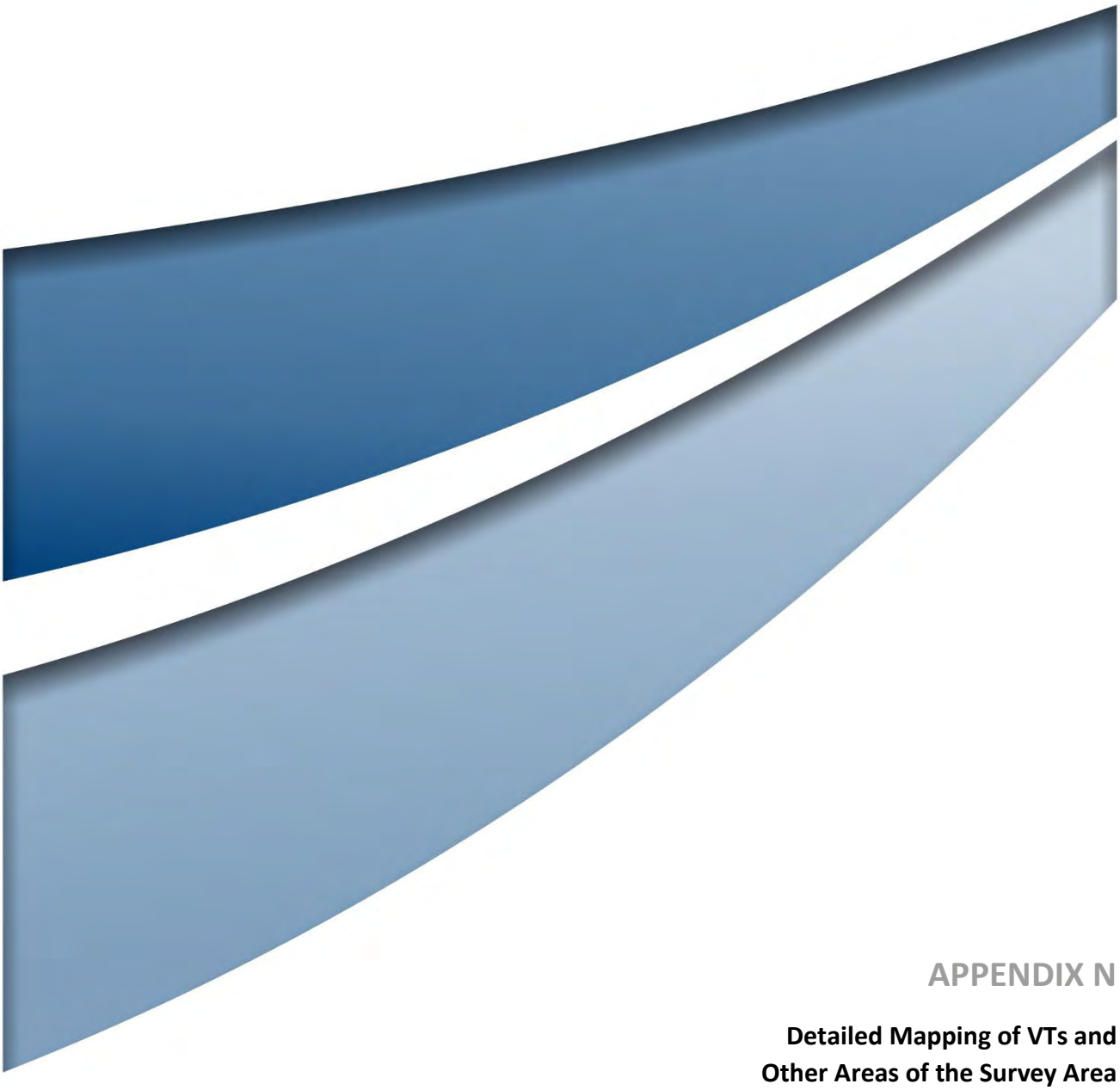
Note	Date	Easting	Northing	Comment
VMN077	16/07/2022	636296	7725602	Floristically identical to HD58, however abundance of *Acacia stellaticeps* is far higher, accounting for dark patterning on aerial imagery. Burnt less than a year ago. Other species include *Euploca diversifolia*
VMN078	16/07/2022	636829	7724394	Same as HD64 but has higher density of *Acacia trudgeniana* which may explain different appearance on aerial imagery. Also a bit more weedy (**Cenchrus ciliaris*) due to cattle activity under trees
VMN079	16/07/2022	636940	7723937	Small, dry clay pan, same as HD-R01. Species include *Eriachne glauca* var. *glauca, Eriachne benthamii* and *Eriachne flaccida*. Surrounded by *Triodia longiceps* and *Triodia epactia* VT
VMN080	16/07/2022	637114	7723902	Structural variant of HD64 in that it has a dense tall shrubland of *Acacia colei*. Other dominant taxa are shared between this vegetation and HD64
VMN081	16/07/2022	637226	7723875	*Triodia longiceps* VT
VMN082	16/07/2022	637345	7723852	Small clay pan area, same as HD-R01
VMN083	16/07/2022	637880	7720802	More or less the same as HD57. *Triodia epactia/longiceps* VT. Recently scorched, sometime between 10 March 2021 and 16 July 2022. Juvenile *Triodia epactia/longiceps*. Same assemblage of flora as HD57 but with *Ptilotus fusiformis*, *Tribulus hirsutus* and *Eucalyptus victrix* (on ecotone with swampy community).
VMN084	16/07/2022	638384	7719965	Same as HD62 floristically. Additional species include *Goodenia nuda*, *Pluchea tetranthera*, *Paspalidium rarum* and *Perotis rara*. Burnt less than a year ago
VMN085	16/07/2022	638517	7719910	Same as HD57, *Triodia longiceps* and *Triodia epactia* VT. Other species include *Eragrostis crateriformis* and *Solanum phlomoides*. Has been mostly burnt less than a year ago
VMN086	17/07/2022	638081	7721344	Same as HD62/HD64: Additional species include *Grevillea pyramidalis* subsp. *leucadendron*, *Afrohybanthus aurantiacus*, *Pluchea ferdinandi-muelleri* and several large *Owenia reticulata*. Floristically identical to HD62 and HD64. Burnt less than a year ago
VMN087	17/07/2022	638295	7719720	Same as VMN086, HD62 and HD64 but less *Triodia epactia* and more *Eragrostis eriopoda* and *Aristida holathera*. Structurally slightly different, but floristically similar/identical. Occasional *Acacia ancistrocarpa* which was not detected at previous quadrats and VMN086
VMN088	17/07/2022	638461	7718787	Narrow bands with low open woodland of *Corymbia candida* subsp. *candida* on tall open shrubland of *Acacia colei* over hummock grassland of *Triodia epactia*. Burnt less than a year ago. Landform is flat red-brown sandy loam. Fire ephemerals similar to HD62 and HD64. *Acacia trudgeniana* present but scattered. *Pimelea ammocharis, Chrysopogon fallax* and *Carissa lanceolata* reasonably common. Same as HC06. Other species present include *Solanum diversiflorum* and *Acacia ancistrocarpa*

Note	Date	Easting	Northing	Comment
VMN089	17/07/2022	638544	7718975	Same as HD57 *Triodia longiceps* VT. Very recently burnt less than a year ago and hard to detect grass species due to recency of burn. *Calandrinia* sp. and *Fimbristylis dichotoma* only readily identifiable/detectable species. *Triodia epactia/longiceps* confirmed present in unburnt patch nearby
VMN090	17/07/2022	638598	7718651	Same as VMN089 and HD57. *Triodia longiceps/epactia* VT. Burnt less than a year ago
VMN091	17/07/2022	638760	7718697	Same as VMN087 based on aerial patterning and larger component of *Aristida holathera* and *Eragrostis eriopoda* among *Acacia colei* and *Acacia trudgeniana* over *Acacia ancistrocarpa* and *Acacia pyrifolia*. Open tall shrubland over hummock/tussock grassland. Other species include *Dolichandrone occidentalis* and *Tribulus occidentalis*
VMN092	17/07/2022	639052	7717970	Same as HD57, *Triodia longiceps/epactia* VT. Very small patch with only a few *Triodia longiceps*, otherwise dominated by *Triodia epactia*. Given small patch size, vegetation is likely transitional
VMN093	18/07/2022	648386	7698275	Very small area of *Triodia epactia*, *Acacia stellaticeps*, *Pluchea tetranthera* flowline/clay pan community. Lots of *Calandrinia stagnensis* in depression. Surrounded by HD67 VT
VMN094	19/07/2022	647586	7700627	Same as M21094 but with fewer tall Acacias and *Acacia stellaticeps*. Has *Dodonaea coriacea*, which was present on track next to M21094. Floristically same as M21094 with *Triodia lanigera* and *Acacia ancistrocarpa*
VMN095	19/07/2022	645375	7703364	Floristically the same as M21151 but with fewer trees and fewer taller shrubs. *Triodia schinzii, Triodia lanigera* and *Triodia epactia* community
VMN096	19/07/2022	643420	7702192	Same/very similar to HD76, however *Melaleuca lasiandra* absent, being replaced by *Hakea lorea* subsp. *lorea* and *Acacia sericophylla*
VMN097	19/07/2022	643538	7701692	Area of *Triodia longiceps/epactia* VT mostly surrounding bare clay pan. Similar to HD57 with *Fimbristylis dichotoma* and herbs including *Calandrinia stagnensis*. Also present are *Eragrostis crateriformis*, *Cyperus iria, Cyperus squarrosus* and *Peplidium muelleri*. Too small for quadrat
VMN098	19/07/2022	643564	7701674	Related to VMN097 and VMN097: On eastern/southern side of clay pan, dense vegetation same as HD76, but more dense due to being on edge of clay pan, consisting of *Acacia trachycarpa*, *Acacia ancistrocarpa*, *Acacia colei, Acacia tumida* var. *pilbarensis, Corymbia zygophylla* and *Carissa lanceolata*. Has *Triodia epactia; Triodia schinzii* may be present, but undetectable because of fire. Ecotonal vegetation
VMN099	19/07/2022	642833	7701293	Appears to represent *Acacia stellaticeps*, *Pluchea tetranthera*, *Triodia epactia* clay/flat/drainage line VT. Very small area
VMN100	20/07/2022	644683	7701196	VT associated with clay pans. *Triodia longiceps/epactia* plain
VMN101	20/07/2022	644623	7700665	VT associated with clay pans. *Triodia longiceps/epactia* plain

Note	Date	Easting	Northing	Comment
VMN102	21/07/2022	653534	7679330	Same as HD82 but too small to complete quadrat without sampling adjacent VT. Low granite outcrop. Additional species include *Ipomoea muelleri* and *Calandrinia ptychosperma*
VMN103	14/07/2022	637662	7722208	Sandy. *Triodia epactia*, *Aristida holathera*, *Eriachne glauca* var. *glauca*
VMN104	14/07/2022	637803	7721775	Change from VMN103 to sandy clay and *Triodia longiceps*
VMN105	14/07/2022	637965	7721196	Sandy. *Acacia trudgeniana* over *Carissa lanceolata*, *Pimelea ammocharis*, *Trigastrotheca molluginea*, *Arivela viscosa* and *Solanum phlomoides* over *Eragrostis eriopoda*, *Chrysopogon fallax*, *Aristida holathera* var. *holathera* and *Aristida contorta* over *Senna notabilis* and *Tephrosia*
VMN106	14/07/2022	638099	7720787	*Acacia trudgeniana*, *Carissa lanceolata* and isolated *Corymbia candida* subsp. *candida* over *Senna notabilis*, *Arivela viscosa* and *Hibiscus leptocladus* over *Tephrosia* sp. D Kimberley Flora (R.D. Royce 1848) and *Indigofera linifolia over Aristida contorta*, *Goodenia microptera*, *Paraneurachne muelleri* and *Triodia epactia* over *Eragrostis eriopoda*, *Sida* sp. Pilbara (A.A. Mitchell PRP 1543) and *Trigastrotheca molluginea*
VMN107	14/07/2022	639222	7716994	Condition is VG (**Cenchrus ciliaris*, **Aerva javanica*)
VMN108	14/07/2022	638898	7718105	Different to S - condition is excellent. Still *Triodia epactia* but with tall isolated clumps of *Acacia ancistrocarpa/colei* (less *Acacia trudgeniana*) over *Pimelea ammocharis*, *Acacia stellaticeps* and *Corchorus incanus* subsp. *incanus* over *Eragrostis eriopoda* and *Aristida holathera* var. *holathera*
VMN109	15/07/2022	642821	7707092	Sandy loam, excellent condition (cattle). *Acacia tumida* var. *pilbarensis, Santalum lanceolatum, Hakea lorea* subsp. *lorea, Melaleuca glomerata, Acacia ancistrocarpa* over *Triodia epactia* over *Acacia stellaticeps*
VMN110	15/07/2022	643649	7707188	Similar to HC09, calcrete, but *Acacia orthocarpa* dominant
VMN111	15/07/2022	639468	7712363	VG condition (cattle affected). Same as other *Triodia longiceps* plains VT. *Triodia lanigera, Commelina ensifolia, Triodia epactia, Fimbristylis dichotoma, Calandrinia* sp. Surrounded by *Acacia stellaticeps* shrubland
VMN112	16/07/2022	640629	7710584	Excellent condition, sandy clay with claypan patches, surface stoniness <2 % up to 6 cm. *Triodia lanigera, Triodia epactia* over *Fimbristylis dichotoma* and *Calandrinia* sp. Other species include *Aristida contorta, Eriachne glauca* var. *glauca*, *Euploca cunninghamii, Crotalaria ramosissima, Commelina ensifolia, Chrysopogon fallax* and *Portulaca cyclophylla*
VMN113	16/07/2022	641525	7710739	*Corymbia zygophylla* band (understory same).
VMN114	16/07/2022	641568	7710921	Condition is excellent/VG. Old fence through VT. Same as HC13 but with isolated *Corymbia zygophylla* and less dense *Acacia acradenia/ancistrocarpa/stellaticeps* (more than 50 %) over *Triodia epactia* (~ 70 %). Species poor

Note	Date	Easting	Northing	Comment
VMN115	17/07/2022	639702	7713463	Condition is excellent (a few cattle tracks). Similar to HC15: *Triodia epactia, Triodia lanigera* and *Triodia longiceps* over *Dactyloctenium radulans, Aristida contorta, Fimbristylis dichotoma, Calandrinia* sp. and *Cajanus marmoratus*. Outside are isolated clumps of *Corymbia candida* subsp. *candida*, *Acacia robeorum* and *Acacia trudgeniana*
VMN116	19/07/2022	640386	7703200	Condition is excellent, soil sandy clay loam. Like HC02/05/23: *Xerochloa barbata, Triodia longiceps, Triodia secunda, Portulaca cyclophylla, Commelina ensifolia, Cyperus squarrosus, Polycarpaea corymbosa, Wahlenbergia tumidifructa, Bulbostylis barbata, Fimbristylis dichotoma, Calandrinia stagnensis, Euphorbia tannensis* subsp. *eremophila* and nearby clumps of *Acacia* shrubs
VMN117	19/07/2022	640812	7703087	Excellent condition, clay sand, undulating plain. Same as HC23: *Triodia longiceps/secunda/epactia* over *Eriachne mucronata* and *Fimbristylis dichotoma* over *Calandrinia stagnensis*
VMN118	19/07/2022	640812	7703087	This plant community is an undulating plain/mosaic where the higher areas are sandy: *Triodia epactia* and *Eriachne mucronata*. Lower areas have more clay, and *Triodia longiceps* and *Triodia secunda* grows everywhere in between. *Triodia secunda* is in smaller clumps joined by stolons, with wide spaces between which gives it the orange appearance on aerial imagery. Grainy areas are *Triodia longiceps* and pale areas are *Triodia epactia*. Sandy areas have small annuals like *Cyperus/Wahlenbergia* etc. Clay areas have *Portulaca cyclophylla*
VMN119	20/07/2022	644002	7700025	Excellent condition, partially burnt, sandy clay loam (sandy higher and clay lower). Same as HC27, undulating plain/mosaic. Low area is *Triodia longiceps* and *Triodia epactia* open hummock grassland. Surrounded *by Acacia stellaticeps* shrubland, *Acacia inaequilatera* and *Triodia epactia*
VMN120	20/07/2022	642331	7700470	Calcrete and alluvium. Like HC29 calcrete: *Hakea lorea* subsp. *lorea*, *Grevillea wickhamii* subsp. *aprica*, *Petalostylis labicheoides, Acacia bivenosa, Corymbia hamersleyana, Ptilotus astrolasius* and *Ptilotus calostachyus*
VMN121	20/07/2022	645981	7698900	Sandy loam, very burnt. Same as HC30: *Corymbia hamersleyana, Acacia tumida* var. *pilbarensis, Acacia inaequilatera, Melaleuca glomerata* and *Hakea lorea* subsp. *lorea* over *Senna notabilis, Corchorus elachocarpus*, *Tephrosia* sp. Bungaroo Creek (M.E. Trudgen 11601), *Hibiscus leptocladus, Arivela uncifera, Tribulus hirsutus, Goodenia microptera, Triodia epactia* and *Triodia lanigera, Dysphania rhadinostachya* subsp. r*hadinostachya, Calandrinia stagnensis, Aristida holathera* var. *holathera*
VMN122	16/07/2022	637139	7724278	Same as HD61 floristically. *Triodia longiceps/epactia* VT. Has *Rothia indica* subsp. *australis* (P3) x 50, *Tribulus hirsutus*, *Indigofera linnaei*

Note	Date	Easting	Northing	Comment
VMN123	16/07/2022	637213	7724344	Same as HD-R01 floristically, particularly owing to shared *Eriachne glauca* var. *glauca* and *Eriachne benthamii*. Shares a herb rich ground layer with similar composition of *Cyperus* sp. and other forbs with HD-R01. Additional fringing upper species include *Acacia synchronicia*. Other species include *Eriachne flaccida*, *Panicum laevinode, Pluchea rubriflora*, *Corchorus tridens* and *Sida fibulifera*
VMN124	16/07/2022	636983	7723942	Same as HD63 but without *Corymbia candida* subsp. *candida*
VMN125	22/07/2022	647571	7700137	Isolated patches of quartz and gravel. Pretty bare with scattered *Triodia epactia* and *Triodia chichesterensis* (P3)
VMN126	22/07/2022	647649	7700097	*Acacia inaequilatera*, *Grevillea wickhamii* subsp. *aprica* and *Corymbia hamersleyana* over *Triodia wiseana* on calcrete. Burnt
VMN127	22/07/2022	650071	7696291	Old drill pad. Drill hole open
VMN128	23/07/2022	649213	7693682	Multiple holes on track
VMN129	23/07/2022	648828	7694346	Multiple holes on track
VMN130	25/07/2022	647194	7698192	Recently burnt with *Acacia inaequilatera* and *Hakea lorea* subsp. *lorea* over *Acacia stellaticeps* over *Triodia lanigera* and *Triodia epactia, Hibiscus leptocladus* as well as *Goodenia microptera, Senna notabilis, Sida arenicola, Dysphania rhadinostachya* subsp. *rhadinostachya, Polycarpaea corymbosa, Bulbostylis barbata* and *Eriachne pulchella* subsp. *dominii*
VMN131	25/07/2022	646355	7697593	*Corymbia hamersleyana, Grevillea wickhamii* subsp. *aprica, Acacia ancistrocarpa, Acacia stellaticeps, Triodia lanigera, Dodonaea coriacea, Indigofera monophylla, Sida arenicola*, on red brown sandy clay loam. Unburnt
VMN132	25/07/2022	644941	7698635	Low clay depression with *Eragrostis cumingii, Calandrinia stagnensis, Cyperus iria, Cyperus squarrosus, Sida* sp. Pilbara (A.A. Mitchell PRP 1543), A*cacia inaequilatera, Carissa lanceolata, Calandrinia pumila, Cyperus leptocarpus, Wahlenbergia tumidifructa, Triodia epactia* and *Triodia lanigera*
VMN133	25/07/2022	644745	7698590	Recently burnt, <2 years ago. *Acacia stellaticeps, Acacia inaequilatera, Senna notabilis, Triodia epactia, Sida* sp. Pilbara (A.A. Mitchell PRP 1543), *Corchorus elachocarpus, Eriachne obtusa, Tephrosia* sp. Bungaroo Creek (M.E. Trudgen 11601), *Goodenia microptera, Ptilotus axillaris*
VMN134	26/07/2022	643940	7698512	Depression next to quadrat HM15 with *Triodia angusta, Acacia stellaticeps* and *Calandrinia stagnensis*



APPENDIX N

Detailed Mapping of VTs and Other Areas of the Survey Area