

Appendix C

Approved Environment Plan



Our ref: E0055/201303, WARREGO, EARS 47952
Enquiries: Stan Bowes - Ph (08) 9222 3765 Fax (08) 9222 3860
Email: stan.bowes@dmp.wa.gov.au

Duncan Macniven
Warrego Energy Pty Ltd
C/O Coffey
Suite 2, 53 Burswood Rd
Burswood, WA, 6100, Australia

Dear Duncan

Exploration Permit EP 469
WEST ERREGULLA SEISMIC SURVEY ENVIRONMENT PLAN
(Version 8, Document Number: ENAUPERT02034AD_2_v8)

The Department of Mines and Petroleum (DMP) acknowledges receipt of the above document on 6 May 2014.

The document has been determined to meet the requirements for an Environment Plan under regulation 11(1) of the *Petroleum and Geothermal Energy Resources (Environment) Regulations 2012* (the Regulations) and has been approved.

Under regulation 11(7) of the Regulations, it is a requirement to submit a summary of the aforementioned Environment Plan to this Department for public disclosure **within 10 days** of receiving this notification.

DMP requires Warrego Energy to confirm the start date of the activity (pre-start notification) prior to the commencement of the activity. DMP also requires notification of the activity completion date (cessation notification) within one week of operations ceasing. The pre-start and cessation notifications are to be forwarded to petroleum.environment@dmp.wa.gov.au.

Please note that this approval does not remove the need for necessary approvals from other agencies.

If you have any questions or comments regarding the above, please contact Stan Bowes on 9222 3765.

Yours sincerely

Steve Tantala
DIRECTOR OPERATIONS
ENVIRONMENT DIVISION

7th May 2014



West Erregulla Seismic Survey

Warrego Energy

Environment Plan



Warrego Energy
Environment Plan
West Erregulla 3D Seismic Survey
May 2014

ENAUPERT02034AD_2_v8

Disclaimer

This document is published in accordance with and subject to an agreement between Coffey and the client for whom it has been prepared, Warrego Energy ('Client'), and is restricted to those issues that have been raised by the client in its engagement of Coffey and prepared using the standard of skill and care ordinarily exercised by environmental scientists in the preparation of such documents.

Any person or organisation that relies on or uses the document for purposes or reasons other than those agreed by Coffey and the Client without first obtaining the prior written consent of Coffey, does so entirely at their own risk and Coffey denies all liability in tort, contract or otherwise for any loss, damage or injury of any kind whatsoever (whether in negligence or otherwise) that may be suffered as a consequence of relying on this document for any purpose other than that agreed with the Client.

© Coffey Environments Australia Pty Ltd ABN 65140765902. 6 May 2014

Suite 2, 53 Burswood Road Burswood WA 6100 Australia

PO Box 4223 Victoria Park WA 6979 Australia

t +61 8 9269 6200 f +61 8 9269 6299 coffey.com

Library Report No.: EP2013/208

Report Reference No.: ENAUPERT02034AD_2_v8

Project Director	Denise True		
Project Manager	David Morley / Natassja Raymond		
Record of Distribution			
Recipient	No. of copies	Formats	
Warrego Energy	1	PDF	
Department of Mines and Petroleum	1	PDF	
Coffey	1	PDF	
Version History			
Report version	Version description	Date	Authorised by
v1	Draft to client	11/12/2013	Martine Scheltema
v2	Revised draft to client	16/12/2013	Martine Scheltema
v3	Final for submission to DMP	18/12/2013	Martine Scheltema
v4	Amended with changes highlighted	24/01/2014	Martine Scheltema
v5	Final approved by DMP	05/02/2014	Martine Scheltema
v6	Amended with changes highlighted	17/04/2014	David Morley
v7	Amended with highlights removed	05/05/2014	Natassja Raymond
v8	Final approved by DMP	06/05/2014	Natassja Raymond

Contents

1	Introduction	1
1.1	Project outline	1
1.2	Objectives	1
1.3	Parties	1
1.3.1	Proponent	1
1.3.2	Contractors	3
1.3.3	Environmental consultant	3
1.4	Health, safety, environment and quality policy	3
1.5	Document structure	3
1.6	Definitions	3
2	Legislative context	5
2.1	Commonwealth legislation	5
2.1.1	Environment Protection and Biodiversity Conservation Act	5
2.1.2	Native Title Act	6
2.1.3	National Greenhouse and Energy Reporting Act	6
2.2	State legislation	6
2.2.1	Petroleum and Geothermal Energy Resources Act	6
2.2.2	Schedule of Onshore Petroleum Exploration and Production Requirements	7
2.2.3	Environmental Protection Act	7
2.2.4	Wildlife Conservation Act	8
2.2.5	Biosecurity and Agriculture Management Act	8
2.2.6	Rights in Water and Irrigation Act	8
2.2.7	Aboriginal Heritage Act	8
2.3	Guidelines and codes of practice	9
2.4	International agreements and conventions	9
2.5	Key environmental approvals	9
3	Project description	11
3.1	Location and tenure	11
3.2	Duration and timing	11
3.3	Project activities	13
3.3.1	Site preparation	13
3.3.2	Operations	16
3.3.3	Demobilisation and rehabilitation	17
3.3.4	Rehabilitation monitoring	17
3.4	Project infrastructure and services	18
3.4.1	Accommodation camp	18
3.4.2	Site office	18
3.4.3	Access tracks	19
3.4.4	Utilities and services	19

3.5	Summary of project activities	21
4	Existing environment	23
4.1	Physical environment	23
4.1.1	Climate	23
4.1.2	Geology, soils and landforms.....	23
4.1.3	Surface water	24
4.1.4	Groundwater.....	24
4.1.5	Air quality and noise.....	28
4.2	Biological environment	28
4.2.1	Bioregional context.....	28
4.2.2	Flora and vegetation	28
4.2.3	Terrestrial vertebrate fauna and associated habitat.....	45
4.3	Heritage and conservation	52
4.3.1	Indigenous heritage.....	52
4.3.2	Non-indigenous heritage	52
4.3.3	Conservation areas and environmentally sensitive features	52
4.4	Socio-economic environment	54
5	Environmental risk assessment.....	55
5.1	Risk assessment method	55
5.2	Assessment of environmental risks.....	57
6	Performance objectives, performance standards and measurement criteria.....	61
7	Implementation strategy	69
7.1	Systems, practices and procedures	69
7.2	Roles and responsibilities.....	71
7.2.1	Warrego Energy Board	71
7.2.2	Warrego Energy Executive	71
7.2.3	Warrego Energy Asset & HSE Manager.....	72
7.2.4	Seismic Project Manager	72
7.2.5	Seismic Contractor Manager.....	72
7.2.6	Seismic Crew	73
7.2.7	Line Preparation Contractor	73
7.2.8	Stakeholder Liaison.....	73
7.3	Training and competencies	74
7.4	Monitoring, auditing, management of non-conformance and review	74
7.5	Oil spill response plan	75
7.5.1	Spill scenarios	75
7.5.2	Response preparations	75
7.5.3	Response procedure.....	76
7.5.4	Testing of procedures	76
7.6	Record keeping	76
7.7	Reporting and notification arrangements	77
7.7.1	Auditing and reporting on routine operations	77
7.7.2	Incident reporting	78

7.7.3	Emissions and discharges reporting	80
7.7.4	Summary of required environmental reporting.....	80
8	Stakeholder consultation	83
9	References.....	87
10	Glossary.....	89
10.1	Acronyms and abbreviations	89
10.2	Symbols and units of measure	90

Figures

1.1	Project location and regional setting	2
3.1	Tenure and cadastre over the project area.....	12
3.2	Conceptual disturbance footprint of the project	14
4.1	Regional hydrology	27
4.2	Vegetation types and conservation significant flora.....	36
4.3	Locations of weed species in the project area.....	42
4.4	Fauna habitat types present within the project area	48
4.5	Indigenous heritage sites	53
7.1	Project organisational structure	71

Tables

2.1	Key environmental approvals	10
3.1	Indicative project timings	11
3.2	Summary of project activities.....	21
4.1	Vegetation types in the survey area	30
4.2	Descriptions of local conservation significance of vegetation types.....	38
4.3	Conservation significant flora known from within the survey area.....	39
4.4	Threatened flora within the project area	44
4.5	Fauna habitat quality criteria.....	46
4.6	Fauna habitat types in the survey area.....	46
4.7	Vertebrate fauna of conservation significance with potential to occur in the project area.....	50
5.1	Impact consequence descriptors	56
5.2	Impact likelihood descriptors	57
5.3	Risk matrix	57
5.4	Risk levels and ratings	57
5.5	Summary of aspects, sources of risk and impacts	58
6.1	Environmental performance objectives, performance standards and measurement criteria	62
7.1	List of systems, practices and procedures for the project	69
7.2	Potential oil spill scenarios.....	75
7.3	List of reportable incidents.....	78
7.4	Summary of reporting requirements	81

Plates

3.1	Example of a Vibroseis truck	15
3.2	Example of a true cable free node	15
4.1	Example of undulating sandplain within the project area	26
4.2	Example of isolated lateritic outcrop within the project area.....	26

Appendices

- A Warrego Energy health, safety, environment and quality policy
- B Flora and vegetation assessment
- C Fauna assessment
- D Environmental risk assessment
- E KD.1 landholder consultation register
- F Warrego Energy stakeholder consultation register

1 Introduction

1.1 Project outline

Warrego Energy Pty Ltd (Warrego Energy) plans to conduct a three-dimensional (3D) seismic survey (this project) within exploration permit EP 469, approximately 50 km southeast of Dongara and 300 km north of Perth (Figure 1.1).

The West Erregulla Field – targeted by this project – was discovered in 1990 following the drilling of the West Erregulla-1 well by Barrack Energy Limited. The field has been independently assessed to contain significant volumes of gas, which Warrego Energy intends to recover through innovative drilling and production techniques. This project aims to further delineate subsurface hydrocarbon deposits and add to existing knowledge about hydrocarbon reserves in this area of the North Perth Basin to support future drilling and production activities.

The proximity of this field to existing market exportation infrastructure (i.e. the Dampier-Bunbury and Parmelia pipelines) provides an economical advantage should this field be developed.

1.2 Objectives

This environmental plan (EP) is required under the *Petroleum and Geothermal Energy Resources Act 1967* and the *Petroleum and Geothermal Energy Resources (Environment) Regulations 2012* (PGER(E) Regulations). It has been prepared according to the Guidelines for the Preparation and Submission of an Environment Plan published by the Department of Mines and Petroleum (DMP, 2012). This EP is also intended to provide Warrego Energy with a practical environmental performance management tool for the project.

The objectives of this EP are to:

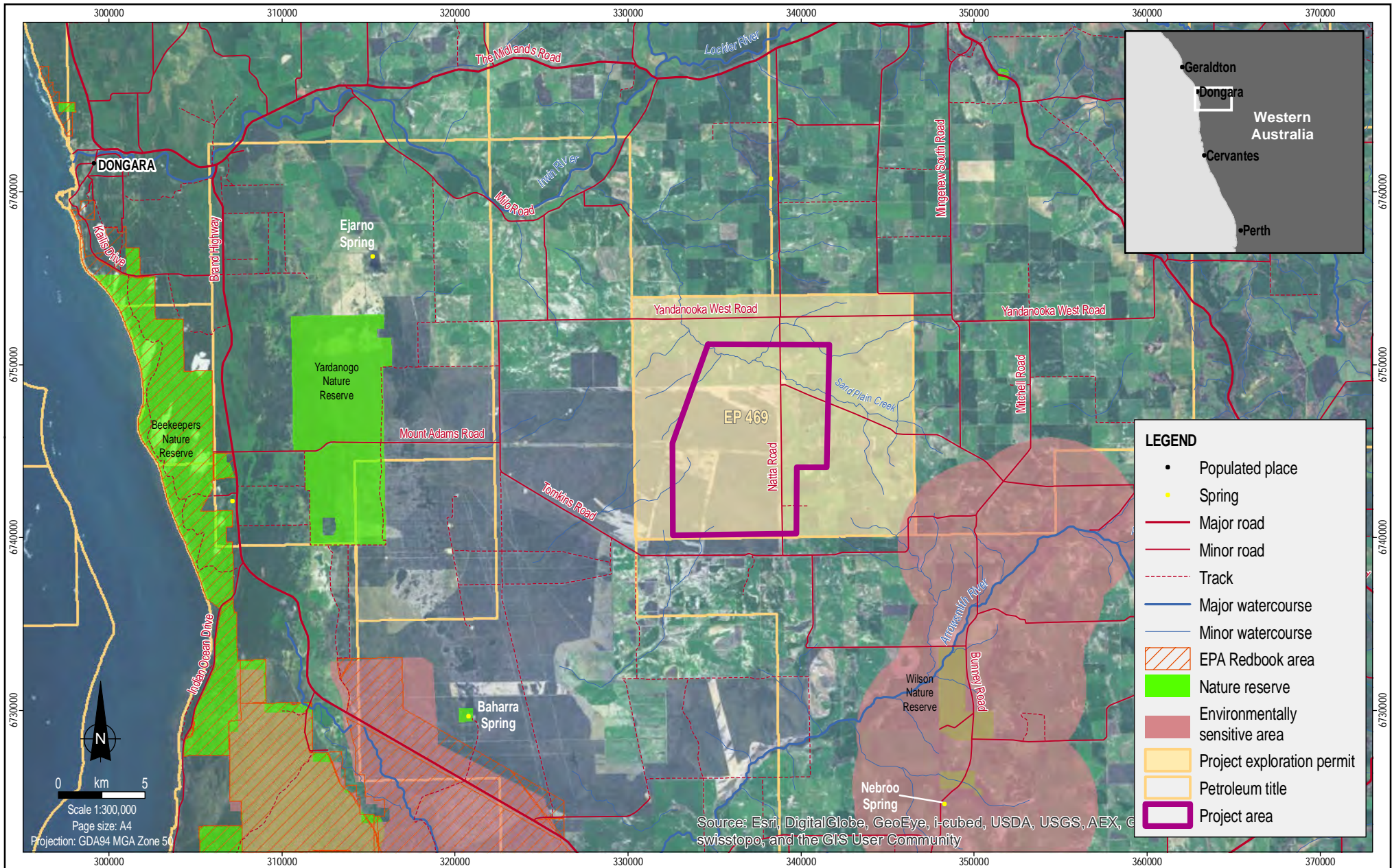
- Demonstrate compliance with relevant legislation.
- Demonstrate that Warrego Energy has a clear understanding of how the project will interact with the environment.
- Demonstrate that environmental effects and risks are managed as low as reasonably practicable.
- Demonstrate that Warrego Energy has set appropriate performance objectives, standards and measurement criteria.
- Ensure that systems are in place to minimise the environmental effects associated with the project.

Any other future exploration or production activities (other than this 3D seismic survey) do not form part of this EP.

1.3 Parties

1.3.1 Proponent

Warrego Energy is a private oil and gas development and production company that was established to invest in onshore unconventional gas assets through the application of innovative drilling and production techniques and technologies.



LEGEND

- Populated place
- Spring
- Major road
- Minor road
- - - Track
- Major watercourse
- Minor watercourse
- ▨ EPA Redbook area
- Nature reserve
- Environmentally sensitive area
- Project exploration permit
- Petroleum title
- Project area

Scale 1:300,000
 Page size: A4
 Projection: GDA94 MGA Zone 50

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Gswisstopo, and the GIS User Community

Source and notes:
 Seismic survey area from Warrego Energy; Petroleum title from DMP
 Crown reserves from Landgate
 Nature reserves and environmentally sensitive areas from DEC
 EPA Redbook data from DEC (downloaded from SLIP, September 23, 2010)
 Roads, railways, powerlines and watercourses from GEODATA250K (optimum scale 1:250,000)
 Imagery from ArcGIS online



Date:
 13.12.2013
 MXT:
 2034_02_GIS001_v0_1
 File Name:
 2034_02_F001.1_GIS

Warrego Energy
 West Erregulla 3D Seismic Survey



Project location and regional setting

Figure No:
1.1

Warrego Energy's contact details are:

37-39 Hay St
Subiaco WA 6008

Telephone: +61 8 9467 7822
Website: <http://www.warregoenergy.com>
Email: info@warregoenergy.com

1.3.2 Contractors

Seismic survey services will be provided to Warrego Energy by a specialist contractor. Two such contractors, Terrex and Geokinetics, operate in Australia. Both have worked in Western Australia over a number of years. Warrego Energy will tender this contract in the third quarter of 2014 once the contractors .

1.3.3 Environmental consultant

This EP has been prepared by Coffey Environments Australia Pty Ltd (Coffey). Coffey's contact details are provided on the reverse of the inside title page of this document.

1.4 Health, safety, environment and quality policy

Warrego Energy is committed to the highest standards of safety, environmental and social performance. All activities associated with the project will comply with Warrego Energy's corporate health, safety, environmental and quality (HSEQ) policy (Appendix A).

1.5 Document structure

In order to meet the objectives defined in Section 1.2, this document contains:

- This introduction (Chapter 1).
- The **legislative context** for the project (Chapter 2).
- A description of **activities** proposed for the project (Chapter 3).
- A description of the **existing environment** (Chapter 4).
- An **environmental risk assessment** of the potential impacts of the project to the environment and the identification of **controls and mitigations** (Chapter 5).
- **Performance objectives, performance standards and measurement criteria** for the project (Chapter 6).
- The **implementation strategy** for the project (Chapter 7).
- A register of all **stakeholder consultation** undertaken for the project (Chapter 8).
- A list of all references used in the writing of this EP (Chapter 9).
- A list of all acronyms and abbreviations used in the writing of this EP (Chapter 10).

1.6 Definitions

The following definitions are used throughout this document to describe different areas related to the project:

- The **project** refers to the proposed 3D seismic survey.
- The **project area** is the area in which the project (discussed in more detail in Chapter 3) will be undertaken (8,575 ha).
- The project's **development footprint** is the total footprint of the project (86.2 ha).
- The **conceptual disturbance footprint** is the portion of the development footprint that requires clearing as a result of project activities (70 ha).
- A **survey area** is the area in which a specialist study (e.g., the flora and vegetation study) was undertaken. Differences may exist between the survey areas for different specialist studies due to the definition of the project at the time.

Not specific to this project, the term 'conservation significant' is used to describe flora or fauna species or ecosystems that are either protected under state or Commonwealth legislation or are regarded as having special significance on a local or regional scale. Including for example Threatened species, which are those recognised as being extinct, extinct in the wild, critically endangered, endangered, vulnerable or conservation dependent under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and or those species considered to be in danger of extinction, rare or otherwise in need of special protection under the *Wildlife Conservation Act 1950*.

Lists of acronyms, abbreviations, units of measure and other glossary items are provided in Chapter 10.

2 Legislative context

The Department of Mines and Petroleum (DMP), through the *Petroleum and Geothermal Energy Resources Act 1967*, has regulatory jurisdiction for exploration and development of all onshore petroleum resources in Western Australia. The act requires that onshore petroleum explorers meet all applicable Commonwealth and State environmental laws and regulations. This chapter provides an overview of legislation relevant to this EP.

2.1 Commonwealth legislation

Commonwealth legislation relevant to this EP are the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), *Native Title Act 1993* and the *National Greenhouse and Energy Reporting Act 2007* (NGER Act).

2.1.1 Environment Protection and Biodiversity Conservation Act

Under the EPBC Act, an action requires the approval of the Commonwealth Minister for the Department of the Environment (DOE) (formerly the Department of Sustainability, Environment, Water, Population and Communities) if the action has, will have, or is likely to have significant impact on any of the following matters of national environmental significance:

- World heritage properties.
- National heritage places.
- Ramsar wetlands of international importance.
- Nationally Threatened animal and plant species and ecological communities.
- Water resources as part of coal seam gas projects.
- Migratory species protected under international agreements.
- The Commonwealth marine environment.
- Nuclear actions.

A number of Threatened flora and fauna species are known or considered likely to be present within the project area and have the potential to be impacted by the project (as discussed in Section 4.2 and Chapter 5). The project was referred to the DOE for assessment under the EPBC Act on 14 November 2013 (reference 2013/7054) and a decision was made on 10 December 2013 that the project is a controlled action and would require assessment and approval under the EPBC Act by referral information. On 19 February 2014, approval of the project under the EPBC Act was granted subject to conditions outlined in the approval letter. Following changes to the project's schedule, the approval was further amended on 3 April 2014 at Warrego Energy's request.

As impacts to EPBC Act listed species are not able to be completely avoided or mitigated, the project will also be required to offset these impacts. Although the offset is still being finalised, it will likely constitute a portion of land with similar environmental values to the project area, particularly with respect to Carnaby's Black Cockatoo feeding and roosting habitat. The proposed offset is about 500 ha in size (about seven times the total area required to be cleared in the project area) and will likely involve rehabilitation, weed management, fencing and revegetation. The overall offset concept is being developed in consultation between Warrego Energy, DOE, DMP and the landholder, and the management of the offset will be detailed in separate documentation to be submitted to DOE and DMP.

2.1.2 Native Title Act

While Warrego Energy understands that native title does not currently exist over the project area, it is acknowledged that the Amangu people have a native title claim (WC04/2) over lands that include the project area.

Warrego Energy has been consulting with the Amangu People and their representatives, the Yamatji Marlpa Aboriginal Corporation, since the acquisition of EP 469 in 2008. Warrego Energy has a Heritage Protection Agreement with the Amangu People for the undertaking of low impact and ground disturbing petroleum operations on the land within EP 469 (previously referred to as EP 25/07-8). Warrego Energy will continue to honour the conditions of this agreement.

2.1.3 National Greenhouse and Energy Reporting Act

The NGER Act requires organisations that meet or exceed either of the following thresholds to report annually on energy produced, energy consumed and greenhouse gas emissions:

- Corporate (i.e., company-wide) threshold: 50 kt CO₂-e emitted or 100 TJ of energy consumed.
- Facility (i.e., project) threshold: 25 kt CO₂-e emitted or 100 TJ of energy consumed.

Aspects of the exploration program that may result in emissions to air contributing to greenhouse gas emissions include:

- Combustion of diesel fuel to generate electricity.
- Combustion of diesel fuel to power equipment/vehicles during site preparation and operations.

Warrego Energy does not anticipate emissions resulting from the project will meet or exceed the NGER thresholds given the relatively short duration of the proposed activities (approximately 60 days) and expected relatively low volumes of emissions generated. However, if emissions were to exceed these values (based on estimates, measurements and projections), Warrego Energy will register under the NGER Act and submit emissions data as required under the Act on the Online System for Comprehensive Activity Reporting (OSCAR).

2.2 State legislation

The key pieces of state legislation that may apply to this project include:

- *Petroleum and Geothermal Energy Resources Act 1967.*
- Schedule of Onshore Petroleum Exploration and Production Requirements 1991.
- *Environmental Protection Act 1986 (EP Act).*
- *Wildlife Conservation Act 1950 (WC Act).*
- *Biosecurity and Agriculture Management Act 2007 (BAM Act).*
- Environment Protection (Clearing of Native Vegetation) Regulations 2004.
- *Rights in Water and Irrigation Act 1914 (RIWI Act).*
- *Aboriginal Heritage Act 1972.*

2.2.1 Petroleum and Geothermal Energy Resources Act

Warrego Energy is required to submit an application to the DMP and obtain approval under the Petroleum and Geothermal Energy Resources Act prior to commencing activities associated with the project. As part of the application, Warrego Energy is required to submit an EP to the DMP. This EP has been prepared to satisfy this requirement.

2.2.2 Schedule of Onshore Petroleum Exploration and Production Requirements

The Schedule of Onshore Petroleum Exploration and Production Requirements 1991 (as amended 21 May 2010) details the legislative requirements for conducting onshore petroleum exploration in Western Australia. The purpose of the Schedule is to ensure activities are conducted in a professional, safe and environmentally responsible manner. This EP is considered to constitute a project specific Code of Environmental Practice as per clause 114 of the Schedule. In addition, Warrego Energy is in the process of developing an Emergency Response Plan (ERP), as per clause 203 of the Schedule, and this will be submitted to the DMP and approved before the commencement of the project.

Warrego Energy will abide by all relevant aspects of the Schedule throughout the project.

2.2.3 Environmental Protection Act

The EP Act is the primary legislation that governs environmental impact assessment and protection in Western Australia.

Environmental Impact Assessment (Part IV)

Although the project has several environmental issues that may ordinarily require referral of the project to the Environmental Protection Authority (EPA) under Part IV of the EP Act, consultation with the DMP and the Office of the EPA has indicated that referral under Part IV is unnecessary, because the project can be adequately assessed under:

- The *Petroleum and Geothermal Energy Resources Act 1967*.
- Part V of the EP Act (by the DMP).
- The EPBC Act (by DOTE) (see discussion on stakeholder consultation in Chapter 8).

Despite this advice, Warrego Energy intends to self-refer the project to the EPA in April 2014 to reduce the risk to the project if it were to be referred to the EPA (by another decision-making authority or a third party) when project activities were about to commence.

Clearing of Native Vegetation (Part V)

Native vegetation will need to be cleared in order to undertake the project. Under Part V of the EP Act, clearing of native vegetation is prohibited unless a clearing permit has been granted or the clearing is exempt under either Schedule 6 of the EP Act or the Environmental Protection (Clearing of Native Vegetation) Regulations 2004. Under item 20 of Regulation 5, petroleum exploration activities that are deemed to be 'low impact' are exempt from requiring a clearing permit unless the activities are carried out within an environmentally sensitive area (ESA). As the project does not meet the definition of a 'low impact' petroleum activity (defined in Schedule 1 of the Environmental Protection (Clearing of Native Vegetation) Regulations 2004) a clearing permit will be required.

Warrego Energy submitted an application for a Native Vegetation Clearing Permit to the DMP on 15 November 2013 (reference CPS 5899/1). A permit to clear native vegetation was granted to Warrego Energy on 30 January 2014, with the permit scheduled to come into effect on 22 February 2014, pending the outcome of the appeals period. However, several appeals by third parties were made against the DMP's decision to grant the NVCP. After an investigation by the Office of the Appeals Convenor, the Minister for Environment determined on 9 April 2014 that the appeals were to be upheld in part, such that several conditions on the NVCP will be added or amended. Amended permit CPS 5899/2 was issued on 11 April 2014.

Warrego Energy will also be required to develop an offset for the native vegetation that is to be cleared. In the interests of avoiding duplication in environmental approval processes, Western

Australian government policy currently provides for the acceptance of offsets developed under other statutory processes (e.g., the federal EPBC Act) where possible. In this case, the DMP has indicated that the offset in development with DOTE (see Section 2.1.1) will also be satisfactory under state approval purposes, and that no additional requirements are necessary.

2.2.4 Wildlife Conservation Act

The WC Act provides protection for flora and fauna species and ecological communities that are considered to be Threatened or otherwise in need of special protection. The 'taking' of flora, fauna or ecological communities listed under the WC Act is an offence unless done in accordance with the appropriate licences/permits.

Following consultation with the Department of Parks and Wildlife (DPAW) and the Department of Environment Regulation (DER), Warrego Energy submitted an application for a Permit To Take (Threatened flora) under the WC Act on 2 December 2013 as a contingency against potential indirect impacts to Threatened flora species that are known to occur in the project area. A Permit To Take was granted to Warrego Energy on 24 January 2014, effective immediately and until 30 April 2014. Due to changes to the project schedule, Warrego Energy liaised with DPAW to extend the validity period of the Permit To Take. The amended permit (152-1314) was issued on 17 April 2014.

2.2.5 Biosecurity and Agriculture Management Act

The BAM Act came into operation in 2013, replacing the *Agriculture and Related Resources Protection Act 1976*. Its purpose is to provide for the control of pest and other introduced species in Western Australia, by limiting what may be brought into the state and by regulating the movement of pest, weed and disease carriers around the state.

The control of weeds and diseases is especially important for this project given its location in the midst of remnant native vegetation in an otherwise largely cleared landscape, and also on working agricultural land.

A single species of declared weed, *Echium plantagineum* (Paterson's curse), is known to occur within the project area. This weed is listed under C3 Category (Management), which means that this species is established in Western Australia but it is feasible, or desirable, to manage it in order to limit its damage (DAFWA, 2013). Three locations of this declared weed have been recorded along Sand Plain Creek within a small pocket of remnant vegetation within cleared farmland in the northwest corner of the project area. Warrego Energy is committed to the development and implementation of a weed management and monitoring program to prevent the spread and/or introduction of all weeds.

2.2.6 Rights in Water and Irrigation Act

The RIWI Act provides the legislation for the Department of Water (DoW) to manage and allocate all terrestrial water resources in Western Australia. Warrego Energy will apply for a Section 26D licence to construct any required water supply bores and a Section 5C licence to extract water, if required.

Warrego Energy will not need to apply for licences under the RIWI Act where any onsite water requirements are supplied by either a licenced water carter or in agreement with landowners and in accordance with landowners' existing licences. For example, the proposed use of an existing water bore to support the site office is covered under the landholder's existing water extraction licence.

2.2.7 Aboriginal Heritage Act

The Aboriginal Heritage Act provides protection for places and objects in Western Australia that are important to Aboriginal people because of connections to their cultures. These places and objects are regarded as Aboriginal sites (DIA, 2012). Approval is required under Section 18 of the Aboriginal Heritage Act to disturb an Aboriginal heritage site.

The Department of indigenous Affairs (DIA) maintains a register of places and objects of significance under the Act and evaluates potential new sites for inclusion in the register. Interrogation of the DIA's Aboriginal Heritage Inquiry System determined that no indigenous heritage sites are registered within the project area (DIA, 2012). However, a cultural heritage survey conducted in conjunction with the Amangu Traditional Owners in February 2014 identified two restricted areas that are not currently registered sites (Terra Rosa, 2014; see Section 4.3.1).

2.3 Guidelines and codes of practice

The DMP and other regulators have produced a range of guidelines relevant to onshore oil and gas exploration. Specifically, this EP has been developed with reference to the Petroleum Guidelines: Environmental Assessment Processes for Petroleum Activities in Western Australia (DMP, 2006), the Guidelines for the Preparation of an Environment Plan (DMP, 2012) and the Guidelines for Onshore Petroleum Geophysical Surveying (Department of Mines, 1991).

The industry codes of practice that apply to this project are the Australian Petroleum Production and Exploration Association (APPEA) Code of Environmental Practice 2008 (APPEA, 2008) and the IAGC (2001) Environmental Manual for Worldwide Geophysical Operations. Warrego Energy has considered these codes of practice in the development of this EP.

2.4 International agreements and conventions

The international agreements and conventions that are of relevance to onshore exploration programs include:

- The Convention on the Conservation of Migratory Species of Wild Animals (commonly referred to as the Bonn Convention).
- Agreement between the Government of Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and their Environment (commonly referred to as the China Australia Migratory Bird Agreement or CAMBA).
- Agreement between the Government of Australia and the Government of Japan for the Protection of Migratory Birds and Birds in Danger of Extinction and their Environment (commonly referred to as the Japan Australia Migratory Bird Agreement or JAMBA).
- Agreement between the Government of Australia and the Government of the Republic of Korea on the Protection of Migratory Birds (commonly referred to as the Republic Of Korea Australia Migratory Bird Agreement or ROKAMBA).

This project is not expected to affect migratory birds and hence is not expected to contravene the above agreements or conventions (refer to Section 4.2.3).

2.5 Key environmental approvals

A summary of the key environmental approvals that are relevant to the project is provided in Table 2.1.

Table 2.1 Key environmental approvals

Legislation	Requirement	Status	Agency
<i>Environment Protection and Biodiversity Conservation Act 1999</i>	Referral	EPBC Act approval was granted on 19 February 2014. The EPBC Act approval was amended on 3 April 2014. No further action is required from Warrego Energy at this stage.	DOTE
<i>Environmental Protection Act 1986</i>	Referral (Part IV)	Warrego Energy will self-refer the project to avoid project risk caused by a potential third-party referral immediately before the project is due to commence or following commencement.	EPA
	Native Vegetation Clearing Permit (Part V)	The NVCP was amended and issued as CPS 5899/2 on 11 April 2014. No further action is required from Warrego Energy as this stage.	DMP
<i>Wildlife Conservation Act 1950</i>	Permit To Take	The Permit to Take (152-1314) was amended and issued on 17 April 2014. No further action is required from Warrego Energy as this stage.	DPAW
<i>Petroleum and Geothermal Energy Resources Act 1967</i>	Environment Plan	This version of the EP (v7) is currently approved by the DMP.	DMP

3 Project description

This chapter describes all activities proposed in connection with the project, including the project location, project schedule, the principles behind line positioning and details of the seismic survey methodology.

3.1 Location and tenure

The project involves conducting a 3D seismic survey within exploration permit EP 469, located onshore approximately 50 km southeast of Dongara and 300 km north of Perth, Western Australia (see Figure 1.1). Warrego Energy is the sole holder of exploration permit EP 469, which was issued on 16 April 2010 and is due to expire on 15 April 2019. Undertaking this project is an obligation under the exploration permit imposed by the regulator.

Land use in the surrounding area is varied and includes a mixture of Vacant Crown Land (VCL), and Freehold land (Figure 3.1). The nearest residential property is located about 570 m to the east of the project area (see Figure 3.1). The closest conservation areas include Wilson Nature Reserve and Yandanogo Nature Reserve, which are located approximately 20 km southeast and 25 km west of the project area respectively (see Figure 1.1).

3.2 Duration and timing

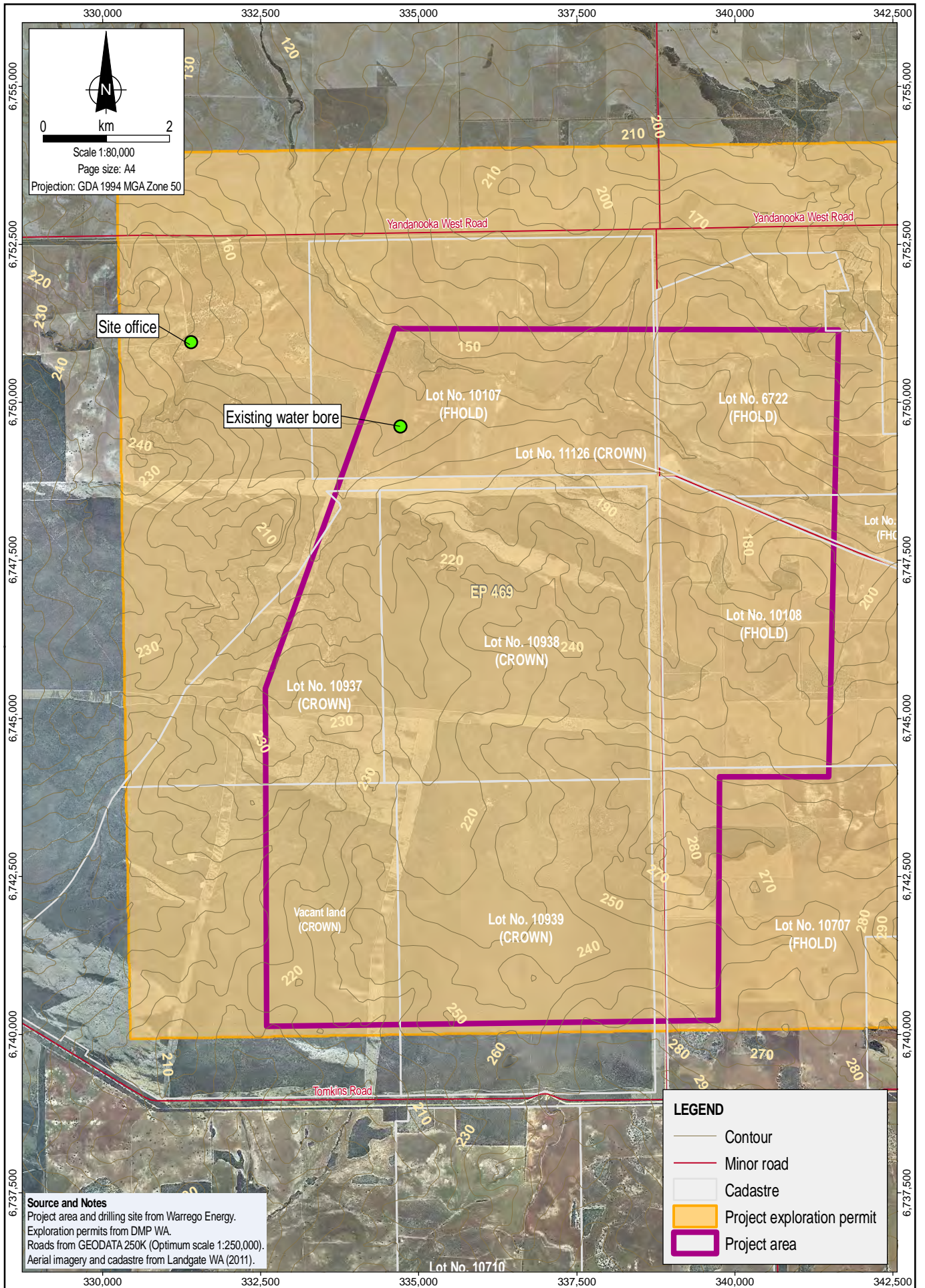
The project is currently scheduled to be undertaken in a phased approach between August and November 2014. This timing is driven by obligations under the exploration permit and land use constraints, for example agricultural activity and dieback management. Implementation of the project, however, is subject to the receipt of required approvals, the availability of survey equipment and agricultural harvest timing. It is proposed to clear seismic source lines in late winter in order to reduce fire risk and to separate the line preparation activities from seismic acquisition activities. Warrego Energy will also re-tender the seismic survey contract in the third quarter of 2014. Following consultation with other operators in the Perth Basin, several of whom are planning seismic surveys around the same time, Warrego Energy has a high degree of confidence that the survey equipment will be available. Indicative durations and timings for each aspect of the project are detailed in Table 3.1.

Table 3.1 Indicative project timings

Activity	Approximate duration	Indicative timing
Site preparation*	30 days	July/August 2014
Mobilisation of machinery and equipment	20 days	October/November 2014
Demobilisation and rehabilitation	25 days	November/December 2014
Post rehabilitation monitoring	Two years or until rehabilitation performance criteria have been met	Monitoring to commence one month after the demobilisation and occur annually between October and December

* Including vegetation clearing.

Project activities are intended to be conducted in daylight hours only.



0 km 2
 Scale 1:80,000
 Page size: A4
 Projection: GDA 1994 MGA Zone 50

Source and Notes
 Project area and drilling site from Warrego Energy.
 Exploration permits from DMP WA.
 Roads from GEODATA 250K (Optimum scale 1:250,000).
 Aerial imagery and cadastre from Landgate WA (2011).

LEGEND

- Contour
- Minor road
- Cadastre
- Project exploration permit
- Project area

3.3 Project activities

Seismic surveys enable creation of a map of the subsurface landscape, leading to identification of structures that may contain oil and gas accumulations. Vibroseis trucks are used as the source of vibrations (sound waves) that penetrate into the ground and are reflected from subsurface geological structures. The reflected seismic signal is then detected through the use of geophones. Data from the geophones is interpreted to create a 3D model of the subsurface geology from which locations of potential oil and gas accumulations may be identified.

The project will comprise three principal activities:

- Site preparation – i.e., preparing source lines including any necessary vegetation clearing and surveying.
- Operations – i.e., setting out the signal retrieval network along receiver lines, creating vibrations along the source lines and collecting data.
- Demobilisation and rehabilitation – i.e., removal of any equipment and rehabilitation.

All project activities will be confined to the project area, which covers an area of approximately 8,575 ha (Figure 3.2). The project's development footprint is estimated to be a maximum of 86.2 ha, representing about 1.0% of the project area. The conceptual disturbance footprint is depicted in Figure 3.2, identifying the nominal position of the seismic survey lines and associated infrastructure. Please note that this figure is for illustrative purposes only and does not represent a final design layout.

It is important to recognise that approximately 28 ha of the conceptual disturbance footprint occurs within already cleared land so only 58.5 ha of ground disturbance will occur. This area may increase slightly given Warrego's commitment to avoid certain environmental values (e.g. length of a source line may increase slightly where it is diverted to avoid Threatened flora). To allow for this, Warrego Energy is committing to disturb no more than 70 ha within the project area (approximately 0.8% of the project area).

The following sections discuss project activities in more detail.

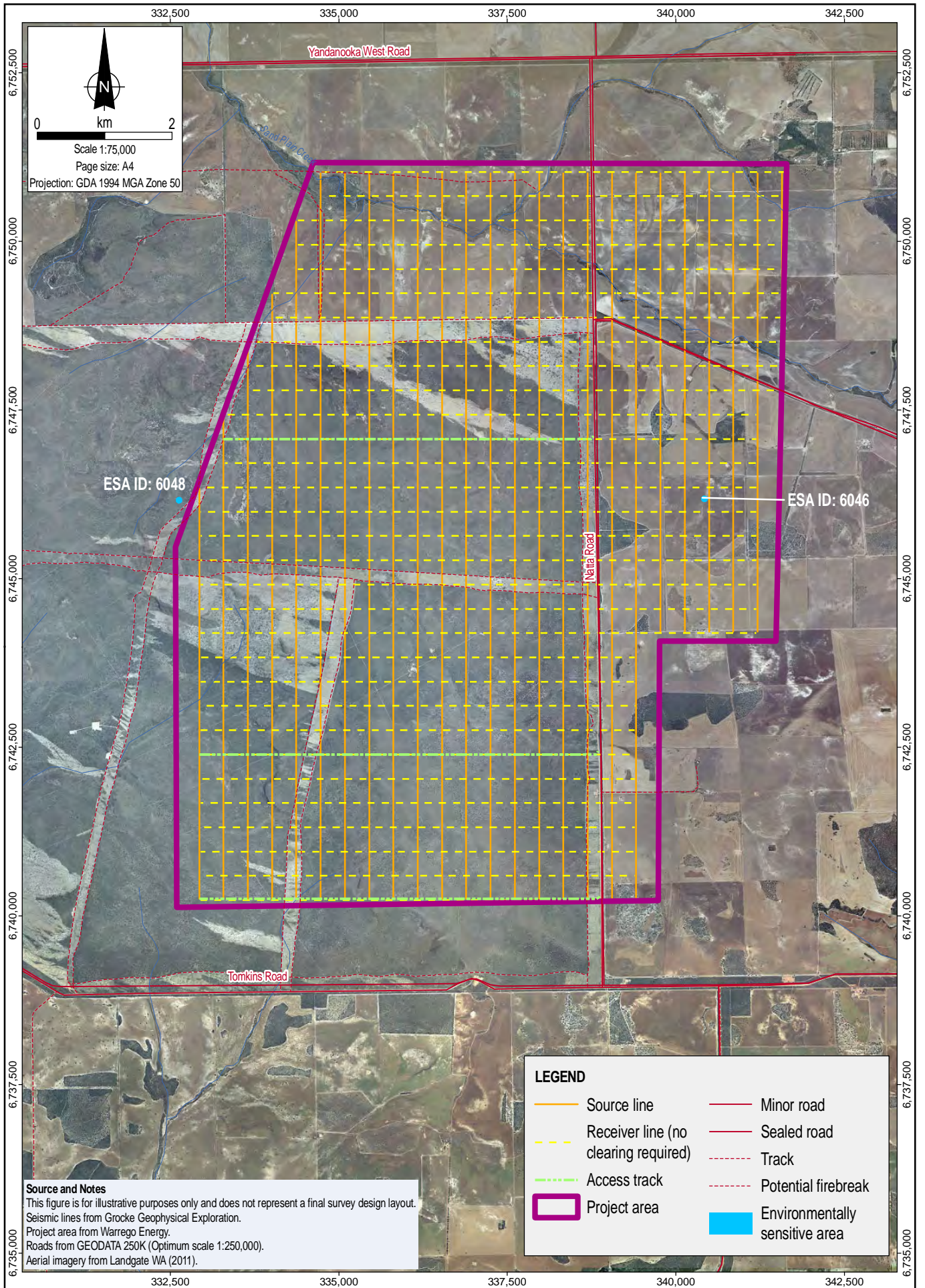
3.3.1 Site preparation

Line design and layout

Warrego Energy plans to run 25 parallel source lines, spaced 360 m apart, lengthways along the project area, approximately north to south. The source lines will have a width of 3.5 m to accommodate the Vibroseis trucks (Plate 3.1) that will travel along them generating seismic signals. The source lines' total disturbance footprint will be approximately 81.8 ha.

Receivers will be set out along approximately 31 parallel lines, spaced 360 m apart, across the project area, perpendicular to the source lines. Warrego Energy has committed to walking in receivers to prevent the need to clear along receiver lines. Warrego Energy's preference is to use true cable-free receiver nodes (e.g. see example in Plate 3.2). Should these be unavailable, however, Warrego Energy is still committed to walking in receivers and avoiding clearing along these lines.

To allow the Vibroseis trucks to move between source lines, three access tracks 3.5 m wide (totalling 9.5 ha) running east to west have also been allowed for (see Figure 3.2). It is intended that vehicle movements required for positioning vehicles will use these tracks wherever possible so that vehicle movements and compaction along the source lines is kept to a minimum, thereby maximising natural regeneration of the source lines. The most intensive rehabilitation efforts are then only likely to be required on the three access tracks. Dog-legs have been incorporated into the eastern ends of the access tracks to remove line of sight and discourage third party access from Natta Road.



0 km 2

Scale 1:75,000
Page size: A4
Projection: GDA 1994 MGA Zone 50

Source and Notes
 This figure is for illustrative purposes only and does not represent a final survey design layout.
 Seismic lines from Grocke Geophysical Exploration.
 Project area from Warrego Energy.
 Roads from GEODATA 250K (Optimum scale 1:250,000).
 Aerial imagery from Landgate WA (2011).

LEGEND

- Source line
- - - Receiver line (no clearing required)
- - - Access track
- ▭ Project area
- Minor road
- Sealed road
- - - Track
- - - Potential firebreak
- Environmentally sensitive area



Plate 3.1
Example of a Vibroseis truck



Plate 3.2
Example of a true cable free node

Warrego Energy aims to position the development footprint to avoid or minimise the project's potential impact to Threatened species (discussed in Chapter 4). Although a regular grid formation of source and receiver lines is preferable, individual source and receiver points can be moved perpendicular to their lines in order to avoid difficult terrain or known locations of Threatened species. The line design will be finalised based on all known locations of Threatened species prior to any work commencing in the project area.

Clearing

In order to prepare the source lines for Vibroseis trucks, clearing of native vegetation will be required along the source lines and access tracks. Clearing of native vegetation is not anticipated to be required for receiver lines as the seismic crew can walk in the geophones.

Vegetation will be cleared using a raised roller mulching technique. As vegetation is cleared it will be mulched and spread behind the machine. This method is preferable to raised blade clearing, because mulched vegetation allows better transmission of seismic energy than pushed-over vegetation, improving the quality of data received and reducing the need for further seismic surveys or additional Vibroseis traffic. The mulching approach is also believed to create fewer health and safety issues than the alternatives. Raised techniques (whether clearing or roller mulching) avoid interference with rootstock and are likely to result in better rehabilitation success.

The clearing equipment will be equipped with a GPS pre-programmed with the line locations so that locations of Threatened species will be avoided. Lines may also be altered to go around topographical obstructions (e.g., laterite breakaways and steep slopes) or other environmentally sensitive features (e.g., drainage lines and watercourses).

3.3.2 Operations

Once the source lines and access tracks are prepared, the seismic crew moves will mobilise to the project area. The seismic crew consists of Vibroseis trucks, light vehicles and line personnel.

The Vibroseis trucks each have a vibrator pad that is lowered to the ground at each energy source position and vibrated with a range of low to medium frequencies in the range of 5 to 100 Hz (the seismic signal). Vibroseis trucks typically work in small fleets of two to four vehicles, travelling head-to-tail and creating synchronous seismic vibrations.

Geophones to detect the seismic signal are placed by hand at 40 m intervals along the uncleared receiver lines. Depending on local conditions (e.g., soil type and slope), several geophones may be used in the same location. The geophones capture the acoustic signals generated by the Vibroseis trucks as they are reflected by the sub-surface environment. These reflected seismic signals are digitised and subsequently downloaded from the receiver nodes. As discussed in the previous section, Warrego Energy intends to use wireless geophones as specified in the "Invitation to tender" and has received tenders for the seismic contract based on this technology.

The Vibroseis energy source is systematically applied along each source line approximately every 40 m. Once a section of the line is completed, the geophones are picked up and moved to the next section of the line.

Operations will be planned to occur during the day. The seismic crew will be accommodated overnight in a purpose-built camp offsite unless otherwise accommodated in town (discussed in Section 3.4.1).

No uphole survey¹ is required for this project.

¹ Seismic surveys sometimes require tests to be conducted through the weathered layer using uphole surveys. Such tests measure near-surface seismic velocity and typically involve the drilling of a hole to 20 to 40 m below ground level. Geophones are laid out around the hole to record seismic signals from a seismic source placed at the bottom of the hole.

3.3.3 Demobilisation and rehabilitation

While some permanent line markers are required to be retained in accordance with the Schedule of Onshore Petroleum Exploration and Production Requirements 1991, all other pegs, markers and equipment will be removed from the project area following completion of the project. Temporary fencing set up by the seismic crew (if any) will be removed, and any pre-existing fencing that was modified will be reinstated, in accordance with landowner requirements.

Warrego Energy will close all project access tracks (i.e., through the placement of brushing at entrances to areas of remnant native vegetation) as soon as practicable to prevent unauthorised third party access. Access may be retained in some circumstances (e.g., for access during a subsequent appraisal drilling program or as otherwise requested by local authorities and/or relevant stakeholders). The project access tracks and source lines will then be left to regenerate naturally.

Landowner liaison will be ongoing for the duration of the project. Any issues arising will be resolved on the spot. On close out of the project, rehabilitation issues will be addressed and agreed and a form of release obtained from each landowner to demonstrate the landowner's satisfaction with the execution of the project.

A rehabilitation plan will be developed in line with industry standards and in consultation with the DMP and DPAW. This will be submitted to the DMP for approval prior to the completion of the project. This plan will include the development of rehabilitation/revegetation completion criteria. These criteria will form the basis for ongoing monitoring of rehabilitation/revegetation progress (discussed further in Section 3.3.4) and to determine satisfactory attainment of rehabilitation. Examples of rehabilitation completion criteria include:

- There should be no actual or potential erosion sites.
- There should be no permanent markers (other than those required under the Schedule of Onshore Petroleum Exploration and Production Requirements 1991), spoil or litter.
- There should be no introduction or spread of weeds within the VCL.
- There should be no introduction of dieback within the VCL.
- There should be no new apparent access to the VCL that could be used by third parties and develop into permanent access.
- Disturbance outside the VCL should be returned to a state suitable to its previous land use (i.e., agricultural) and to the satisfaction of the relevant landholder in accordance with land access agreements.
- Revegetation within the VCL should include foraging species for the Carnaby's Black Cockatoo.
- Threatened flora species, *Thelymitra stellata* and *Paracaleana dixonii* (i.e. those identified within 15 m of the conceptual disturbance footprint) persist within the project area following project completion.
- Rehabilitation of disturbed areas within VCL should consist of native vegetation similar to undisturbed areas within the project area.

3.3.4 Rehabilitation monitoring

To ensure rehabilitation/revegetation of disturbed areas has been successful, Warrego Energy will monitor and audit against the closure criteria developed within the aforementioned rehabilitation plan. Monitoring will commence one month after completion of the project with a particular focus on third party access issues and the presence of introduced weeds and/or dieback. Rehabilitation monitoring will then continue annually between October and December for a minimum of two years and until monitoring has shown all rehabilitation completion criteria have been met.

Rehabilitation monitoring will also include the monitoring of Threatened flora species *Thelymitra stellata* and *Paracaleana dixonii* (in line with the requirements of the Permit to Take) to assess the persistence of these species and their habitat in proximity to disturbed areas following completion of the project (i.e., those locations identified within 15 m of the conceptual disturbance footprint).

Augmentation of the revegetation process will be investigated with the DPAW and the DMP if lines are not recovering unaided. Dieback and weed management controls will also be implemented in accordance with a dieback and weed management plan to achieve the completion criteria. The weed and dieback management plan will include the following management measures:

- Ensure machinery, vehicles and equipment are clean of soil and debris prior to entering and leaving the project area, moving between agricultural land and VCL, and in accordance with landowner hygiene requirements.
- As much as possible, minimise vehicle movements within and between the agricultural land and the VCL to mitigate against the potential for the introduction and/or spread of weeds and disease.
- Design, construct and operate a suitable hygiene facility for decontamination of vehicles and machinery on arrival at and departure from the project area, and in the instance that a vehicle needs to move between the agricultural land and the VCL.
- A weed monitoring and management program will be developed to ensure that any existing and new weed infestations within areas of project disturbance (including areas of rehabilitation) are identified and can be controlled or eradicated.
- A dieback monitoring and management program will be developed to prevent the introduction of dieback into VCL and to ensure that if dieback is introduced it is identified and controlled to prevent further spread.

It is likely that weed monitoring will focus on areas of higher risk (i.e., on private property and along access tracks in the VCL).

3.4 Project infrastructure and services

3.4.1 Accommodation camp

Warrego Energy is currently considering two accommodation options for the seismic crew. Provisional arrangements have been made for accommodation in existing hotels/hostels in nearby towns or at a temporary accommodation camp at a nearby site, depending on contractor selection. Both of these options are outside of EP 469 and are therefore not considered further in this EP.

3.4.2 Site office

In negotiating access through private property adjacent to the project area, Warrego Energy has arranged with a landholder to use an existing residence on freehold land as a daytime site office and ablutions for the duration of the project. The residence consists of a house, shed and parking and turnaround area.

Vehicles involved in the seismic survey will be stored at the site office overnight, reducing the number of vehicle movements required between the project area and the crew's accommodation outside EP 469 in Mingenew. An existing laydown area between the site office and the project area may be used as an alternative parking site. The reduced number of vehicle kilometres required will also assist with the project's weed and dieback management.

All non-liquid wastes generated at the site office will be stored in rubbish bags within project vehicles and returned to the (offsite) accommodation facilities each night for disposal. If the accommodation camp is located at existing facilities in a town, waste will be disposed of by arrangement with the

facility manager, by arrangement with the local shire or otherwise by using a licenced waste contractor. Recyclable waste will be recycled where recycling collection is available.

Waste from site office ablutions will be managed by the existing septic system installed at the residence.

3.4.3 Access tracks

As discussed in Section 3.1, to allow the Vibroseis trucks to move between source lines, three access tracks 3.5 m wide (totalling 9.5 ha) running east to west have been allowed for (see Figure 3.2). Dog-legs have been incorporated into the eastern ends of the access tracks to remove line of sight and discourage third party access from Natta Road.

3.4.4 Utilities and services

The utilities and services required in connection to this project are:

- Water (potable and non-potable).
- Electricity.
- Chemical and fuel storage.
- Vehicle refuelling and maintenance.
- Waste.
- Vehicle and equipment hygiene.

Water

Non-potable water may be required for the hygiene station, although the preference is for a dry facility (see section 'Vehicle and equipment hygiene station' below). Non-potable water will also be required for the fire response vehicle and may also be needed, on an as-required basis, for dust suppression. The total requirement of water for these purposes is estimated at a nominal 1 kL/day.

Water will be sourced from an existing groundwater bore on freehold land within the project area by arrangement with the landholder. Water will be abstracted under the landholder's existing water licence.

Electricity

Portable diesel generators may be required to supply electricity to the hygiene station air compressor. If used, diesel generators will be self-bunded or located in lined, gravel bunds. All electrical equipment, instrumentation, lighting and cabling will be installed in accordance with the provisions of the Petroleum and Geothermal Energy Resources (Management of Safety) Regulations 2010.

The site office will use existing electricity infrastructure.

No other requirement for electricity is otherwise anticipated.

Chemical and hazardous material storage

No chemical or hazardous material storage within exploration permit EP 469 is anticipated.

Vehicle refuelling

Project vehicles and equipment will require refuelling during operations. A fuel tanker will be used to refuel seismic vehicles within the project area or at the site office to avoid excessive vehicle

movements through the project area and on local roads. Refuelling operations will be covered by the seismic contractor's refuelling procedures, which at a minimum will require:

- Refuelling of vehicles and machinery at designated locations only.
- Use of drip trays, spill mats or equivalent during all refuelling activities.
- Spill kits to be available at all times.
- Removal and disposal of any contaminated material offsite to a licenced facility using a licenced contractor.
- Any spills to be cleaned up immediately.
- No smoking in vicinity of refuelling operations under any circumstances.
- No refuelling under conditions of total fire ban or harvester and vehicle movement bans.
- No refuelling within 100 m of a watercourse.

The fuel tanker will transport fuel in a 110% double-bunded tank designed to AS 1692 and capable of holding 2,000 L.

Waste

Waste generated by the project is expected to be minimal. Wastes may be generated during:

- Meal breaks (e.g., food scraps, aluminium cans, plastic bottles, plastic wrapping, paper wrapping).
- Use of ablutions (e.g., sewage and grey water from portable toilets).
- Use of hygiene station.
- Operation of the site office.

All non-liquid wastes generated during the project will be stored in rubbish bags within project vehicles and returned to the (offsite) accommodation facilities each night for disposal. If the accommodation camp is located at existing facilities, waste will be disposed of by arrangement with the local shire or otherwise by using a licenced waste contractor. Recyclable waste will be recycled where recycling collection is available.

Portable ablutions will be provided within the project area (e.g. trailer mounted facilities). Sewage and grey water will be collected and disposed of at a licenced facility by a licenced waste contractor. A dump point for small volumes of septic waste is also available in Mingenew if required.

Any wastewater from a wet hygiene station will be treated as infected/contaminated and as such will not be allowed to escape the hygiene station area (see section 'Vehicle and equipment hygiene station' below).

Waste from the site office (including sewage and greywater) will be disposed of via the existing septic tank system at the premises.

Vehicle and equipment hygiene station

As part of the project's biosecurity requirements, one or more vehicle and equipment hygiene station(s) will be operated as part of project activities. The preference is for the operation of dry hygiene facilities involving the use of compressed air and brushes to remove soil and plant material.

Seismic crew motor vehicles can be on any part of the survey area and moving in any direction at any time of the day. Activity is current on several lines at all times. If a permanent hygiene station is required (as well as mobile stations) the permanent point would be on a frequently used road intersection or access point from road to off-road.

Where a wet hygiene station is required (in compliance with landowner biosecurity measures, for example), all water and soil emissions at the hygiene station will be contained and managed to

prevent spread of infection. Methods of achieving this outcome may include dosing washdown water with swimming pool chlorine or by retaining wastewater in a sump and removing soil once the sump has dried out through natural seepage and evaporation. Wet hygiene station washdowns would be conducted using a four-wheel drive utility vehicle equipped with an 800 to 900 L tank, pump and adjustable hose nozzle. The vehicle or equipment being used will be placed on a plastic, banded sheet.

All vehicles, equipment, plant and machinery must be certified clean before initially arriving in the project area and will be required to pass through the hygiene station when moving between VCL and agricultural land in accordance with a hygiene management plan (and potentially between agricultural properties, in accordance with land access agreements) and again before leaving the project area.

3.5 Summary of project activities

A summary of project activities is provided in Table 3.2.

Table 3.2 Summary of project activities

Item	Detail
Project name	West Erregulla 3D Seismic Survey
Proponent	Warrego Energy Pty Ltd
Type of project	Onshore 3D seismic survey
Location	Arrowsmith East and Moorriary, approximately 50 km southeast of Dongara and 300 km north of Perth The project area is bounded by the following points: 29°21' 28" S, 115°17' 47" E 29°21' 32" S, 115°22' 07" E 29°25' 21" S, 115°21' 57" E 29°25' 21" S, 115°20' 53" E 29°27' 26" S, 115°20' 51" E 29°27' 25" S, 115°16' 25" E 29°24' 32" S, 115°16' 28" E
Tenure	Exploration permit EP 469
Timing	July/August 2014 to November/December 2014
Expected duration	30 days for site preparation 20 days for operations (data acquisition) 25 days for demobilisation and rehabilitation Minimum of 2 years and then until closure criteria for rehabilitation monitoring are met
Survey line details	25 source lines spaced at 360 m – all cleared to 3.5 m wide 31 receiver lines spaced at 360 m – only 3 cleared as access tracks (3.5 m wide)
Accommodation camp	Located outside exploration permit EP 469. Accommodation will be provided either at existing facilities in nearby towns or at a temporary accommodation camp at a nearby site, depending on contractor selection.
Site office	Located in EP 469 but outside project area. Existing residence to be used by agreement with the landholder.

Item	Detail
Project area	8,575 ha
Development footprint	86.2 ha (in both cleared and uncleared areas)
Conceptual disturbance footprint	Approximately 58.5 ha
Native vegetation to be cleared	Up to 70 ha
Hours of operation	Daylight hours, 7 days a week

4 Existing environment

This chapter is a review of the existing physical, biological and cultural environment of the project area and surrounding region.

4.1 Physical environment

This section describes climate, landform, soils, surface water, groundwater, air quality and noise levels within the project area and surrounds.

4.1.1 Climate

Exploration permit EP 469 is located within the Lesueur Sandplain subregion of the Geraldton Sandplains bioregion, as defined by the Interim Biogeographic Regionalisation for Australia (IBRA). The climate of the region is described as Mediterranean, with dry, warm summers and wet, cool winters (BOM, 2012).

Climate data from Eneabba weather station, approximately 43 km south of EP 469, shows the warmest period in the region is from December to March, with average maximum temperatures from 1972 to 2012 ranging from 33.6 to 36.3°C. The lowest temperatures generally occur between July and September, with average minimum temperatures ranging from 9.0 to 9.6°C during these months (BOM, 2012).

Average rainfall in the region from 1964 to 2012 is highest during the cooler months between May and August. Rainfall during these months ranges from 69.1 to 101.1 mm per month. The driest months are between November and March, with rainfall ranging from 7.3 to 14.4 mm in this period. The average annual rainfall at Eneabba is 493.3 mm (BOM, 2012).

In the warmer months, when there is a high risk of fire, the Shire of Three Springs has a designated prohibited burning period during which it is an offence to light a fire in the open air. Immediately before and after the prohibited period, a restricted burning period applies. A permit must be obtained before lighting a fire in the open air during the restricted period. Shires may declare harvester and vehicle movement bans, and total fire bans may also be declared. In 2011 and 2012, the prohibited burning period was from 1 November to 31 January and the restricted burning periods were between 17 September and 31 October 2011 and 1 February and 15 March 2012 (Shire of Three Springs, 2011).

4.1.2 Geology, soils and landforms

The project area is located within the Geraldton Sandplains bioregion (Lesueur Sandplain sub-region) under IBRA (Woodman Environmental, 2013). The Lesueur Sandplain subregion (GS3) comprises coastal Aeolian and limestones, Jurassic siltstones and sandstones (often heavily lateritised) of central Perth Basin (Desmond & Chant, 2001).

The project area lies in the Northern Sandplains Region (Irwin Botanical District) as described by Beard (1990). Soils in this region are described as yellow sands inland and leached sandy soils near the coast, which overlay laterite. This region is almost completely underlain by sedimentary rocks of siliceous nature. The principal exception to this is a block of Proterozoic metamorphic rocks with some granite, between Greenough and Murchison Rivers (Beard, 1990). The sedimentary rocks form a series of plateaux, including the Dandaragan Plateau, on which the project area is located (Beard 1990; Woodman Environmental, 2013). These plateaux have been eroded by the sea on the west and dissected by rivers, but substantial stretches of the plateau surfaces are still preserved and form

extensive monotonous sandplains. Sandy soils are found throughout, except upon Proterozoic rocks where red loams are found (Beard, 1990). The area also contains several isolated lateritic outcrops in addition to the generally flat or undulating sandplains (Plates 4.1 and 4.2).

4.1.3 Surface water

The project area is generally devoid of any significant permanent surface water features. However, numerous small watercourses dissect the surrounding area, draining either westwards from the Arrowsmith Region onto the Swan Coastal Plain, or north or south towards the two nearest river systems (RPS, 2011). There are also several small ephemeral creeks in the project area, including Sand Plain Creek and several other unnamed watercourses (RPS, 2011) (Figure 4.1).

Sand Plain Creek bisects farmland in the north of the project area. Water was observed in the creek during previous site visits, although it was not necessary for vehicles to navigate through water in order to use a number of existing watercourse crossings.

The most significant surface water features in the vicinity of the project area are two regional drainage systems – the Arrowsmith River, to the south of the project area, and the Irwin and Lockier Rivers to the north of the project area (see Figure 4.1) (RPS, 2011).

The Arrowsmith River is the smaller of the two rivers (approximately 82 km in length) and lies less than 15 km southwest of the project area. The river flows in an east-west direction and has a catchment area of 1,605 km². The Arrowsmith River discharges into wetlands and karstic aquifers approximately 5 km from the coast (RPS, 2011).

The Irwin River is approximately 160 km in length and flows east to west through hilly terrain and agricultural areas before discharging into the ocean. The river has a catchment area of 6,605 km² (RPS, 2011).

Both the Irwin and Arrowsmith Rivers flow intermittently with significant flows predominantly through the winter months; however, some semi-permanent pools persist throughout the summer. Water quality in these rivers is generally brackish to saline (RPS, 2011). Across the Arrowsmith Region, the Irwin and Arrowsmith Rivers are known to receive a small contribution of fresh groundwater from minor spring-fed tributaries such as Springy Creek (Irwin River) and at the sites of some semi-permanent pools in the rivers (RPS, 2011).

4.1.4 Groundwater

The project area overlies the Yarragadee Formation aquifer, which is the largest aquifer in the Perth Basin. The Yarragadee Formation is comprised mainly of sand with minor shale and siltstone interbedded within it and lies over the Cadda Formation. It covers an area from north of Dongara to the Serpentine area south of Perth (RPS, 2011).

The Cadda Formation may host minor localised permeable horizons but is general of very low permeability. The Cadda Formation, where present, is a regional aquiclude and acts as a confining bed to the underlying aquifers (RPS, 2011).

The Yarragadee Formation aquifer is a multilayered flow system and due to the layered nature of the formation it becomes confined at depth. Within the project area, the upper water table is usually in excess of 100 m below ground level and given the layered nature of the formation, very little direct rainfall recharge is anticipated to reach the regional water table (RPS, 2011).

The water table is moderately flat above the 80 m contour, but steepens and drops off to the west towards the Swan Coastal Plain. The groundwater generally flows in a westerly direction (RPS, 2011).

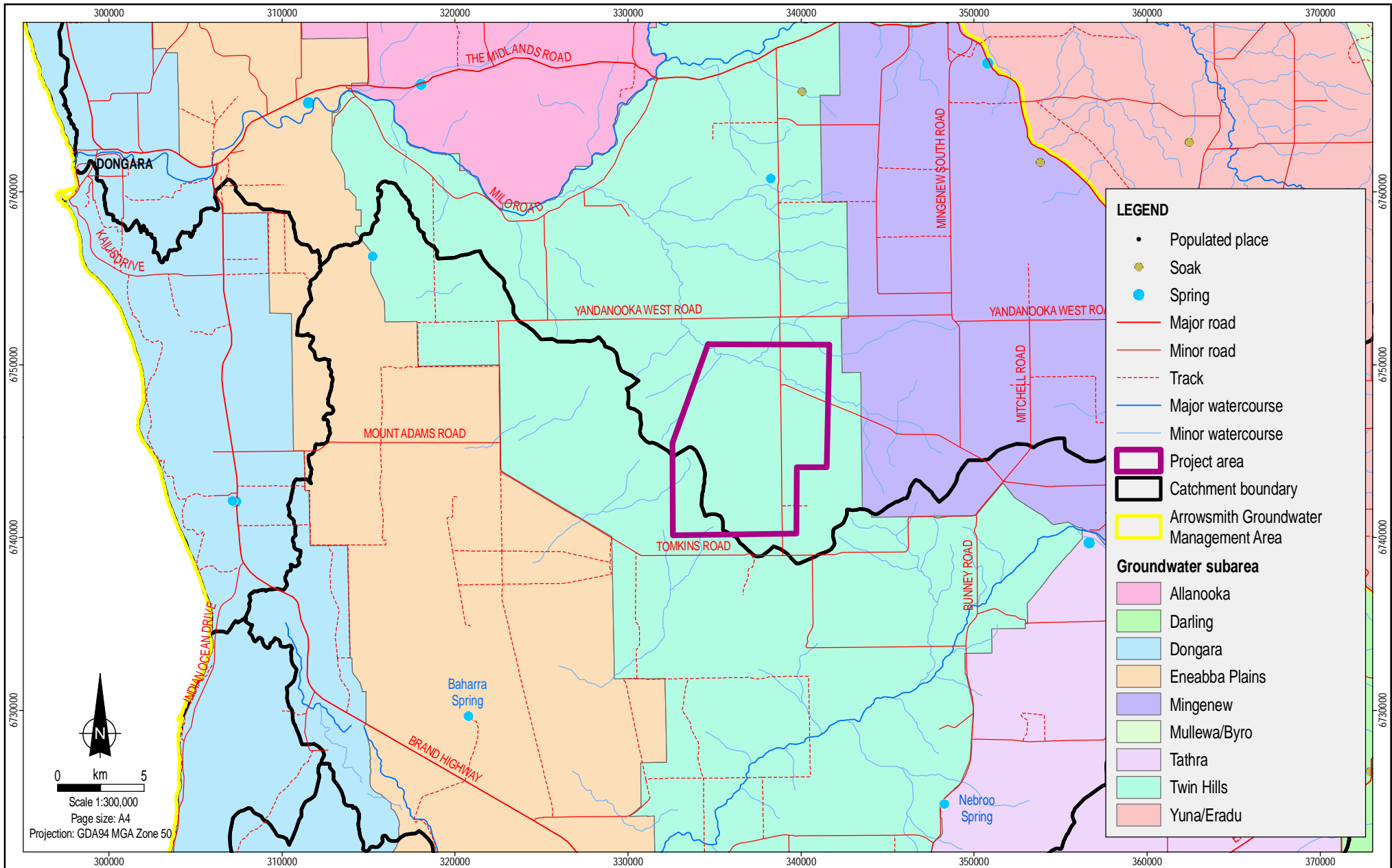
Water quality in the Yarragadee Formation aquifer is fresh to brackish, with salinity in the aquifer ranging between 500 to 1,000 mg/L.

Plate 4.1
Example of undulating sandplain
within the project area



Plate 4.2
Example of isolated lateritic
outcrop within the project area





Source: Project area from Warrego Energy. Winsites, hydrographic catchments and groundwater sub-areas from DOW. Roads, railways, powerlines and watercourses from GEODATA250K (optimum scale 1:250,000).

Notes: Project area is entirely in Arrowsmith groundwater management area



Date: 13.12.2013
MXT: 2034_02_GIS006_v0_2
File Name: 2034_02_F004.1_GIS

Warrego Energy
West Erregulla 3D Seismic Survey

Regional hydrogeology

Figure No: **4.1**

The project is located within the Arrowsmith Groundwater Management Area, as proclaimed under the RIWI Act (RPS, 2011). Under the Act a licence is required from the DoW before water can be taken from a watercourse or ground water aquifer. For licensing and allocation purposes, the project area is located within the Twin Hills sub-area of the Arrowsmith groundwater area (RPS, 2011) (see Figure 4.1).

The main use of groundwater in the area from the Yarragadee Formation aquifer is irrigation and cattle grazing (RPS, 2011).

4.1.5 Air quality and noise

Air quality and noise emissions around the project area are expected to be slightly above natural ambient levels due to pastoral, industrial and tourism activities. The following regional sources are likely to influence the ambient air quality and noise levels at the project area.

- Gas/condensate production facilities (Beharra Springs).
- Rural plant and machinery use.
- Talc Mine (Three Springs).

These sources of emissions have a relatively low impact on the overall ambient air quality and noise levels in the area.

Activities associated with the project are similar to rural plant and machinery use activities. The nearest sensitive receptor (a residence) is located approximately 570 m to the east of the project area (see Figure 3.1).

4.2 Biological environment

This section describes the flora, vegetation, fauna and habitat of the project area and surrounds.

4.2.1 Bioregional context

The Lesueur Sandplain subregion in which the project is located is known to contain a large number of distinct, species rich and geographically restricted floristic communities (Mt Lesueur and Coomallo areas), as well as a number of rare flora, rare vertebrates and stygofauna of cave communities in Beekeepers Nature Reserve. This area is nationally and internationally regarded as having a particularly high floristic diversity and level of endemism (Desmond & Chant, 2001).

The subregion has approximately one-sixth of its area in conservation reserve. One wetland of national significance (Lake – Louge Indoon System) and two wetlands of subregional significance (White and Green Lakes, Saline Lakes of Coolimba – Jurien) are also located within the subregion (Desmond & Chant, 2001).

The eastern portion of the Lesueur Sandplain subregion has been cleared extensively, with salinity problems in the area as a result (Desmond & Chant, 2001).

4.2.2 Flora and vegetation

A Level 2 flora and vegetation survey was conducted over the project area by Woodman Environmental Consulting (Woodman Environmental) in accordance with the EPA's Guidance Statement No. 51 Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia (EPA, 2004a).

The survey included a desktop assessment, an initial reconnaissance visit (15 September 2011), a detailed survey over three visits in spring 2011 (26 to 30 September, 24 to 27 October and 20 to 26 November) and another two surveys in spring 2012 (10 to 13 September and 2 to 5 October).

The full report (Woodman Environmental, 2013) is provided as Appendix B, and the following section is based on the results from this report.

Vegetation

Vegetation within the Lesueur Sandplain subregion is comprised of proteaceous scrub-heaths rich in endemics. York Gum and Jam woodland occur on outwash plains and associated drainage. The vegetation of the subregion consists mainly of shrub-heaths rich in endemics on a mosaic of lateritic mesas, sandplains, coastal sands and limestones, with heath on lateritised sandplains along the northeastern margins of the subregion (Desmond & Chant, 2001; Woodman Environmental, 2013).

The project area is located within the Northern Sandplains Region as described by Beard (1990). The vegetation of this region is broadly described as scrub on heath on sandplains near the coast with *Acacia-Casuarina* thickets further inland, *Acacia* shrub with scattered trees of *Eucalyptus loxophleba* on hard-setting loams (Beard, 1990). The Tathra vegetation system (Beard, 1976) in which the project is located is the most extensive vegetation system in the Dongara area and consists of scattered shrubs of 1 to 2 m height and a denser layer of shrubs to 1 m height. Species present include *Nuytsia floribunda*, *Eucalyptus todtiana*, *Banksia attenuata*, *Banksia menziesii* and *Banksia prionotes*. Also within the Tathra vegetation system, but on outcrops of laterite ridges and breakaways, is *Hakea auriculata*, which dominates a low heath cover to 60 cm height.

Woodman Environmental described and mapped 17 vegetation types (VTs) in the flora survey area, as detailed in Table 4.1 and shown on Figure 4.2.

As shown in Table 4.1, the condition of nearly all mapped vegetation in the survey area is classified '1' (or pristine), the highest rating for vegetation condition. Remnant vegetation within private property (i.e., on agricultural land) varied in condition from pristine to poor depending on the number of weeds present and the decline in native species diversity relating to clearing and grazing impacts. Areas ranked good to poor were generally associated with Sand Plain Creek where these pressures were greatest (Woodman Environmental, 2013)

Several small areas of disturbance from previous oil and gas exploration activities in the area were also noted, although much of these areas now resemble surrounding areas of vegetation. Overall, the survey area is a large, intact block of remnant vegetation in a region that is for the most part cleared for agricultural use (Woodman Environmental, 2013).

DPAW's database of Threatened ecological communities (TECs) and priority ecological communities (PECs) was searched for records of TECs and PECs within a 20 km radius of a point between Tomkins Road and Sand Plain Creek (Woodman Environmental, 2013). This search area encompassed the project area as well as some of the surrounding region. The search returned several occurrences of TECs: the endangered TEC 'Assemblages of organic mound springs of the Three Springs area' and the vulnerable TEC 'Ferricrete floristic community (Rocky Springs type)'. However, these TECs were outside of the survey area, approximately 10 km to the east. No PECs were identified as potentially occurring within the search area.

A search of the DOTE database for matters of national environmental significance within the survey area was also conducted (Woodman Environmental, 2013). No Threatened ecological vegetation communities listed under the EPBC Act were identified.

Table 4.1 Vegetation types in the survey area

No.	Description	Landform types	Soil types	Condition*	Area mapped (ha)
Supergroup 1					
1a	Mid open forest of <i>Eucalyptus accedens</i> over mid open shrubland dominated by <i>Gastrolobium spinosum</i> , <i>Olearia rudis</i> and <i>Anthocercis genistoides</i> over low open forbland and rushland dominated by <i>Calandrinia calyptrata</i> , <i>Calandrinia corrigioloides</i> , <i>Millotia myosotidifolia</i> , <i>Trachymene pilosa</i> and <i>Conostylis aculeata</i> subsp. <i>breviflora</i> on grey sand on mid slopes.	Mid slopes.	Grey, white sand.	1 or 2	25
1b	Mid open forest of <i>Eucalyptus accedens</i> over low open shrubland dominated by <i>Gastrolobium plicatum</i> and <i>Dodonaea divaricata</i> over low open forbland of mixed species including <i>Goodenia berardiana</i> , <i>Rhodanthe manglesii</i> , <i>Podolepis lessonii</i> and <i>Acanthocarpus canaliculatus</i> on grey-brown sandy or clay loams on mid-upper slopes	Upper and mid slopes.	Grey or brown clay and sandy loams.	1 or 2	42
2	Mid open forest of <i>Eucalyptus accedens</i> or low open forest <i>E. loxophleba</i> subsp. <i>loxophleba</i> over mid open shrubland dominated by <i>Rhagodia preissii</i> subsp. <i>preissii</i> and <i>Melaleuca acutifolia</i> on grey-brown sandy loams on flats and slopes.	Flats to mid slopes.	Brown to grey or white sandy loam.	1	6
3	Occasional mid woodland of <i>Eucalyptus accedens</i> over mid shrubland dominated by <i>Melaleuca concreta</i> , <i>M. marginata</i> and <i>M. acutifolia</i> over low isolated mixed shrubs and sedges including <i>Acacia ericksoniae</i> and <i>Lepidosperma</i> sp. A2 Inland Flat (G.J. Keighery 7000) on pink-brown or white clay loams on flats.	Drainage lines or flats, upper slope.	Brown or pink-brown clay or clay loam, sand.	1	22
4	Tall closed to open shrubland dominated by <i>Allocasuarina campestris</i> or occasionally <i>Acacia neurophylla</i> subsp. <i>neurophylla</i> over mid open shrubland and sedgeland of mixed species including <i>Grevillea biternata</i> , <i>Melaleuca radula</i> , <i>Melaleuca concreta</i> , <i>Thryptomene</i> sp. Mingenew (Diels & Pritzel 332) (P3), <i>Ecdeiocolea monostachya</i> and <i>Thryptomene racemulosa</i> on grey-brown sand, sandy loam or clay loam, occasionally with granitic pebbles, on slopes and flats adjacent to seasonal creeks.	Flat, lower slopes, mid slopes, upper slopes.	Brown-grey to grey sand to sandy loam to clay loam.	3 or 4	48
4D				5	9

No.	Description	Landform types	Soil types	Condition*	Area mapped (ha)
5	Tall closed shrubland to shrubland dominated by <i>Allocasuarina campestris</i> with occasional <i>Acacia aciphylla</i> , <i>Acacia neurophylla</i> subsp. <i>neurophylla</i> and <i>Melaleuca viminea</i> subsp. <i>viminea</i> over sparse low shrubland and sedgeland of mixed species including <i>Ecdeiocolea monostachya</i> and <i>Thryptomene racemulosa</i> over open forbland and grassland of mixed introduced species including * <i>Ehrharta longiflora</i> and <i>Ursinia anthemoides</i> on grey or brown sandy or clay loams within and on the banks of seasonal creeks.	Flat, drainage line.	Brown-grey sand to sandy loam to clay loam.	3 or 4	40
6	Open woodland of <i>Eucalyptus loxophleba</i> subsp. <i>loxophleba</i> over mid closed shrubland dominated by <i>Melaleuca marginata</i> over sparse forbland of mixed species including <i>Rhodanthe polycephala</i> on grey-brown clay on slopes above seasonal creeks.	Mid slope.	Brown-grey light clay.	1	3
Supergroup 2					
7a	Mid mallee woodland to isolated mallees of <i>Eucalyptus conveniens</i> or mid open shrubland of <i>Allocasuarina campestris</i> over low shrubland and sedgeland of mixed species frequently dominated by <i>Ecdeiocolea monostachya</i> and <i>Melaleuca aspalathoides</i> , or occasionally <i>M. tinkeri</i> , <i>Hakea auriculata</i> or <i>Hakea lissocarpha</i> , on gravelly grey or brown clay loams or sands, usually with laterite on or near the surface, on slopes and crests.	Upper slopes, mid slopes, crests.	Grey or brown sand or clay loam, often with lateritic pebbles, occasionally with lateritic outcropping.	1	799
7b	Mid mallee woodland to isolated mallees of <i>Eucalyptus conveniens</i> or mid open shrubland of <i>Allocasuarina campestris</i> over low shrubland and sedgeland of mixed species dominated by <i>Banksia carlinoides</i> , <i>Ecdeiocolea monostachya</i> , <i>Hakea incrassata</i> , <i>Hibbertia hypericoides</i> and <i>Melaleuca aspalathoides</i> on gravelly grey or brown clay loams or sands, usually with laterite on or near the surface, on slopes and crests.	Upper slopes, mid slopes, lower slopes, crests, ridges.	Grey, brown or grey-brown sand, sandy loam or clay loam, often with lateritic pebbles.	1	664
8	Mid mallee woodland to isolated mallees of <i>Eucalyptus conveniens</i> over mid shrubland to open shrubland dominated by <i>Allocasuarina campestris</i> over low shrubland and sedgeland of mixed species dominated by <i>Ecdeiocolea monostachya</i> , <i>Hakea auriculata</i> , <i>Melaleuca radula</i> , <i>M. aspalathoides</i> and <i>Banksia fraseri</i> var. <i>fraseri</i> on gravelly grey or brown clay loams usually over massive laterite on breakaway tops, ridges and lateritic rises.	Upper slopes, mid slopes, crests, ridges, breakaways.	Grey, brown or grey brown clay or sandy loams, usually with lateritic pebbles and exposed lateritic outcropping.	1	444
8D				4	4

No.	Description	Landform types	Soil types	Condition*	Area mapped (ha)
9	Mid to low open shrubland of <i>Allocasuarina campestris</i> , <i>Melaleuca concreta</i> and <i>Melaleuca marginata</i> over low shrubland dominated by <i>Melaleuca tinkeri</i> and occasionally <i>Gastrolobium plicatum</i> over low shrubland and forbland dominated by <i>Stylidium torticarum</i> (P3), <i>Leucopogon</i> sp. Yandanooka (M. Hislop 2507) and <i>Micromyrtus rogeri</i> (P1) on gravelly pink-brown or white-grey clay or clay loam over decaying laterite on breakaway tops and slopes.	Breakaway tops and slopes, flats below breakaways.	Brown, pink, grey, white or grey-white clay or clay loam, often with lateritic gravel, often with exposed decaying laterite outcropping.	1	50
Supergroup 3					
10	Mid sparse to open shrubland of mixed species including <i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i> , <i>Grevillea biformis</i> subsp. <i>biformis</i> and <i>Banksia attenuata</i> over low shrubland and sedgeland of mixed species dominated by <i>Ecdeiocolea monostachya</i> , <i>Melaleuca leuropoma</i> , <i>Daviesia divaricata</i> subsp. <i>divaricata</i> ms, <i>Mesomelaena pseudostygia</i> and <i>Banksia shuttleworthiana</i> on yellow-brown or occasionally grey sand on slopes and valley floors.	Upper slopes, mid slopes, lower slopes, flats, crests.	Yellow, yellow-brown, brown or grey sand or sandy loam.	1	1,033
10D				5	5
11	Mid sparse to open shrubland of <i>Allocasuarina campestris</i> and <i>Grevillea biformis</i> subsp. <i>biformis</i> over low shrubland and sedgeland dominated by <i>Hakea circumalata</i> , <i>Lepidobolus preissianus</i> subsp. <i>preissianus</i> , <i>Mesomelaena pseudostygia</i> and <i>M. stygia</i> subsp. <i>deflexa</i> (P3) on yellow or yellow-brown sand or sandy loam on mid to upper slopes.	Upper slopes, mid slopes.	Yellow or yellow-brown sand or sandy loam.	1	538
12	Occasional mid sparse to open shrubland of <i>Allocasuarina campestris</i> and <i>Grevillea biformis</i> subsp. <i>biformis</i> over low shrubland and sedgeland dominated by <i>Beaufortia elegans</i> , <i>Hibbertia hypericoides</i> and <i>Ecdeiocolea monostachya</i> on grey or brown sand or sandy loam on mid to upper slopes.	Mid slopes, upper slopes.	Grey-white to brown sand to sandy loam.	1	243

No.	Description	Landform types	Soil types	Condition*	Area mapped (ha)
Supergroup 4					
13a	Low open woodland of <i>Eucalyptus todtiana</i> over mid to low shrubland of mixed species dominated by <i>Allocasuarina humilis</i> , <i>Banksia scabrella</i> (P4), <i>Calothamnus sanguineus</i> , <i>Eremaea beaufortioides</i> var. <i>microphylla</i> , <i>Melaleuca</i> aff. <i>leuropoma</i> and <i>Hibbertia hypericoides</i> over low shrubland and sedgeland of mixed species including <i>Banksia dallanneyi</i> subsp. <i>media</i> , <i>Conostylis canteriata</i> , <i>Mesomelaena pseudostygia</i> and <i>Caustis dioica</i> on grey or brown sand on lower and mid slopes,	Mid slopes, lower slopes, plain.	Grey-white or brown sand or sandy loam.	1	1,740
13aD				5	5
13b	Low open woodland of <i>Eucalyptus todtiana</i> over mid to low shrubland of mixed species dominated by <i>Allocasuarina humilis</i> , <i>Calothamnus sanguineus</i> , <i>Hakea trifurcata</i> , <i>Hibbertia hypericoides</i> and <i>Melaleuca leuropoma</i> over low shrubland and rushland of mixed species including <i>Banksia dallanneyi</i> subsp. <i>media</i> , <i>Conostylis aculeata</i> subsp. <i>breviflora</i> and <i>Conostylis canteriata</i> on grey, brown or yellow sand on flats, in depressions and on slopes.	Mid slopes, lower slopes, flats, drainage depressions.	Grey, brown or yellow sand or sandy loam.	1	548
14	Low open shrubland dominated by <i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i> , <i>Banksia carlinoides</i> , <i>Hakea lissocarpha</i> and <i>Verticordia densiflora</i> over low open shrubland, sedgeland and forbland dominated by <i>Dampiera teres</i> (broad-leaf variant), <i>Jacksonia angulata</i> , <i>Harperia lateriflora</i> , <i>Opercularia vaginata</i> and <i>Melaleuca trichophylla</i> on grey-brown sands, sandy loams and clay loams in minor drainage lines and on flats.	Mid slopes, lower slopes, flats, drainage lines, wetlands, depressions.	Grey, grey-white, brown or grey-brown sand, sandy loam or clay loam.	1	167
Other (not classified in a Supergroup)					
PC 1D	Low woodland of <i>Acacia acuminata</i> over introduced pasture grasses and isolated native forbs including <i>Ptilotus manglesii</i> and <i>Arthropodium dyeri</i> on grey-brown clay loams on flats adjacent to seasonal creeks.	Flats adjacent to seasonal creeks.	Grey-brown clay loams.	4	10
Subtotal of mapped VTs					6,450
C	Cleared land (areas of disturbance with no vegetation)			C	3,099
Total					9,549

Source: Woodman Environmental (2013).

A 'D' postfix on a VT number indicates a degraded version of a VT.

* Vegetation condition is defined as in Keighery (1994 cited in Woodman Environmental, 2013):

1 – Pristine: pristine or nearly so; no obvious signs of disturbance.

2 – Excellent: vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.

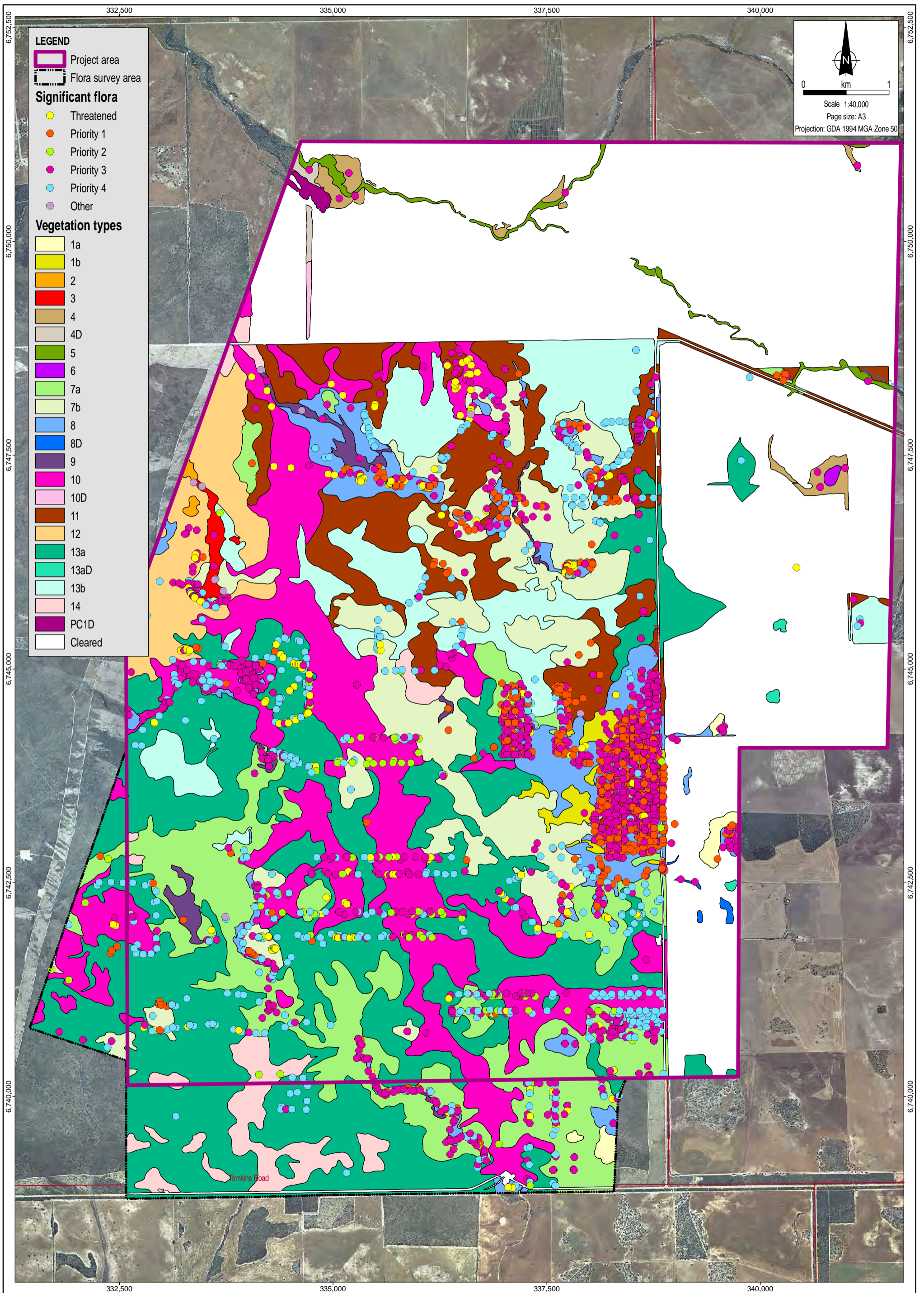
3 – Very good: Vegetation structure altered, obvious signs of disturbance.

4 – Good: Vegetation structure significantly altered by very obvious signs of multiple disturbance. Retains basic vegetation structure or ability to regenerate it.

5 – Poor: Basic vegetation structure severely impacted by disturbance.

C – Cleared land.

This page has been left blank intentionally.



Source and Notes:
Project area from Warrego.
Significant flora and vegetation types from Woodman Environmental Consulting (2013).
Roads from GEODATA 250K (Optimum scale 1:250,000).
Aerial imagery from Landgate WA (2011).



Date: 13.12.2013
MKT: 2034_02_GIS004_v0_2
File Name: 2034_02_F004.2_GIS

Warrego Energy
West Erregulla 3D Seismic Survey



Vegetation types and conservation significant flora

Figure No: 4.2

This page has been left blank intentionally.

None of the VTs mapped in the survey area by Woodman Environmental were equivalent to any state-listed TECs or PECs or any Threatened ecological communities of national environmental significance (Woodman Environmental, 2013).

Woodman Environmental also considered the local conservation significance of each VT that was mapped. The local conservation significance of each VT was determined by considering the extent of the VT in the survey area, the type and extent of associated landforms, and whether the VT is potential habitat for flora species of high conservation significance. These criteria are shown in Table 4.2.

Table 4.2 Descriptions of local conservation significance of vegetation types

Criteria	Local conservation significance ranking			
	1	2	3	4
Composition of VT in survey area.	> 10%	< 10%	< 10%	< 1%
Is landform/soil type where VT occurs is locally common and widespread?	Yes	Yes	No	No
Is VT a habitat for DRF or for one or more other species of high conservation significance (including, but not limited to, Priority flora species and potentially undescribed taxa) that is completely or predominantly restricted to the VT?	–	–	–	Yes

Source: Woodman Environmental (2013).

All VTs are considered of the highest local conservation significance (ranking '4') according to the classification in Table 4.2, with the exception of VT 13b (ranking '2') and VT 14 (ranking '3') (see Appendix B for more detail). All VTs in the survey area may be of increased regional significance as they are part of the Tathra-379 vegetation system, more than 70% of which has been cleared for agricultural purposes.

Flora

A total of 73 conservation significant flora species, including nine Threatened (Declared Rare Flora) species, occur or have the potential to occur in the project area, based on data compiled from historical studies in the area and records from DPAW databases (refer to Table 4 of Appendix B).

A total of 30 confirmed and 2 probable flora species of conservation significant taxa are known from the survey area.

The 2011 and 2012 Level 2 surveys recorded a total of 535 vascular flora taxa and one known hybrid, representing 64 families and 196 genera and included three Threatened flora species (*Eucalyptus crispata* and the orchids *Thelymitra stellata* and *Paracaleana dixonii*), 23 confirmed Priority species, one probable Priority species and one hybrid species. In addition, another Threatened flora species, two priority flora species and a probable priority species have historically been recorded within the survey area. A summary of conservation significant flora known from within the survey area is shown in Table 4.3 and their locations are shown on Figure 4.2. A description of the four Threatened flora species is provided in Table 4.4.

Table 4.3 Conservation significant flora known from within the survey area

Taxon	Number of locations	Number of individuals	Found in VTs
Threatened			
<i>Eucalyptus crispata</i>	3 (4)	18	8, 10
<i>Eucalyptus leprophloia</i> *	2*	Unknown	8, C
<i>Paracaleana dixonii</i>	174	263	7a, 7b, 8, 10, 11, 12, 13a
<i>Thelymitra stellata</i>	139 (144)	273	7a, 7b, 8, 11, 13a
Priority 1			
<i>Lasiopetalum ogilvieanum</i>	26	113	7a, 7b, 8, 13a
<i>Malleostemon decipiens</i>	2	300	4, 5
<i>Micromyrtus rogeri</i>	504	17,174	1a, 1b, 3, 7a, 7b, 8, 9, 10, 11, 12, 13b, C
? <i>Stylidium carnosum</i> subsp. Narrow leaves (J.A. Wege 490)	1	1	10
<i>Synaphea oulopha</i>	146 (150)	846	1b, 7a, 7b, 8, 9, 10, 11, 13a, 13b
Priority 2			
<i>Eucalyptus abdita</i>	6 (7)	12	1b, 8 (potentially also in 11)
<i>Persoonia filiformis</i>	88	190	7a, 7b, 10, 13a
<i>Schoenus badius</i>	7	7^	7a, 10, 13b, 14
<i>Stylidium pseudocaespitosum</i>	1	1	13a
Priority 3			
<i>Acacia isoneura</i> subsp. <i>isoneura</i>	1	1	5
<i>Allocasuarina grevilleoides</i>	37	1,997	7a, 7b, 8, 13a
<i>Banksia fraseri</i> ?var. <i>crebra</i> *	1*	Unknown	7b
<i>Beyeria gardneri</i>	1	2	12
<i>Eucalyptus macrocarpa</i> x <i>pyriformis</i>	3	19	7b, 8, 11
<i>Guichenotia impudica</i> *	1*	Unknown	11
<i>Haemodorum loratum</i>	57	90	3, 7a, 7b, 8, 9, 10, 12, 13a, 13b
<i>Hemiandra</i> sp. <i>Eneabba</i> (H. Demarz 3687)	22	30	7a, 10, 13a, 13b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	514	21,527	3, 7a, 7b, 8, 9, 10, 11, 12, 13a, 13b
<i>Persoonia rudis</i>	17	18	7a, 7b, 8, 10, 11, 12, 13a

Taxon	Number of locations	Number of individuals	Found in VTs
<i>Schoenus griffinianus</i> *	1*	1	13a
<i>Stylidium drummondianum</i>	433	9,294	1a, 1b, 7a, 7b, 8, 8D, 9, 10, 11, 13a, 13b, C
<i>Stylidium torticarpum</i>	59	1,111	1a, 1b, 3, 4, 7b, 8, 9, C
<i>Synaphea aephynsa</i>	157	1,780	7a, 7b, 8, 9, 10, 12, 13a
<i>Thryptomene</i> sp. <i>Mingenew</i> (Diels & Pritzel 332)	8	221	4, 4D, 5, 7a
<i>Verticordia luteola</i> var. <i>luteola</i>	2	21	13a
Priority 4			
<i>Banksia scabrella</i>	463	7,668	7a, 7b, 8, 10, 11, 12, 13a, 13b, 14, C
<i>Calytrix chrysantha</i>	1	30	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	121	1,310	3, 7a, 7b, 8, 10, 11, 12, 13a

Source: Woodman Environmental (2013).

Conservation status under the *Wildlife Conservation Act 1950* (descriptions adapted from DEC (2012)):

Schedule 1 (S1) – Taxa that have been adequately searched for and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such.

Priority 1 (P1) – Taxa that are known from few specimens or sight records from one or a few localities on lands not managed for conservation, e.g., agricultural or pastoral lands, urban areas, active mineral leases, Shire or Main Roads reserves.

Priority 2 (P2) – Taxa that are known from one or a few collections or sight records, some of which are on lands not under imminent threat of habitat destruction or degradation, e.g., national parks, conservation parks, nature reserves, State forest, vacant Crown land (VCL), water reserves, etc.

Priority 3 (P3) – Taxa that are known from collections or sight records from several localities not under imminent threat, or from few but widespread localities with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat.

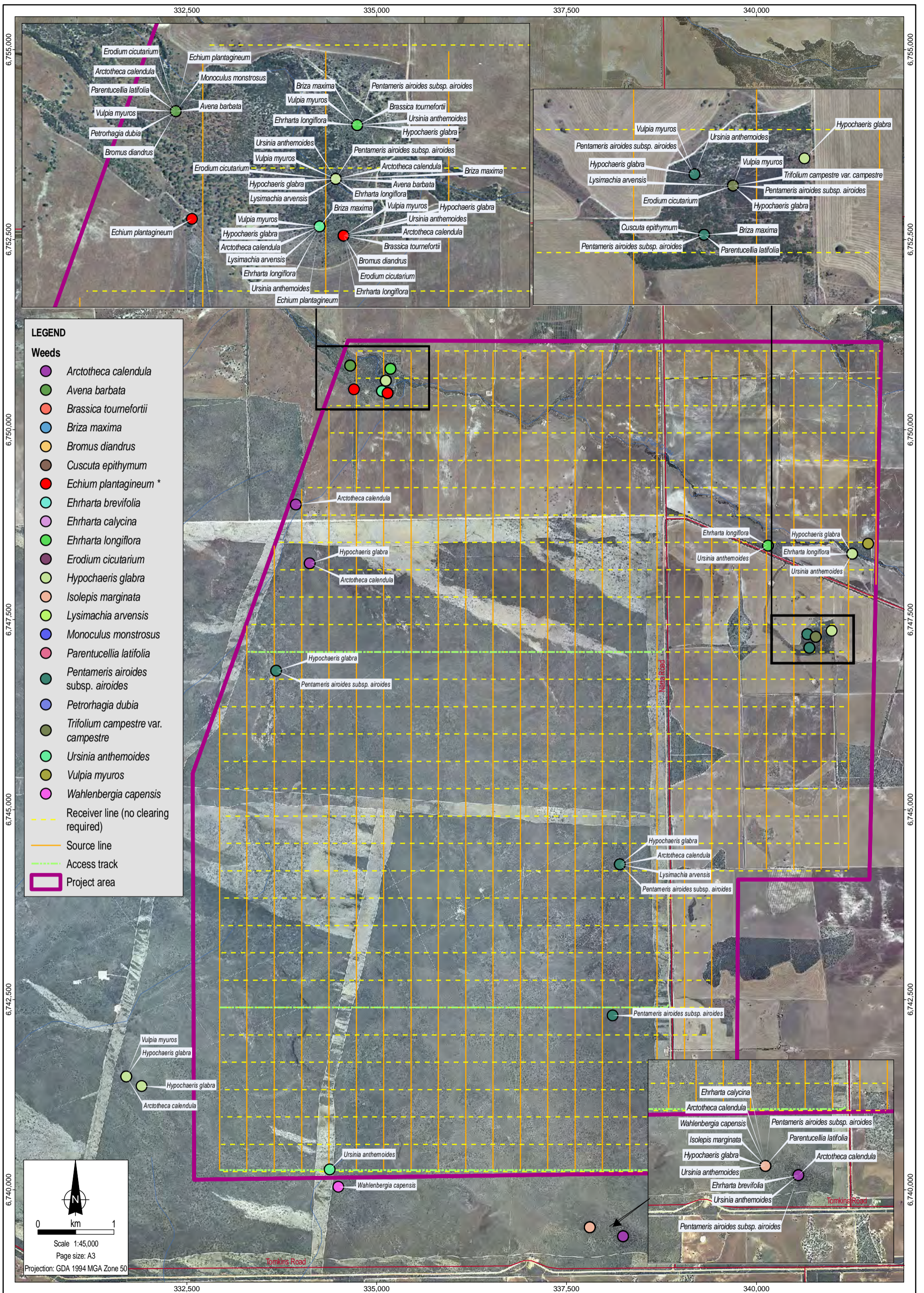
Priority 4 (P4) – Taxa that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not current Threatened or in need of special protection, but could be if present circumstances change.

Bracketed totals include collections that could not be positively identified.

* Indicates record from desktop search that could not be verified as correct by Woodman Environmental in 2012 and is believed to be erroneous.

^ Numbers of individuals were not recorded for this species, however is an annual species that is likely to be more abundant than indicated.

This page has been left blank intentionally.



Source and Notes:
 Weed locations from Woodman Environmental Consulting (2013).
 * Declared Pest under the BAM Act.
 Roads from GEODATA 250K (Optimum scale 1:250,000).
 Aerial imagery from Landgate WA (2011).

coffey
 Date: 16.12.2013
 MKT:
 2034_02_GIS008_v0_2
 File Name:
 2034_02_F004.3_GIS

Warrego Energy
West Erregulla 3D Seismic Survey

warrego energy

Locations of weed species in the project area

Figure No: **4.3**

This page has been left blank intentionally.

Table 4.4 Threatened flora within the project area

Threatened flora	Description	Presence within project area
<p>Scaly Butt Mallee, <i>Eucalyptus leprophloia</i> (Endangered)</p>	<p><i>E. leprophloia</i> is a mallee that grows to a height of about 8 m and generally occurs on breakaways and hills or valleys associated with such features. There are 27 known records of this species representing 9 populations. One of these populations is located in the Boothendarra Nature Reserve (Woodman Environmental, 2013).</p>	<p>While two of these known records occur within the project area, <i>E. leprophloia</i> was not recorded by Woodman in the project area during the detailed and targeted surveys in 2011 and 2012. Woodman (2013) considers that both records represent the same plant, the location data of which are suspected to be erroneous.</p>
<p>Yandanooka Mallee, <i>Eucalyptus crispata</i> (Vulnerable)</p>	<p><i>E. crispata</i> grows to about 7 m in height and generally occurs in isolated clumps on breakaways and hills. There are 29 records of <i>E. crispata</i>, representing approximately 12 populations and spanning an area of approximately 80 km, encompassing conservation areas including Wilson Nature Reserve and Boothendarra Nature Reserve. Existing records of the species indicate that populations of <i>E. crispata</i> generally contain fewer than 20 individuals.</p>	<p>Woodman's Level 2 flora and vegetation survey positively identified 18 individuals of this species across three locations. A fourth potential location was also identified but was unable to be positively identified (<i>E. ?crispata</i>) due to the absence of fruiting material (Woodman, 2013). This species was recorded solely within vegetation type (VT) 8. Approximately 448.3 ha of habitat for <i>E. crispata</i> is present within the survey area.</p>
<p>Sandplain Duck Orchid, <i>Paracaleana dixonii</i> (Endangered)</p>	<p><i>Paracaleana dixonii</i> is a tuberous, perennial orchid 0.2 m in height, found in small isolated colonies in sandy soils, occasionally over laterite. There are 38 records of <i>Paracaleana dixonii</i>, representing approximately 21 populations and occurring over a range of approximately 180 km. A number of these populations are located within secure conservation estate, including Lesueur and Moore River National Parks and Coomallo and South Eneabba Nature Reserves.</p>	<p>A total of 263 individuals of <i>Paracaleana dixonii</i> were recorded at 174 locations, representing a total of 30 subpopulations. The record of this species within the survey area represents the northernmost known collection of the species, extending its known range by approximately 10 km (Woodman Environmental, 2013). This species was predominantly recorded within VT 13a (70 locations) and was also recorded within VT 7a (13 location), 7b (29 locations), 8 (1 location), 11 (7 locations) and 12 (15 locations). Approximately 4,438 ha of habitat for <i>Paracaleana dixonii</i> is present within the survey area.</p>
<p>Star Sun Orchid, <i>Thelymitra stellata</i> (Endangered)</p>	<p><i>Thelymitra stellata</i> is a tuberous, perennial orchid 0.25 m in height, found in small isolated colonies on lateritic soils, often on breakaways and hills. There are 53 records of <i>Thelymitra stellata</i>, representing approximately 42 populations and occurring over a range of approximately 450 km. A number of these populations (consisting of relatively few individuals) are located within secure conservation estate, including Lesueur National Park and Coomallo Nature Reserve.</p>	<p>A total of 266 individuals of <i>Thelymitra stellata</i> were recorded at 139 locations, representing a total of 18 subpopulations. A further seven individuals, over five locations and representing another two subpopulations, may also represent this species. However, these could only be identified to <i>Thelymitra ?stellata</i> due to the absence of flowering material. The record of this species within the survey area represents the northernmost known collection of the species, extending its known range by approximately 10 km (Woodman Environmental, 2013). This species was predominantly recorded within VT 8, with 129 of the 139 confirmed locations and one of the five potential locations recorded occurring within this VT. This species was also recorded within VT 7a (9 locations), 7b (2 locations), 11 (2 locations) and 13a (1 location). Approximately 4,195 ha of habitat for <i>Thelymitra stellata</i> is present within the survey area.</p>

Source: Woodman Environmental (2013).

Woodman Environmental (2013) recorded a total of 22 introduced flora within the survey area (Figure 4.3). None of these weeds are listed as weeds of national significance. One species, *Echium plantagineum* (Pattersons Curse), is a declared pest under the BAM Act, but not for the shires within which the project occurs. For a full list and description of each of the weed species, refer to Appendix B.

Although private property was not surveyed for weed species, it is highly likely that several weed species exist in these areas (Woodman Environmental, 2013).

Glevan Consulting (2012) was commissioned by Woodman to conduct an assessment for the presence of *Phytophthora* dieback in the project area. No areas of remnant vegetation within the VCL were observed to be currently affected by, infected by or altered by the previous introduction of *Phytophthora* dieback. This area should be considered as being protectable from the *Phytophthora* dieback disease. Areas of remnant vegetation within agricultural land were not examined as they were not able to be mapped (i.e., sufficiently disturbed that dieback occurrence mapping was not possible at time of inspection).

4.2.3 Terrestrial vertebrate fauna and associated habitat

In June 2012, Coffey conducted a Level 1 terrestrial vertebrate fauna survey over the project area (Coffey Environments, 2013) in accordance with:

- EPA's Position Statement No. 3 Terrestrial Biological Surveys as an Element of Biodiversity Protection (EPA, 2002),
- EPA Guidance Statement No. 56 Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia (EPA, 2004b), and
- EPA's Technical Guide – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA, 2010).

Coffey also undertook a Black Cockatoo habitat assessment in accordance with the EPBC Act Referral Guidelines for Three Threatened Black Cockatoo Species (DSEWPAC, 2012). This fauna assessment is provided in this EP as Appendix C, and the following discussion is based on the results from this report. Coffey Environments' fauna assessment consisted of two parts:

1. A desktop assessment involving the interrogation of the DPAW Threatened Fauna Database, the NatureMap database, the EPBC Act Protected Matters Database and other published documents. General texts were also used to provide supplementary information (refer to Appendix C).
2. An on-site field investigation from 6 to 8 June 2012 to identify fauna habitats and assess the potential for conservation significant terrestrial fauna species to occur within the project area. This investigation therefore included an inspection of the major fauna habitats and land systems with the project area and the adjacent areas. Habitat was assessed by traversing the area in a vehicle and on foot, mapping and recording habitat reference points and drawing on floristic community mapping previously conducted by Woodman Environmental (2013).

Consistent with EPA Guidance Statement No. 56 (EPA, 2004b), this level of survey was considered adequate given the scale and nature of impact associated with the project was assessed by Coffey to be low.

The fauna assessment did not include a survey for short-range endemic (SRE) invertebrates, as the area did not contain unique or locally uncommon habitats likely to support SRE fauna.

Fauna habitat

The fauna assessment identified five fauna habitat types in the project area, with habitat condition ranging from very good to highly degraded (according to the criteria in Table 4.5). Each of these fauna habitats is described in Table 4.6, including a description of the habitats' suitability for use by the Carnaby's Black Cockatoo. Habitat types are mapped on Figure 4.4 and depicted in plates in Appendix C.

Table 4.5 Fauna habitat quality criteria

Rating	Description
High	These areas closely approximate the vegetation mix and quality that would have been in the area prior to any disturbance. The habitat has connectivity with other habitats and is likely to contain the most natural vertebrate fauna assemblage.
Very good	These areas show minimal signs of disturbance (e.g., grazing, clearing, fragmentation, weeds) and generally retain many of the characteristics of the habitat if it had not been disturbed. The habitat has connectivity with other habitats and fauna assemblages in these areas are likely to be minimally affected by ground disturbance.
Good	These areas show signs of disturbance (e.g., grazing, clearing, fragmentation, weeds) but generally retain many of the characteristics of the habitat if it had not been disturbed. The habitat has connectivity with other habitats and fauna assemblages in these areas are likely to be affected by disturbance.
Disturbed	These areas show signs of significant disturbance. Many of the trees, shrubs and undergrowth are cleared. These areas may be in the early succession and regeneration stages. Areas may show signs of significant grazing, contain weeds or have been damaged by vehicles or machinery. Habitats are fragmented or have limited connectivity with other fauna habitats. Fauna assemblages in these areas are likely to differ significantly from what might be expected in the area had the disturbance not occurred.
Highly degraded	These areas often have a significant loss of vegetation, an abundance of weeds and a large number of vehicle tracks or are completely cleared. There is limited or no fauna habitat connectivity. Faunal assemblages in these areas are likely to be significantly different to what might have been in the area pre-disturbance.

Source: Coffey Environments (2013).

Table 4.6 Fauna habitat types in the survey area

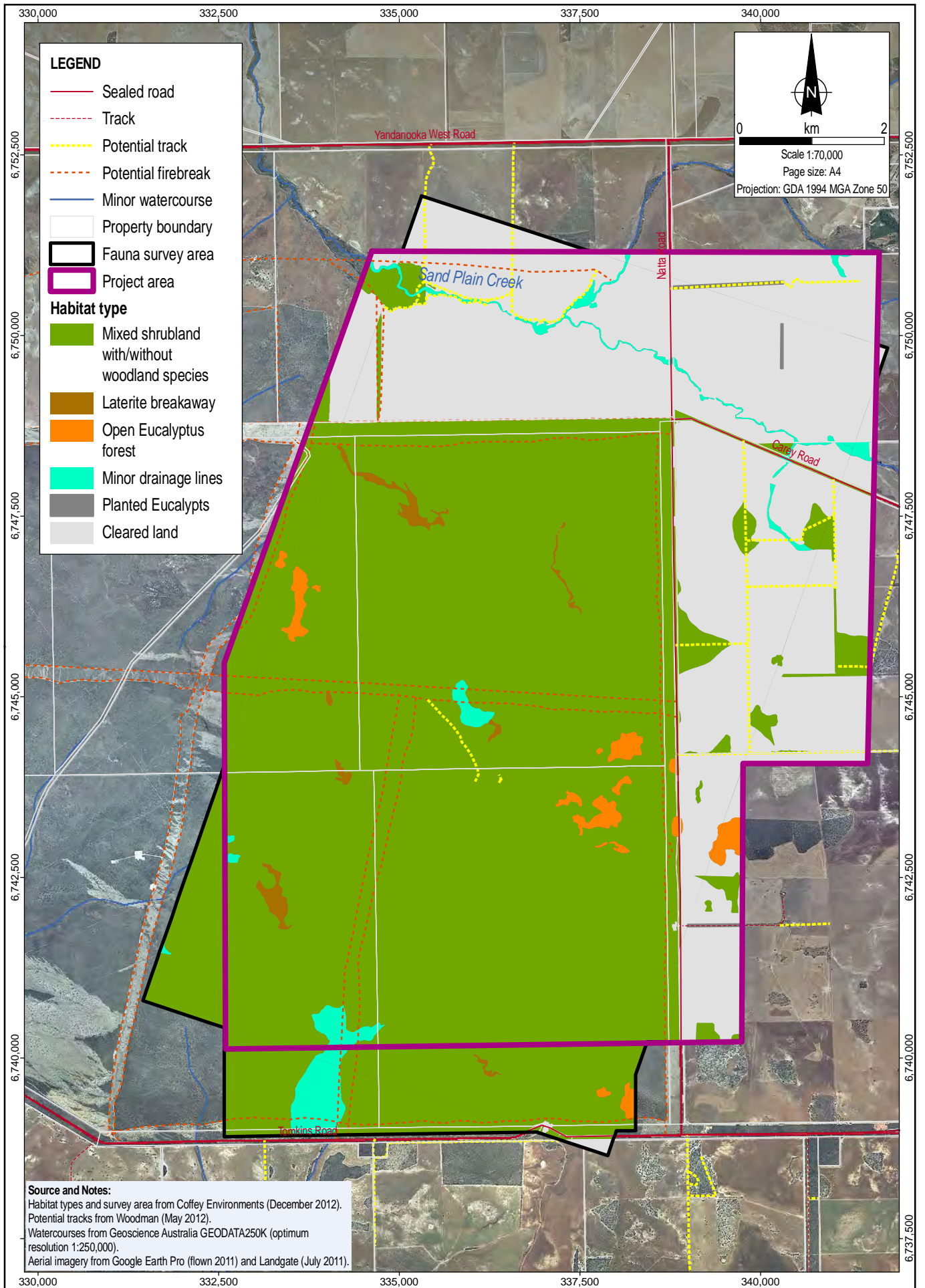
Habitat type	Description	Habitat quality	Area mapped (proportion of total area)
Cleared land	Agricultural land, either crops or pasture. This habitat provides little value to native vertebrate fauna species.	Highly degraded	3,158.9 ha (33%)
Planted <i>Eucalyptus</i>	Isolated trees planted along roadsides. Given its isolated nature, this habitat has little value to native vertebrate fauna species, with the exception that it may provide suitable roosting habitat for the Carnaby's Black Cockatoo.	Highly degraded	9.1 ha (>1%)

Habitat type	Description	Habitat quality	Area mapped (proportion of total area)
Open <i>Eucalyptus</i> forest	<p>The Open <i>Eucalypt</i> Forest habitat occurs as patches throughout the survey area with <i>Eucalyptus accedens</i> the dominant species.</p> <p>This habitat provides suitable roosting habitat for the Carnaby's Black Cockatoo. These younger age class trees may also provide suitable breeding habitat in the future.</p>	This fauna habitat was of very good quality within areas of VCL. However, remnant areas of this habitat outside the VCL (i.e., within/surrounded by cleared land) ranged from good to highly degraded quality.	94.2 ha (1%)
Mixed shrubland with/without woodland species	<p>Mixed shrubland with or without low open woodland, on flats, in depressions and on slopes. Species comprising this habitat include <i>Eucalyptus tottiana</i>, <i>Eucalyptus conveniens</i>, <i>Allocasuarina humilis</i>, <i>Allocasuarina campestris</i>, <i>Banksia scabrella</i>, <i>Calothamnus sanguineus</i>, <i>Banksia dallanneyi</i>, <i>Banksia attenuate</i>, <i>Conostylis canteriata</i>, <i>Hakea trifurcate</i>, <i>Hakea circumalata</i>, <i>Grevillea biform</i> and <i>Melaleuca leuropoma</i>.</p> <p>This habitat contained a number of flora species that are foraging habitat for Carnaby's Black Cockatoo. The <i>Eucalyptus</i> species present would also provide suitable roosting habitat.</p>	This habitat was of very good quality within areas of VCL. However remnant areas of this habitat outside the VCL (i.e., within/surrounded by cleared land) ranged from highly degraded to good quality.	6,109.5 ha (64%)
Laterite breakaway	<p>The laterite breakaways habitat contains a mixture of shrubland with/without open mallee woodland on clear rises or ridges in the landscape.</p> <p>This habitat contained a number of flora species that are foraging habitat for Carnaby's Black Cockatoo (<i>Hakea auriculata</i> and <i>Banksia fraseri</i>).</p>	Very good.	51.6 ha (1%)
Minor drainage lines	Consisting of open shrubland in minor drainage lines and flats, This habitat included suitable foraging species for Carnaby's Black Cockatoos, including <i>Banksia carlinoides</i> and <i>Hakea lissocarpha</i> .	This fauna habitat was of Very Good quality within the area of Vacant Crown Land. However remnant areas of this habitat outside Vacant Crown Land/within cleared farmland ranged from Good to Highly Degraded quality.	177.6 ha (2%)

Source: Coffey Environments (2013).

Note: While no suitable breeding habitat for the Carnaby's Black Cockatoo was observed, the open *Eucalyptus* forest and planted *Eucalyptus* habitats contained younger age class trees that may provide suitable breeding habitat in the future.

Good quality habitat was generally associated with areas that contained higher connectivity with large patches of remnant vegetation (i.e., VCL). Although the cleared land was highly degraded, the vast majority of the uncleared land (approximately 95%) was considered of good to very good quality. This is consistent with the vegetation condition as described by Woodman Environmental (2013) and discussed in Section 4.2.2; i.e., that overall the project area represents a large, intact block of remnant vegetation in a region that is for the most part cleared for agricultural use.



Species diversity and assemblage

The desktop assessment indicated that a total of 302 fauna species have been previously recorded in the region in which the project is located. These 302 species include 168 bird species, 29 mammal species, 94 reptile species and 11 amphibian species. This total also includes several marine bird species whose ranges are restricted to coastal or offshore regions and would not be expected to be found in the project area. A number of opportunistic fauna sightings were recorded during the field investigations including another two species previously not identified increasing the total potential species list to 304 species. The full list of species is provided in Appendix C.

Eleven of the 304 species are introduced, three of which were identified during the desktop assessment (i.e. Cat (*Felis catus*), House Mouse (*Mus musculus*) and Rat (*Rattus rattus*) and eight of which were positively recorded during Coffey Environments' 2013 site investigations, including:

- Cow (*Bos taurus*).
- Goat (*Capra hircus*).
- Sheep (*Ovis aries*).
- Dingo/Dog (*Canis lupus/familiaris*).
- Red Fox (*Vulpes vulpes*).
- Rabbit (*Oryctolagus cuniculus*).
- Pig (*Sus scrofa*).

The fauna assessment identified that fauna assemblages present in the survey area are likely to be tolerant of some disturbance (e.g., anthropogenic disturbances such as farming) but may also be present in reduced numbers due to introduced predators and seasonal fluctuations in abundance. The relatively undisturbed area of VCL has the greatest biodiversity value, while the surrounding cleared land is unlikely to provide habitat for an assemblage that would be typical of the region.

Notably, the fauna assemblages identified in the survey area are not unique to the survey area. The species of mammals, reptiles and birds present or likely to visit the project area would most likely be present in adjacent areas of similar vegetation communities in the region (Coffey Environments, 2013).

Conservation significant fauna

Based on the desktop assessment, 20 fauna species of conservation significance have been identified as potentially occurring within the vicinity of the project area, including:

- Three species listed as Threatened under the EPBC Act.
- Thirteen species scheduled under the WC Act.
- Nine species listed as Priority fauna species by DPAW.
- Five species listed as migratory species under the EPBC Act.

Table 4.7 lists the conservation significant fauna species that have the potential to occur in the project area and an indication of the likelihood of each species occurring in the project area (refer to Appendix C for fuller descriptions of each species' habitat and distribution).

Table 4.7 Vertebrate fauna of conservation significance with potential to occur in the project area

Common name (species name)	WC Act ¹ /DEC status ²	EPBC Act status ³	Potential to exist within project area ⁴
Birds			
Baudin's Black Cockatoo (<i>Calyptorhynchus baudinii</i>)	Schedule 1	Vulnerable	Unlikely
Carnaby's Black Cockatoo (<i>Calyptorhynchus latirostris</i>)	Schedule 1	Endangered	Likely
Malleefowl (<i>Leipoa ocellata</i>)	Schedule 1	Vulnerable	Unlikely
Peregrine Falcon (<i>Falco peregrinus</i>)	Schedule 4	—	Possible
Australian Bustard (<i>Ardeotis australis</i>)	Priority 4	—	Likely
Rufous Fieldwren (<i>Calamanthus campestris</i> subsp. <i>Montanellis</i>)	Priority 4	—	Unlikely
White-browed Babbler (<i>Pomatostomus superciliosus</i> subsp. <i>ashbyi</i>)	Priority 4	—	Unlikely
White-bellied Sea Eagle (<i>Haliaeetus leucogaster</i>)	Schedule 3	Migratory	Unlikely
Rainbow Bee-eater (<i>Merops ornatus</i>)	Schedule 3	Migratory	Likely
Fork-tailed Swift (<i>Apus pacificus</i>)	Schedule 3	Migratory	Possible
Great Egret (<i>Ardea alba</i>)	Schedule 3	Migratory	Unlikely
Cattle Egret (<i>Ardea ibis</i>)	Schedule 3	Migratory	Unlikely
Mammals			
Western Brush Wallaby (<i>Macropus irma</i>)	Priority 4	—	Possible
Reptiles			
<i>Egernia stokesii</i>	Schedule 1	—	Unlikely
Gilled Slender-Bluetongue (<i>Cyclodomorphus branchialis</i>)	Schedule 1	—	Possible

Common name (species name)	WC Act ¹ /DEC status ²	EPBC Act status ³	Potential to exist within project area ⁴
Woma Python (<i>Aspidites ramsayi</i>)	Schedule 4 Priority 1	—	Unlikely
<i>Lerista macropisthopus</i>	Priority 2	—	Unlikely
Black Striped Snake (<i>Neelaps calonotos</i>)	Priority 3	—	Unlikely
Lined skink (<i>Lerista lineate</i>)	Priority 3	—	Unlikely
Western Carpet Python (<i>Morelia spilota imbricata</i>)	Schedule 4 Priority 4	—	Likely

Source: Coffey Environments (2013).

Notes:

- Species listed as “specially protected” under the *Wildlife Conservation Act 1950 (WA)*:
Schedule 1 (S1) – Fauna that is rare or likely to become extinct.
Schedule 3 (S3) – Birds that are subject to an agreement between the governments of Australia and Japan, relating to the protection of migratory birds.
Schedule 4 (S4) – Fauna that is in need of special protection.
- DPAW conservation codes:
Priority 1 (P1) – Taxa that are known from few specimens or sight records from one or a few localities on lands not managed for conservation, e.g., agricultural or pastoral lands, urban areas, active mineral leases, Shire or Main Roads reserves.
Priority 2 (P2) – Taxa that are known from one or a few collections or sight records, some of which are on lands not under imminent threat of habitat destruction or degradation, e.g., national parks, conservation parks, nature reserves, State forest, Vacant Crown Land, water reserves, etc.
Priority 3 (P3) – Taxa that are known from collections or sight records from several localities not under imminent threat, or from few but widespread localities with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat.
Priority 4 (P4) – Taxa that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not current Threatened or in need of special protection, but could be if present circumstances change.
Priority 5 (P5) – Taxa that are not considered Threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming Threatened within five years.
- Species listed as Threatened fauna under the Commonwealth EPBC Act according to the following classifications:
Endangered (EN) – A taxon is Endangered when the best available evidence indicates that it is considered to be facing a very high risk of extinction in the wild.
Vulnerable (VU) – A taxon is Vulnerable when the best available evidence indicates that it is considered to be facing a high risk of extinction in the wild.
Migratory (M) – Species migrates to, over and within Australia and its external territories.
- Likelihood of occurrence:
Present – Observed within the site during Level 1 fauna assessment.
Likely – Suitable habitat present, species recently recorded in the region.
Potentially – Suitable habitat present, limited species records in the region.
Unlikely – Absence of suitable habitat, known distribution outside the project area.
Absent – Species recognised as Extinct (Ex/S2), or locally extinct.

None of the species listed in Table 4.7, or evidence of these species, was positively recorded during field investigations. Of the 20 conservation significant fauna species listed in Table 4.7, only four were considered “likely” to occur (Black Cockatoo, Australian Bustard, Rainbow Bee-eater and Western Carpet Python), and another four were considered as “possibly” occurring within the project area (Peregrine Falcon, Fork-tailed Swift, Western Brush Wallaby and Gilled Slender-Bluetongue) (Coffey Environments, 2013). Refer to Table 4 of Appendix C for a description of each of these species’ distribution, habitat and likelihood of occurrence.

4.3 Heritage and conservation

This section describes indigenous heritage, non-indigenous heritage and conservation areas within or in the vicinity of the project area.

4.3.1 Indigenous heritage

The Aboriginal Heritage Inquiry System, maintained by the DAA, was examined for indigenous sites of archaeological and ethnographical significance in the project area and in the surrounding region (DIA, 2012).

A total of nine indigenous heritage sites were identified within the search area, however none are in close proximity to the project area. The nearest site is located along the Irwin River, more than 20 km northwest of the project area (Figure 4.5).

A cultural heritage survey was conducted by Terra Rosa Cultural Resources Management, the Amangu Traditional Owners, the Yamatji Marlpa Aboriginal Corporation and Warrego Energy in February 2014 (Terra Rosa, 2014). The survey identified two restricted access areas in the northern portion of the project area along Sand Plain Creek. Warrego Energy will incorporate the avoidance of these areas into the final design of the project. In addition, Traditional Owners will act as monitors during the line preparation activities and will provide assistance in the delivery of inductions to the project team.

4.3.2 Non-indigenous heritage

Coffey undertook a desktop assessment for non-indigenous heritage over the project area. A search of the Australian Heritage Database did not identify any heritage sites of significance in the local area (AHD, 2012). The nearest non-indigenous heritage sites are located in Mingenew and Dongara, both at least 30 km from the project area.

4.3.3 Conservation areas and environmentally sensitive features

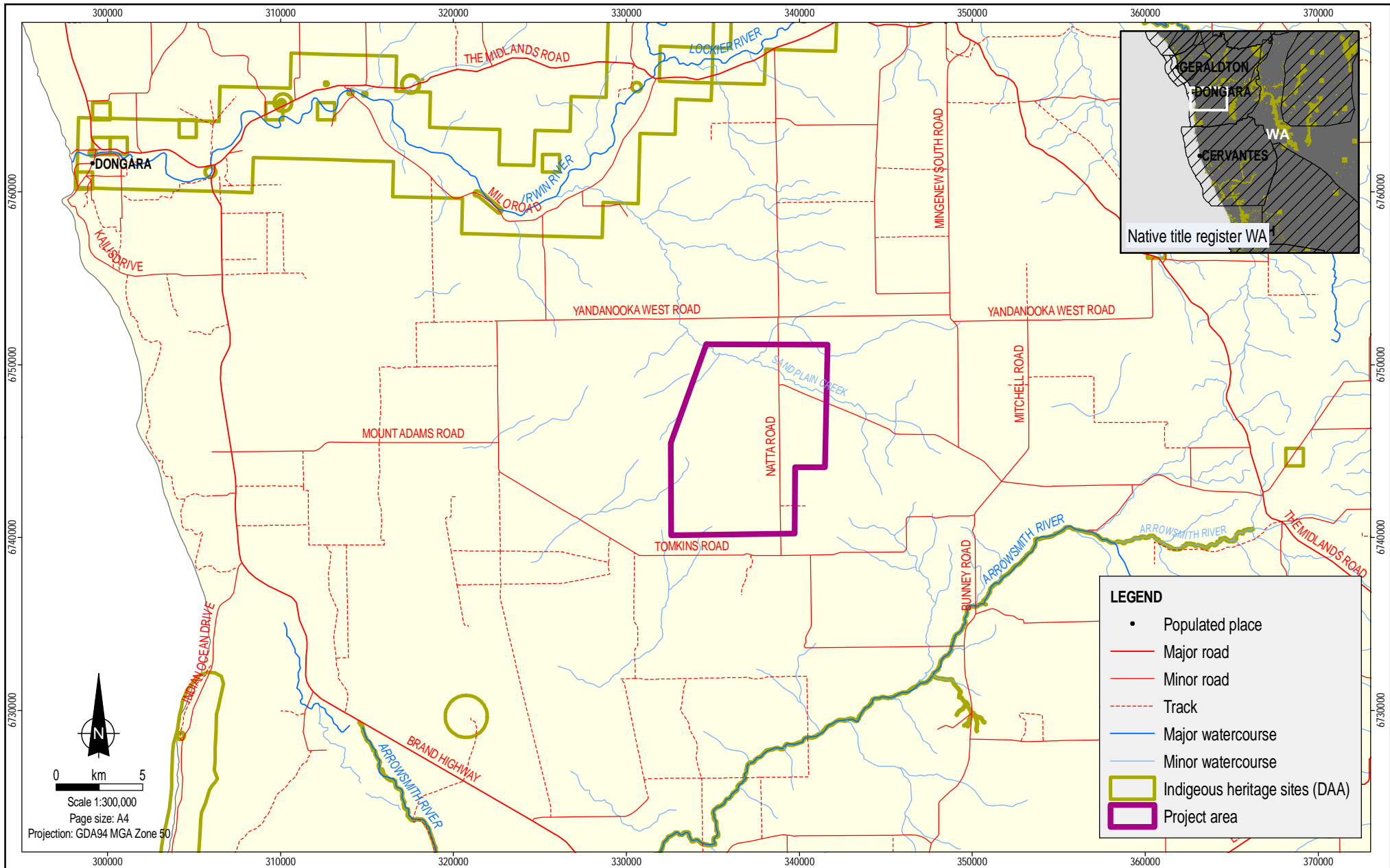
The Lesueur Sandplain subregion, where the project is located, has largely been cleared for grazing and agricultural purposes. Approximately 70% of the subregion is currently cleared farmland used for dry-land agriculture (Desmond & Chant, 2001).

Conservation areas are predominantly concentrated in the western areas of the subregion, with the most significant conservation areas directly south of Dongara (see Figure 1.1) (Desmond & Chant, 2001).

The closest conservation areas to the project area are:

- Wilson Nature Reserve, which covers about 1,100 ha and is approximately 15 km southeast of the project area.
- Yandanogo Nature Reserve, which covers about 6,500 ha and is approximately 15 km west of the project area.
- Beekeepers Nature Reserve, which covers about 120,000 ha and is approximately 40 km to the southwest of the project area.

There is also an environmentally sensitive area (ESA) within and in close proximity to the project area (see Figure 1.1). ESA ID 6046, which is located within the project area, is believed to represent an erroneous record of the Threatened flora species *Eucalyptus leprophloia*, as discussed in Table 4.4. Nevertheless, Warrego Energy has committed to avoiding this ESA.



Source:
 Drilling site and project area from Warrego Energy.
 Winsites, hydrographic catchments and groundwater sub-areas from DOW
 Roads, railways, powerlines and watercourses from GEODATA250K (optimum scale 1:250,000).
 Indigenous heritage sites from Department of Aboriginal Affairs.

Notes:
 Project area is subject to the Amangu People Native Title Claim.



Date:
 17.12.2013
 MXT:
 2034_02_GIS007_v0_2
 File Name:
 2034_02_F004.5_GIS

Warrego Energy
West Erregulla 3D Seismic Survey

Indigenous heritage

Figure No:
4.5

4.4 Socio-economic environment

The project area is located within the Shires of Three Springs and Mingenew on private property and VCL. Roads in and around the project area include Tomkins Road to the south, Mount Adams Road to the east and Yandanooka West Road to the north.

The main industries within the Shire of Three Springs are farming (grain production and livestock grazing), mining, and government-based operations. With regards to mining, the shire hosts the largest talc mine in the southern hemisphere. The mine has been in operation since 1948 and is the largest employer in the shire (Shire of Three Springs, 2011). The shire of Three Springs has a population of around 700 (ABS, 2011a).

The Shire of Mingenew similarly has agriculture and grazing as primary industries. The township of Mingenew contains the largest inland grain receiving facility in Australia (Shire of Mingenew, 2011). The Shire of Mingenew has a population of around 450 (ABS, 2011b).

The townships of Port Denison and Dongara to the northwest of the project area are the closest population centres. The city of Geraldton approximately 100 km to the north of the project area is the closest major population centre, with a population of 36,300 (ABS, 2011c).

5 Environmental risk assessment

This chapter details the method and outcomes of the Warrego Energy environmental risk assessment for the proposed project.

5.1 Risk assessment method

The environmental hazard identification and risk assessment process applied to the project is based on Warrego Energy's internal environmental risk assessment method and the principles of AS/NZS 31000:2009 and HB 203:2012. Key steps in this process include:

- Identifying aspects of the project that may have an impact upon the environment.
- Describing the potential environmental impacts if no mitigation measures are in place.
- Assigning a realistic worst-case consequence rating to the impact (Table 5.1).
- Assessing the likelihood of the impact with the consequence assigned (Table 5.2).
- Determining a risk score for each impact (Table 5.3).
- Classifying the residual impact as a low, medium or high risk (Table 5.4).
- Identifying practical management strategies for each risk.
- Reassessing the consequence, likelihood and risk score for each risk with mitigations measures in place (i.e., determine the residual risk).

The management practices identified are designed to keep risks as low as reasonably practicable (ALARP) and economically achievable.

Table 5.1 Impact consequence descriptors

Consequence rating	Triggers			
	Health impact	Environmental impact	Financial impact	Socio-political impact
Negligible (1)	Injury requiring first aid only. Slight health effect, not affecting performance or causing absence.	Pollution or environmental impacts minimal, isolated and do not require remediation.	Less than \$10,000.	No internal disruption.
Minor (2)	Injury or minor health effects requiring treatment by medically qualified person. Effects are reversible. Short-term absence from work, complete recovery.	Pollution or environmental impacts small, local and short-term.	Greater than \$10,000 but less than \$50,000.	Minor internal disruption. Limited community impact or interest. Reportable to regulatory authorities.
Moderate (3)	Life threatening injury or major health effect to individual requiring medivac to hospital facilities. Irreversible health damage without loss of life. Long-term absence from work, part recovery.	Pollution or environmental impact large, local and medium-term. External advice needed to manage the situation.	Greater than \$50,000 but less than \$250,000.	Internal disruption that could require outside help to manage. Community discussion, adverse local or financial publicity. Lawsuits possible.
Major (4)	Fatality or permanent disablement from occupational illness or disease.	Pollution or environmental impact severe, widespread and long-term. External resources needed to manage the situation.	Greater than \$250,000 but less than \$2,000,000.	Serious business disruption and impact on company operations. State/national media interest and adverse publicity. Heavy selling pressure on public shares. Litigation almost certain.
Catastrophic (5)	Fatality or multiple permanent disabling injuries from occupational illness or injury.	Pollution or environmental impacts massive, widespread and irreversible. Extensive external resources needed to manage the situation.	Greater than \$2,000,000.	Business operations suspended. International media interest. Collapse of share price. Litigation certain, potential for criminal charges.

Table 5.2 Impact likelihood descriptors

Likelihood	Description	Probability
Highly unlikely	Not expected to occur.	< 10%
Unlikely	Could occur at some time but is not expected to occur.	10 – 30%
Possible	Expected to occur at some time.	30 – 60%
Likely	Likely to occur regularly.	60 – 80%
Highly likely	Ever-present; occurs in most circumstances.	> 80%

Table 5.3 Risk matrix

			Consequence				
			Negligible	Minor	Moderate	Major	Catastrophic
			1	2	3	4	5
Likelihood	Highly likely	5	5	10	15	20	25
	Likely	4	4	8	12	16	20
	Possible	3	3	6	9	12	15
	Unlikely	2	2	4	6	8	10
	Highly unlikely	1	1	2	3	4	5

Table 5.4 Risk levels and ratings

Risk level	Scores	Management action
Low	1 to 5	Acceptable.
Medium	6 to 14	Acceptable only with adequate controls.
High	15 to 30	Not acceptable. Risk must be reduced further.

5.2 Assessment of environmental risks

The qualitative risk assessment undertaken by Warrego Energy and its consultants is based on experiences with similar seismic survey programs, site knowledge, desktop data and information, stakeholder consultation and professional judgement. Risks have been identified for each activity of the project, including the identification of risks from non-routine activities or incidents.

A total of 31 risks were identified during the systematic hazard identification assessment. Of these, 13 'medium' and 18 'low' residual risks were identified. As no 'high' residual risks were identified, the 'medium' residual risks can be considered the key risk factors for the project.

A summary of the aspects, sources of risk and impacts identified during the environmental risk assessment process is shown in Table 5.5.

The full risk assessment is provided in Appendix D.

Table 5.5 Summary of aspects, sources of risk and impacts

Aspect	Source of risk	Impacts	Residual risk rating	
Line preparation	Vehicle and equipment/plant movement	Introduction and spread of weeds/dieback.	Low	
		Loss of conservation significant flora.	Medium	
		Erosion of soil.	Low	
		Generation of dust.	Medium	
		Fauna mortalities.	Low	
		Disturbance to fauna.	Low	
		Contamination of soil (e.g. in refuelling).	Medium	
		Fire.	Medium	
	Planned vegetation clearing	Loss of conservation significant flora.	Medium	
		Loss of habitat for conservation significant fauna species.	Medium	
		Fragmentation of habitat.	Medium	
		Fauna mortalities.	Low	
		Disturbance to fauna.	Low	
	Unplanned vegetation clearing (i.e. clearing outside of approved clearing footprint)	Loss of conservation significant flora. Clearing in an environmentally sensitive area (ESA).	Low	
		Alteration of landform	Alteration of surface water flows. Disturbance to drainage lines or minor watercourses.	Low
			Disturbance to indigenous or non-indigenous heritage site.	Low
		Presence of project team	Disruption to landowners.	Low
	Operations (seismic data acquisition)	Seismic signal generation	Soil compaction (in particular on agricultural land).	Medium
		Generation, storage and removal of wastes	Attraction of fauna to waste receptacles. Rubbish from project left on site. Contamination of soil or groundwater (e.g. spills from generators, sewage systems, etc.).	Low
	Operation of site office	Generation, storage and removal of wastes	Attraction of fauna to waste receptacles. Rubbish from project left on site. Contamination of soil or groundwater (e.g. spills from generators, sewage systems, etc.).	Low

Aspect	Source of risk	Impacts	Residual risk rating
Vehicle, equipment and plant use	Operation of combustion engines	Greenhouse gas emissions.	Low
	Fire started by combustion engines, hot equipment or people	Loss of equipment or property. Loss of flora and fauna. Indirect effects (e.g. loss of topsoil in next rain event). Negative community sentiment.	Medium
		Fauna mortalities.	Low
		Disturbance to fauna.	Medium
	Refuelling	Contamination of soil.	Medium
	Burst hydraulic line/hose	Contamination of soil.	Low
	Spilt engine/gear/hydraulic oil drum	Contamination of soil.	Low
	Rollover or accident involving fuel tanker or fuel delivery vehicle	Contamination of soil.	Low
	On-site vehicle hygiene station	Introduction and spread of weeds/dieback.	Low
Rehabilitation	Rehabilitation not carried out properly or in a timely manner	Unauthorised third party access to remnant native vegetation preventing successful rehabilitation.	Low
	Completion criteria not met	Vegetation along seismic lines not regenerating.	Medium
Stakeholder management	Unauthorised or improper access to properties	Unauthorised land access by project personnel. Breach of landowner agreements. Damage to landowner infrastructure. Complaints about the project.	Low
	Presence of project team	Disruption to landowners.	Low
		Additional vehicles on local roads. Disruption to traffic. Disruption to local residents.	Medium
Failure to engage stakeholders.	Negative community sentiment resulting in complaints about the project or future difficulties in obtaining social licence for similar projects.	Low	

This page has been left blank intentionally.

6 Performance objectives, performance standards and measurement criteria

This chapter defines the environmental performance objectives, performance standards and measurement criteria for the project as required under the PGER(E) Regulations.

Environmental risks and impacts (or groups thereof) identified in the environmental risk assessment in Chapter 5 have associated performance objectives, performance standards and measurement criteria.

Each environmental risk or group of risks has at least one performance objective defined. For each performance objective, there is at least one performance standard (e.g., legislation, code of practice, guideline, company policy, etc.) defined. For each performance standard, there is at least one measurement criterion defined to allow direct measurement of performance by monitoring, data analysis, inspection or audit.

Table 6.1 lists performance objectives, performance standards and measurement criteria for the project. Note that some performance objectives, performance standards and measurement criteria may not apply if the associated risk is not applicable (e.g., the risks relating to groundwater use apply only if Warrego Energy uses a groundwater bore).

Table 6.1 Environmental performance objectives, performance standards and measurement criteria

Risk or group of risks	Performance objectives	Performance standards	Measurement criteria
Introduction and spread of weeds/dieback.	<ul style="list-style-type: none"> • Avoid the introduction of dieback. • Minimise the spread of weeds. • Avoid introduction of any new weed species. 	<ul style="list-style-type: none"> • <i>Biosecurity and Agriculture Management Act 2007.</i> • <i>Quarantine Act 2000.</i> • Project HSE inductions covering hygiene requirements. 	<ul style="list-style-type: none"> • No occurrences of dieback detected in dieback inspections following completion of project activities and rehabilitation. • No new colonisations of weeds or new weed species detected during weed inspections following completion of project activities and rehabilitation. • Rehabilitation Management Plan developed prior to completion of project activities. • Induction records. • Biosecurity and hygiene station records. • Activity reports show that the project is conducted in dry conditions.
Erosion of soil. Erosion from alteration of surface water flows. Alteration of surface water flows. Disturbance to drainage lines or minor watercourses.	<ul style="list-style-type: none"> • Minimise impacts of soil erosion. • Landforms returned as near to pre-disturbance conditions as possible. 	<ul style="list-style-type: none"> • <i>Environmental Protection Act 1986.</i> • Schedule of Onshore Petroleum Production and Exploration Requirements 1991. 	<ul style="list-style-type: none"> • Use of raised roller mulching techniques along seismic lines to minimise soil erosion. • No significant erosion or impacts to watercourses. • No clearing within 20 m of Sand Plain Creek. • Existing watercourse crossings used. • Activity reports show that the project is conducted in dry conditions. • Rehabilitation Management Plan developed prior to completion of project activities.
Generation of dust.	<ul style="list-style-type: none"> • Minimise fugitive dust emissions. 	<ul style="list-style-type: none"> • Traffic Management Plan. • Project HSE inductions covering journey management. 	<ul style="list-style-type: none"> • Induction records. • No unresolved third-party complaints relating to dust.

Risk or group of risks	Performance objectives	Performance standards	Measurement criteria
Fauna mortalities. Disturbance to fauna.	<ul style="list-style-type: none"> Minimise the risk of injury to native species. Avoid mortalities of conservation significant fauna. 	<ul style="list-style-type: none"> <i>Wildlife Conservation Act 1950.</i> <i>Environment Protection and Biodiversity Conservation Act 1999.</i> Traffic Management Plan. Project HSE inductions covering fauna in the project area and journey management. 	<ul style="list-style-type: none"> No recorded mortalities of conservation significant fauna. Incident reports and records. Speed limits imposed on project tracks. Induction records.
Loss of conservation significant flora. Clearing in an ESA.	<ul style="list-style-type: none"> Minimise area of vegetation to be cleared to ALARP. Keep project activities within planned disturbance footprint. 	<ul style="list-style-type: none"> Project HSE inductions covering conservation significant flora and ESAs. Permit To Take. Native Vegetation Clearing Permit. 	<ul style="list-style-type: none"> Valid Permit To Take for any Threatened flora cleared. Daily progress records. Audit of clearing with respect to planned disturbance areas.
Loss of habitat for conservation significant fauna species. Fragmentation of habitat.	<ul style="list-style-type: none"> Minimise area of vegetation to be cleared to ALARP. 	<ul style="list-style-type: none"> Native Vegetation Clearing Permit. Final disturbance footprint. 	<ul style="list-style-type: none"> Total area cleared does not exceed 70 ha. Audit of clearing against planned disturbance areas. If possible, existing tracks and firebreaks used in preference to clearing new tracks.
Disturbance to indigenous or non-indigenous heritage site.	<ul style="list-style-type: none"> To avoid loss of indigenous and non-indigenous heritage values. 	<ul style="list-style-type: none"> <i>Aboriginal Heritage Act 1972.</i> <i>Environment Protection and Biodiversity Conservation Act 1999.</i> Project HSE inductions covering heritage sensitivities and requirements. Agreement with Amangu people. 	<ul style="list-style-type: none"> Indigenous and non-indigenous heritage site database records. Induction records. No complaints from Amangu people relating to indigenous heritage sites. Established buffer zone of 20 m around identified heritage sites.

Risk or group of risks	Performance objectives	Performance standards	Measurement criteria
Soil compaction (in particular on agricultural land).	<ul style="list-style-type: none"> • Have approval/satisfaction of rehabilitation of agricultural land from landowners following project activities. 	<ul style="list-style-type: none"> • Schedule of Onshore Petroleum Production and Exploration Requirements 1991. • <i>Petroleum and Geothermal Energy Resources Act 1967</i> and associated regulations. • Agreements with landowners. • Stakeholder Management Plan. 	<ul style="list-style-type: none"> • Landowner satisfaction with rehabilitation as evidenced in signed-off project documents following completion of project activities. • No unresolved complaints from landowners relating to soil compaction.
Greenhouse gas emissions.	<ul style="list-style-type: none"> • To operate in an efficient manner to reduce greenhouse gas emissions to ALARP. • To maintain greenhouse gas emissions below NGER reporting thresholds. 	<ul style="list-style-type: none"> • <i>National Greenhouse Energy and Reporting Act 2007</i>. • Schedule of Onshore Petroleum Exploration and Production Requirements 1991. • <i>Petroleum and Geothermal Energy Resources Act 1967</i> and associated regulations. 	<ul style="list-style-type: none"> • Ongoing fuel consumption monitored in daily records. • Quarterly Discharges and Emissions Report (ENV-PEB-088) completed and submitted to DMP.

Risk or group of risks	Performance objectives	Performance standards	Measurement criteria
<p>Fire and associated impacts:</p> <ul style="list-style-type: none"> • Loss of property or equipment. • Loss of flora and fauna. • Indirect effects (e.g. loss of topsoil in next rain event). • Negative community sentiment. 	<ul style="list-style-type: none"> • Minimise the potential for fire to occur as a result of project activities. 	<ul style="list-style-type: none"> • <i>Bush Fires Act 1954.</i> • Project HSE inductions covering fire prevention and response. • Stakeholder Management Plan. • Emergency Response Plan. 	<ul style="list-style-type: none"> • No fires as a result of project activities as evidenced by incident records. • Designated smoking area in place and enforced. • All project vehicles use diesel fuel only. • Local shires, DFES and DPaW notified prior to commencement of project activities. • Any fires observed are reported to DMP, DFES and local shires whether started by project activities or not. • Fire response equipment available to project personnel at all times. • All project vehicles have a fire extinguisher in vehicle. • Project activity records show project activities not conducted on a day of total fire ban or when harvester and vehicle movement bans have been issued by local shires. • Induction records.
<p>Contamination of soil</p>	<ul style="list-style-type: none"> • No contaminated areas associated with the project. 	<ul style="list-style-type: none"> • <i>Contaminated Sites Act 2003.</i> • <i>Environmental Protection Act 1986.</i> • Journey Management Procedure. 	<ul style="list-style-type: none"> • Any contaminated material (e.g. soil) remediated or removed from site and disposed of appropriately. • Results of inspections following project activities. • Results of inspections following rehabilitation activities. • Incident reports and records. • Records of oil spill response plan tests.
<p>Use of a finite resource.</p>	<ul style="list-style-type: none"> • Minimise consumption of resources. 	<ul style="list-style-type: none"> • Project HSE inductions cover minimisation of water and electricity usage. 	<ul style="list-style-type: none"> • Induction records.

Risk or group of risks	Performance objectives	Performance standards	Measurement criteria
Depletion of groundwater reserves. Impact on other groundwater users.	<ul style="list-style-type: none"> To minimise water use. To comply with water licencing requirements. 	<ul style="list-style-type: none"> <i>Rights in Water and Irrigation Act 1914.</i> 	<ul style="list-style-type: none"> Licence to construct bores has been obtained (if bores required). Licensed bore driller used (if bores constructed). Licence to take water has been obtained (if bores used). Flowmeters installed on bores (if bores constructed).
Attraction of fauna to waste receptacles. Rubbish from project left on site. Contamination of soil or groundwater (e.g. spills from generators, sewage systems, etc.).	<ul style="list-style-type: none"> No waste left in project area from project personnel. Remediation of any spills. 	<ul style="list-style-type: none"> Project HSE inductions to cover waste management requirements and spill management. Rehabilitation Management Plan. 	<ul style="list-style-type: none"> No sightings or evidence of fauna feeding on project wastes (incident reports). Project general waste bins and skips to be fitted with covers and kept closed at all times. Any contaminated material (e.g. soil) removed from site and disposed of appropriately. Any spills to be cleaned up immediately. Induction records.
Unauthorised third party access to remnant native vegetation preventing successful rehabilitation.	<ul style="list-style-type: none"> Discourage third party access to project tracks. 	<ul style="list-style-type: none"> Schedule of Onshore Petroleum Production and Exploration Requirements 1991. Rehabilitation Management Plan. 	<ul style="list-style-type: none"> Presence of physical obstructions blocking tracks following project activities. Placement of dog-legs (or other interruption of line-of-sight) in seismic lines and access tracks at intersections with public roads and tracks. Third-party access via project access points not evident during rehabilitation inspections.
Vegetation along seismic lines not regenerating.	<ul style="list-style-type: none"> Maximise rehabilitation success. 	<ul style="list-style-type: none"> Schedule of Onshore Petroleum Production and Exploration Requirements 1991. Native Vegetation Clearing Permit. Permit To Take. Rehabilitation Management Plan. 	<ul style="list-style-type: none"> Rehabilitation Management Plan developed prior to completion of project activities. Rehabilitation activities continue for minimum of two years following project activities until rehabilitation completion criteria are met.

Risk or group of risks	Performance objectives	Performance standards	Measurement criteria
<p>Unauthorised land access by project personnel.</p> <p>Breach of landowner agreements.</p> <p>Damage to landowner infrastructure.</p> <p>Complaints about the project.</p>	<ul style="list-style-type: none"> • Have approval/satisfaction of rehabilitation of agricultural land from landowners following project activities. • Avoid damage to or loss of third party infrastructure. • Avoid any unauthorised or improper land access. 	<ul style="list-style-type: none"> • <i>Environmental Protection Act 1986.</i> • HSEQ Policy. • Stakeholder Management Plan. • APPEA Code of Practice. • Agreements with landowners. • Project HSE inductions cover sensitivities of landowners. 	<ul style="list-style-type: none"> • Evidence of a register to record complaints from the landowners or the public. • No unanswered enquiries from stakeholders regarding project activities. • No access gained to property contrary to project plans and landowner agreements as evidenced by project activity records. • No complaints from landowners regarding unplanned damage to landowner property or infrastructure. • Induction records. • Release forms signed by all landowners.
<p>Additional vehicles on local roads.</p> <p>Disruption to traffic.</p> <p>Disruption to local residents.</p> <p>Disruption to landowners.</p>	<ul style="list-style-type: none"> • Minimise disruption to local traffic, local residents and landowners. 	<ul style="list-style-type: none"> • Schedule of Onshore Petroleum Production and Exploration Requirements 1991. • Traffic Management Plan. • Stakeholder Management Plan. 	<ul style="list-style-type: none"> • Stakeholder consultation records. • DFES and local shires notified prior to commencement of project activities. • Evidence of a register to record complaints from the landowners or the public.
<p>Negative community sentiment resulting in complaints about the project or future difficulties in obtaining social licence for similar projects.</p>	<ul style="list-style-type: none"> • Maximise acceptance of project by all stakeholders. 	<ul style="list-style-type: none"> • <i>Environmental Protection Act 1986.</i> • HSEQ Policy. • Stakeholder Management Plan. • APPEA Code of Practice. • Project HSE inductions cover sensitivities of landowners, the community and other stakeholders. 	<ul style="list-style-type: none"> • Early consultation with all relevant stakeholders as evidenced in stakeholder consultation records. • DFES and local shires notified prior to commencement of project activities. • Evidence of a register to record complaints from the landowners or the public. • No unanswered enquiries from stakeholders regarding project activities. • Induction records.

This page has been left blank intentionally.

7 Implementation strategy

7.1 Systems, practices and procedures

A summary of the systems, practices and procedures that relate to the implementation of this EP is provided in Table 7.1.

A number of the systems, practices and procedures may be partially or completely owned by project contractors. These will be further defined in the applicable contractor bridging documents and interface plans with Warrego Energy.

Note that each of the systems, practices and procedures listed in Table 7.1 have varying degrees of control over environmental aspects. For example, the Journey Management Procedure is primarily a health and safety document but also addresses some environmental matters.

Table 7.1 List of systems, practices and procedures for the project

System, practice or procedure	Short Description
Systems	
HSEQ Manual	Documents the health, safety, environment and quality system to be used for the project.
Policies and standards	
Warrego Energy Corporate Health, Safety, Environment and Quality Policy	Sets out Warrego Energy's corporate commitment to the environment.
Plans, procedures and registers	
Stakeholder consultation register	Ensures that records of communications with landowners, government agencies and other relevant stakeholders are kept.
Contractor bridging documents and/or interface plans	Defines how Warrego Energy's requirements for project implementation are met through contractors' own procedures and standards.
Emergency Response Plan	Details the steps to be taken in the event of an emergency.
Oil and Fuel Spill Procedure	Details how oil and other hydrocarbon spills will be responded to.
Rehabilitation Management Plan	Details the rehabilitation required for the project, including monitoring requirements and completion criteria.
Dieback and Weed Management Plan	Details steps to be taken to avoid the introduction and spread of dieback and weeds in the project area, including steps to be taken should dieback or weeds be identified during rehabilitation monitoring as being a result of project activities.
Stakeholder Management Plan	Identifies stakeholders that Warrego Energy needs to communicate with, topics for communication, complaint management, Details communication with stakeholders (e.g., which stakeholders, how often, on which topics, etc.).

System, practice or procedure	Short Description
Traffic Management Plan	If required, this plan describes how traffic will be managed should the seismic survey need to acquire data along a public road reserve.
Vehicle Use Procedure	Describes how vehicles may and may not be used in the project area, including the use of the daily vehicle inspection checklist.
Journey Management Procedure	Details the steps to be taken when planning journeys related to the project.
Waste Collection, Storage and Disposal Procedure	Details the process for ensuring that all project waste is appropriately and properly collected, stored and disposed of.
Handling Oil and Oily Waste	Details special management requirements for oils and waste oils.
Hydraulic Hoses Procedure	Details the management of hydraulic hoses on vehicles and machinery, including inspections and maintenance.
Permit to Work Procedure	Details the process of obtaining an internal permit to conduct certain types of high-risk work. Permits typically require a higher level of management to ensure that risks are minimised.
Vehicle Convoy Procedure	Details how vehicles must be operated when travelling in convoy, including any traffic management arrangements that may need to be considered.
Spot Fire Response and Emergency Evacuation – Field Procedure	Details the standard procedures for dealing with fires and evacuations while in the field. Steps from this procedure will be incorporated into the project-specific ERP.
Refuelling Using Fuel Trailer Procedure	Sets out standard steps to be followed when conducting refuelling operations in the field.
Refuelling Petrol Powered Fire Fighting Pump Procedure	Sets out standard steps to be followed when refuelling the mobile fire-fighting unit.
Vib General Operations Procedure Vib Operations and Pipelines Procedure Vib Operations and Rough Terrain Procedure	These procedures detail how Vibroseis trucks operate in the field, including in higher risk situations such as in the vicinity of existing pipelines and in rough terrain.
Gate Management Procedure	Details how gates on access tracks, roads and private property will be managed.
Line Crew Operations Procedure	Details how seismic line crew conduct seismic surveys.
Line Preparation Operations Procedure	Details how seismic source lines and access tracks will be prepared.
Road Crossing With Offroad Plant Procedure	Details how off-road vehicles and machinery will cross public access roads.
Weed and Seed Washdown Station	Describes how the hygiene station will be sited and operated.

7.2 Roles and responsibilities

Warrego Energy and its contractors will manage all activities associated with the implementation of the project. Key management responsibilities are defined below and the organisational structure is depicted in Figure 7.1.

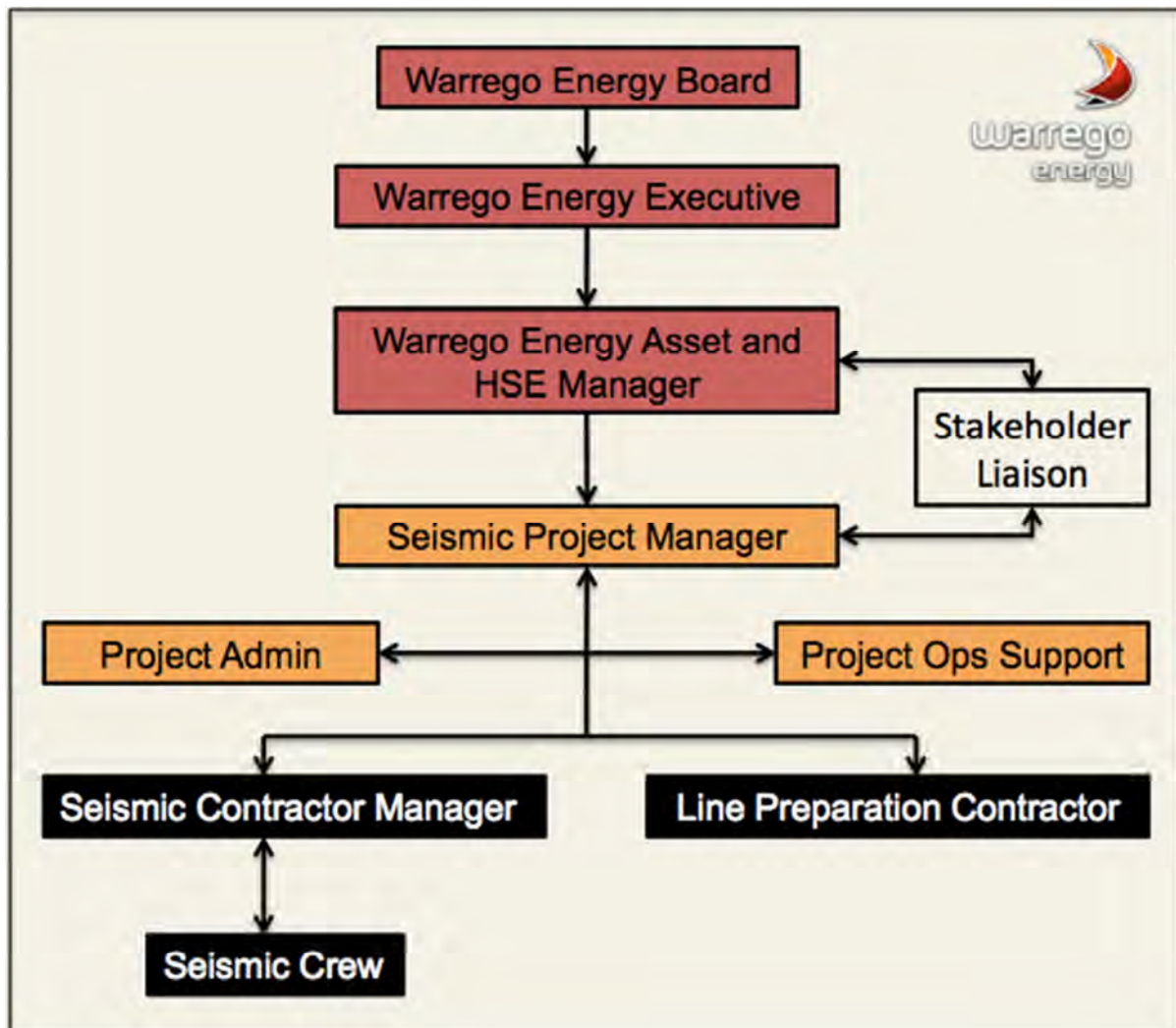


Figure 7.1 Project organisational structure

7.2.1 Warrego Energy Board

It is the responsibility of the Warrego Energy Board to ensure that:

- Any operation, employee or contractor adheres to the company's HSE philosophy.
- The operating parameters and goals of the project are set.
- The project is correctly resourced and managed.

7.2.2 Warrego Energy Executive

It is the responsibility of the Warrego Energy Executive to ensure that:

- The health, safety and environment operating ethos is translated into operating policies and procedures.
- All relevant stakeholders are consulted.

- Project is conducted in accordance with the project strategy and relevant approvals.

The Warrego Energy Executive is the project sponsor, responsible for resourcing the project and reporting to the Warrego Energy Board of Directors on delivery and performance.

7.2.3 Warrego Energy Asset & HSE Manager

It is the responsibility of the Warrego Energy Asset & HSE Manager to ensure that:

- The project operates in compliance with this EP and other regulatory requirements for the duration of the project and that contractor procedures, where used, satisfactorily cover the requirements of this EP.
- Internal inspections and audits are undertaken to assess the effectiveness of the environmental management procedures and assess the environmental performance of the project (in conjunction with the Seismic Project Manager – see Section 7.2.4).
- Induction material addresses the requirements of this EP and appropriate induction and training records are maintained.
- All routine and incident reporting requirements of the EP are met.
- All key stakeholders are kept informed and the needs of all stakeholders are addressed (landowner and shire consultation is facilitated by the stakeholder liaison – see Section 7.2.4).
- The performance of contractors and equipment are audited to ensure compliance with this EP and relevant policies, procedures and guidelines, and any necessary corrective action timeously undertaken.

The Warrego Energy Asset & HSE Manager has overall accountability for the project's compliance with this EP.

7.2.4 Seismic Project Manager

It is the responsibility of the Seismic Project Manager to ensure that:

- All project work is carried out in accordance with this EP.
- Internal inspections and audits are undertaken to assess the effectiveness of the environmental management procedures and assess the environmental performance of the project (in conjunction with the Warrego Energy Asset & HSE Manager – see Section 7.2.3).
- Personnel are adequately inducted and trained prior to commencement of the project.
- Personnel are aware of this EP, the management strategies it contains and the environmental and social sensitivities associated with the project area.
- Personnel act responsibly in accordance with the Warrego Energy HSEQ corporate policy.
- All hazards, incidents and near misses reported by contractors are reported to the Warrego Energy Asset & HSE Manager, and have been adequately investigated and corrected.
- The Stakeholder Liaison is regularly consulted and updated on project activities (see Section 7.2.6).

7.2.5 Seismic Contractor Manager

It is the responsibility of the Seismic Contractor Manager to ensure that:

- All aspects of this EP relevant to contractor operations and associated contractor interface documents are properly complied with.
- Contractor personnel are adequately inducted and trained prior to commencement of the project.

- Contractor personnel are aware of this EP, the management strategies it contains and the environmental and social sensitivities associated with the project area.
- Contractor personnel act responsibly in accordance with all applicable (Warrego Energy and contractor) policies and standards.
- Hazards, incidents and near misses are promptly reported to the Seismic Project Manager, promptly and adequately investigated and corrected.

7.2.6 Seismic Crew

It is the responsibility of all contractor personnel to ensure that:

- All aspects of this EP and the Warrego Energy HSEQ corporate policy are understood and implemented.
- Reasonable care is taken to ensure safety is never compromised and environmental impacts are avoided.
- They report to work in a fit condition, i.e., not influenced by alcohol, drugs, fatigue or any condition that may affect the employee's ability to complete any assigned task in a safe and effective manner.
- Promptly report all health, safety and environment hazards, incidents and near misses to the Seismic Contractor Manager.

7.2.7 Line Preparation Contractor

It is the responsibility of the Line Preparation Contractor to ensure that:

- All aspects of this EP and the Warrego Energy HSEQ corporate policy are understood and implemented.
- Reasonable care is taken to ensure safety is never compromised and environmental impacts are avoided.
- They report to work in a fit condition, i.e., not influenced by alcohol, drugs, fatigue or any condition that may affect the employee's ability to complete any assigned task in a safe and effective manner.
- Hazards, incidents and near misses are promptly reported to the Seismic Project Manager, and are promptly and adequately investigated and corrected.

7.2.8 Stakeholder Liaison

It is the responsibility of the Stakeholder Liaison to liaise with landowners and the local shires to:

- Ensure that land access arrangements are in place prior to project personnel requiring land access.
- Ensure that stakeholder concerns are passed on to the Warrego Energy Asset & HSE Manager, and any issues requiring stakeholder consultation are communicated to relevant stakeholders.
- Ensure that stakeholder issues arising are adequately addressed in a timely manner, and provide active assistance in facilitating such resolution.
- Provide routine liaison between the survey operation and landholders, agree any necessary rehabilitation measures on completion of the project and obtain close out reports and forms of release from the landholders.

7.3 Training and competencies

Employee and contractor awareness of correct environmental management will be critical to the environmental success of the project. All Warrego Energy employees and contractors will therefore be required to complete site-specific project inductions before being permitted to commence any work on site.

The inductions will cover environmental management, informing employees and contractors of their obligations and project-specific environmental management procedures, including roles, responsibilities and lines of communication.

Environmental topics will include:

- The role of the DMP as the regulator for petroleum activities.
- Warrego Energy's corporate HSEQ policy.
- The scope of the project.
- Local and regional environmental sensitivities (e.g., flora and fauna, water, soil and landforms, emissions, heritage, conservation areas, landowners).
- Key environmental aspects and management measures for the project.
- Presence of Threatened flora species in project area.
- Waste management.
- Biosecurity management (i.e., weed and disease control).
- Fire prevention and response.
- Incident reporting.
- Spill response procedures.
- Site access and journey management.
- Importance of minimising vehicle movements to improve rehabilitation success.
- Procedures if a heritage site (suspected or otherwise) are uncovered.
- Complaint management.
- Site rehabilitation procedures.

All contractors and personnel engaged in the operation will be provided with access to this EP at all times. Environmental inductions will be targeted towards the roles of the personnel involved. Certain inductions may therefore cover some topics in more detail.

For efficiency, environmental inductions may be undertaken in conjunction with safety inductions. Any additional training requirements will be undertaken on an as-needed basis.

Contractors will be required to provide their own training registers and records to Warrego Energy prior to the commencement of project activities. The Seismic Contractor Crew Manager will otherwise be responsible for ensuring that seismic crew members possess the correct training and/or competencies for activities controlled by the contractor (e.g., for operating heavy machinery).

7.4 Monitoring, auditing, management of non-conformance and review

This EP will be reviewed should there be a significant change to the scope of the project, not covered by this EP, or if required as a result of a change in the applicable legislative framework.

Any new or modified activities or new or increased environmental risks not previously identified in an approved EP must be approved by DMP before those activities or risks may be undertaken. Additional/changed activities and risks must be incorporated into a revised version of the EP. For minor changes, DMP may instead agree to the submission of a written notification or a bridging document.

The EP will also be reviewed following any incidents or non-conformances identified in audits to assess if procedural controls need to be modified to minimise or avoid future occurrences.

The Warrego Energy Asset & HSE Manager and Seismic Project Manager will coordinate regular inspection of project activities to assess compliance with this EP and regulatory requirements and coordinate any required review of the EP documentation and associated procedures.

An internal pre-start audit and close-out audit (i.e. following data acquisition) will be undertaken by the Warrego Energy Asset and HSE Manager and Seismic Project Manager. They will also perform an audit on completion of line preparation works and prior to the commencement of the seismic activity.

Rehabilitation monitoring and weed and dieback monitoring will be conducted in accordance with a rehabilitation management plan and dieback and weed management plan. Both plans will be prepared and submitted to DMP for approval prior to operation.

7.5 Oil spill response plan

Emergency response procedures have been developed for the project and are documented in the Emergency Response Plan (ERP). However, contingencies particular to an oil spill situation are described specifically in this section of the EP.

Note that some of the information in this section is derived from elsewhere in this EP.

7.5.1 Spill scenarios

Table 7.2 shows the types of oil spills that have the potential to occur as part of this project.

Table 7.2 Potential oil spill scenarios

Oil spill scenario	Likelihood	Maximum credible spill size
Spill during refuelling	Possible	10 L
Burst hydraulic hose on vehicle or equipment	Unlikely	5 to 50 L
Engine, gear and hydraulic oil drum spill	Highly unlikely	200 L
Fuel tanker rollover	Highly unlikely	2,000 L

Note: scenarios are as per the ERA in Appendix D. Likelihood ratings are as per the definitions provided in Table 5.2.

7.5.2 Response preparations

The following management measures will be implemented to manage the risks associated with oil spills (see also Appendix D):

- Use drip trays, spill mats or equivalent while refuelling.
- Refuel, service and maintain vehicles and machinery at designated locations only.
- Remove and dispose of any contaminated material offsite to a licenced facility using a licenced contractor.

- Spill kits will be available during all refuelling operations.
- Refuelling will not be conducted within 100 m of watercourses.
- Vehicles and machinery will be maintained according to the manufacturer's specifications.
- Vehicles and machinery will be inspected on a regular basis.
- Drums containing oil will be stored in a bund capable of holding at least 110% of the largest drum's contents.
- Vehicles delivering fuel to the project area will have a journey management plan in place.
- Vehicles delivering fuel to the project area will carry a spill kit at all times.

In accordance with the ERP, spill kits will contain the following equipment:

- Absorbent pads.
- Shovels.
- Heavy duty garbage bags.
- Personal protective equipment.

7.5.3 Response procedure

The procedure for responding to an oil spill will be:

1. Determine how the source of the spill can be stopped to limit any further spill.
2. Circle the spill with absorbent materials to stop it from spreading or from entering waterways. Soil may also be used to create small earthen bunds if necessary.
3. Use more absorbent material to soak up the spill area. Soil should not be used to soak up or cover a spill as this will unnecessarily increase the amount of contaminated material to be removed.
4. Collect all contaminated soil and absorbent materials and place them in a sealed container.
5. Dispose of contaminated waste at a licenced waste facility.
6. Document the incident on a spill report form.
7. Record and/or report the incident as per the requirements outlined in Section 7.7.

7.5.4 Testing of procedures

The oil spill response procedures will be tested on site prior to the commencement of project activities, and then monthly for the duration of the line preparation and seismic operations. The test will be a simulation of a typical spill scenario (see Table 7.2) that will require all field personnel working on the project to respond to the spill as if it were real.

7.6 Record keeping

During project activities, Warrego Energy and its contractors will maintain records relating to the environmental performance of the project. The following list details the types of environmental records that will be kept:

- Records of daily activities.
- Weekly/daily environmental inspection records.
- Incident and hazard reporting records.
- Energy and fuel usage.
- Waste and emissions records.
- Land and vegetation disturbance records.

- Water consumption and bore water quality records.
- Biosecurity inspection records.
- Induction and training records.
- Equipment maintenance records.
- Vehicle maintenance records and pre-start checklists.
- Results of audits.
- Hazardous material and chemical storage and use records.

Warrego Energy has developed forms, checklists and registers to facilitate systematic record keeping. These are summarised in Table 7.1 and form part of Warrego Energy's record keeping procedures.

Certain other reports and records are required to be made under the PGER(E) Regulations. These are detailed in the following section.

7.7 Reporting and notification arrangements

This section outlines the following reporting and notification requirements:

- Auditing and reporting by Warrego Energy on routine operations (Section 7.7.1).
- Reports by Warrego Energy to the DMP for incidents outside of routine operations (Section 7.7.2).
- Reports by Warrego Energy for emissions and discharges to the environment (Section 7.7.3).
- Summary of reporting requirements (Section 7.7.4).

7.7.1 Auditing and reporting on routine operations

The Warrego Energy Asset and HSE Manager will prepare daily reports to document the progress of the project, including details of any unusual occurrences, hazards or incidents. Warrego Energy will keep a record of all reports.

Routine reporting

Warrego Energy is required to submit the following routine reports to the DMP in accordance with the Schedule of Onshore Petroleum Exploration and Production Requirements 1991:

- **Weekly report of seismic survey operations:** Warrego Energy will submit weekly reports to the DMP for the duration of the seismic survey as required in clause 718. The reports will provide an update on the progress of the seismic survey.
- **Survey summary:** upon the completion of the seismic survey, Warrego Energy shall also forward a summary with the start and completion dates of the survey and the number of kilometres covered by the survey.

Note that the Schedule of Onshore Petroleum Exploration and Production Requirements 1991 contains other reporting requirements not related to environment that are not listed here.

Internal audits

Warrego Energy will carry out internal audits against the commitments made within this EP to assess the effectiveness of the environmental management procedures. Any non-conformances identified during the inspections/audits will be managed through Warrego Energy's incident management system through a follow-up, action and close-out process.

The audits may also be used to assess the environmental performance of the project and identify possible improvements. However, this may not always be practicable due to the project's short duration.

Close-out report

At the completion of the project, a close out report will be prepared and submitted to the DMP. The report will review the environmental performance of the project against this EP, based on findings from the internal audits (see Section 7.4). It will also provide recommendations for future improvements and identify any areas that require additional rehabilitation and monitoring.

An initial close-out report will be provided to the DMP not later than 3 months after demobilisation of the seismic crew from site.

Subsequent reports may be required to provide rehabilitation and monitoring updates.

7.7.2 Incident reporting

The Petroleum and Geothermal Energy Resources (Environment) Regulations 2012 require certain unplanned activities (or incidents) to be reported to DMP. These incidents are classified as either **reportable** or **recordable**.

These reporting requirements will be communicated to all personnel as part of project inductions.

Reportable incidents

As defined in Regulation 4 of the PGER (E) Regulations, a **reportable incident** is:

- (a) *an incident that is classified as a reportable incident under the environment plan for the activity; or*
- (b) *an incident arising from the activity if –*
 - (i) *the incident has caused, or has the potential to cause, an adverse environmental impact; and*
 - (ii) *under the environmental risk assessment process described in the environment plan for the activity, that environmental impact is categorised as moderate or more serious than moderate*

In this EP, reportable incidents as described in Regulation 4 have been taken to be those risks with a residual consequence level of 3, 4 or 5. These are summarised in Table 7.3.

Table 7.3 also contains some incidents that always require reporting regardless of their assessed risk level in the EP's environmental risk assessment.

Table 7.3 List of reportable incidents

Consequence-based reportable incidents	Additional reporting requirements
<ul style="list-style-type: none"> • Introduction or spread of weeds or dieback. • Project related fire. • Unplanned loss of conservation significant flora. • Clearing in an environmentally sensitive area. • Unauthorised land access by project personnel. • Breach of landowner agreements. • Damage to landowner infrastructure. • Disturbance to indigenous or non-indigenous heritage site. • Rehabilitation completion criteria not met. 	<ul style="list-style-type: none"> • Spills of hydrocarbons or hazardous materials in excess of 80 L to the sea or inland waters. • Spills of hydrocarbons or hazardous materials in excess of 500 L in other areas. • Spills of hydrocarbons or hazardous materials that affect a ground surface of area in excess of 100 m². • Death or injury to individuals of a listed species during an activity. • Unplanned impact to a matter of national environmental significance (as defined under the EPBC Act) during an activity. • Property damage exceeding \$20,000. • Potentially hazardous events.

Warrego Energy is required to communicate all reportable incidents to DMP as soon as practicable and as provided for in the PGER(E) Regulations:

- **Within two hours**, Warrego Energy will inform DMP of the incident (preferably verbally by telephoning the Environment Division Duty Officer on 0419 960 621), providing the operator's name, incident location, type of incident, initial response taken and any other details that are known.
- **Within three days**, Warrego Energy will provide to DMP a written report containing the full particulars of the incident. The written report would be provided using DMP form ENV-PEB-189 'Environmental Incident Report Form – Reportable Incident'. Any report so required will include:
 - Petroleum title, site name or location where the incident occurred.
 - Name and business address of the employer who controls the work site.
 - Time and date of the incident.
 - Names and contact details of any witnesses.
 - Name, position and telephone number of person(s) submitting the details.
 - A description of the incident, including the work or activity being undertaken at the time.
 - Estimated quantity, composition and known toxicity of fluids that escaped (if applicable).
 - Duration of fluid escape (if applicable).
 - Extent of the impact, including type, date, locations and details of environmental damage.
 - Immediate actions taken to control further environmental impact.
 - Any arrangement for internal investigations.
 - Corrective actions proposed to prevent recurrence of similar incidents.

Reports (if required) will be submitted to DMP via email at petroleum.environment@dmp.wa.gov.au.

Recordable incidents

As defined in Regulation 4 of the PGER(E) Regulations, a **recordable incident** is:

an incident arising from the activity that –

(a) breaches an environmental performance objective or environmental performance standard in the environment plan for the activity; and

(b) is not a reportable incident

Performance objectives and performance standards for this project are defined in Chapter 6.

These incidents will be followed up by the Warrego Energy Asset and HSE Manager to determine whether any follow-up action is required.

Warrego Energy will communicate all recordable incidents to DMP. Warrego Energy recognises that Regulation 30 of the PGER(E) Regulations requires a recordable incident to be reported as soon as practicable following the end of the calendar month in which the recordable incident occurred, but not more than 15 days following the end of that month (e.g., all recordable incidents occurring in March must be reported to DMP on or before 15 April).

Any recordable incident report will contain a minimum of:

- All material facts and circumstance that Warrego Energy knows of or is able, by reasonable research and enquiry, to find out;

- Any action taken to avoid or mitigate any adverse environmental impacts of the recordable incidents;
- The corrective actions that have been taken, or are proposed to be taken, to prevent similar recordable incidents.

If recordable incidents need to be reported Warrego Energy will use DMP form ENV-PEB-190 'Monthly Recordable Environmental Incident Report Form'. These will be communicated to DMP via email at petroleum.environment@dmp.wa.gov.au.

7.7.3 Emissions and discharges reporting

Warrego Energy recognises Regulations 33 and 34 of the PGER(E) Regulations require communication to DMP a record of all emissions and discharges to any land, air, marine, seabed, sub-seabed, groundwater, subsurface or inland waters environment that occur during the course of the project.

Emissions and discharges (if any) will be reported every three months (from date of EP approval) and following the completion of project activities. Reports (if any) will be made using DMP form 'Quarterly Emissions and Discharges Report Form'. The report will cover the following:

- Solid waste:
 - General/putrescible.
 - Controlled: hazardous solid material and chemicals, contaminated soil, batteries.
- Liquid waste:
 - General/putrescible.
 - Controlled: hazardous liquid chemicals, waste oil, fuel, hydraulic oils, cooking oil, septic sludge.
- Gas flaring and venting.
- Atmospheric emissions estimates (CO₂-e) from fuel usage (based on NGER threshold estimator).
- Details of any emissions resulting from environmental incidents.

Warrego Energy may also be required to make an annual report of greenhouse gas emissions under the NGER Act if certain thresholds are exceeded (see Section 2.1.3).

7.7.4 Summary of required environmental reporting

Table 7.4 provides a summary of all environmental reporting requirements discussed in this section.

Table 7.4 Summary of reporting requirements

Type of reporting	Reporting items	Timeframe	EP reference
Reportable incidents	Incidents arising from activities with residual consequence rating of 3 or more.	Within 2 hours – initial report.	Section 7.7.2
	Additional reporting requirements: <ul style="list-style-type: none"> • Spills of hydrocarbons or hazardous materials in excess of 80 L to the sea or inland waters. • Spills of hydrocarbons or hazardous materials in excess of 500 L in other areas. • Spills of hydrocarbons or hazardous materials that affect a ground surface area in excess of 100 m². • Death or injury to individuals from a listed species during an activity. • Unplanned impact caused to a matter of national environmental significance (as per the EPBC Act) during an activity. 	Within 3 days – full report.	
Recordable incidents	Incidents arising from activities that (a) breach a performance objective or standard and (b) are not a reportable incident.	Within 15 days of end of calendar month in which incident occurred.	Section 7.7.2
Emissions and discharges	All emissions and discharges to land, air, sea, seabed, sub-seabed, groundwater, subsurface or inland waters environment.	Every 3 months after EP approval.	Section 7.7.3
	Greenhouse gas emissions.	Annually.	Section 7.7.3

This page has been left blank intentionally.

8 Stakeholder consultation

Warrego Energy initiated a stakeholder consultation program in 2008 when it acquired exploration rights in EP 469. Since then, Warrego Energy has consulted with landholders, traditional owners, local government, state and federal government agencies and other stakeholders with regards to its broader West Erregulla Exploration Program, which includes a potential appraisal well in addition to this project (i.e. 3D seismic survey).

The aim of the stakeholder consultation program was and is to inform stakeholders of Warrego Energy's proposed activities and to identify any conflicts, concerns, management strategies and positive benefits.

Warrego Energy is committed to continuing the stakeholder consultation program while it has a presence in the region.

Consultation has involved the following parties:

- Department of Mines and Petroleum – Native Vegetation Branch and Petroleum Branch.
- Department of Parks and Wildlife (formerly the Department of Environment and Conservation) – Species and Communities Branch and Environmental Management Branch.
- Office of the Environmental Protection Authority.
- Commonwealth Department of the Environment (formerly the Department of Sustainability, Environment, Water, Population and Communities).
- Office of the Appeals Convenor.
- Department of Water.
- Department of Lands.
- Amangu people.
- Yamatji Marlpa Aboriginal Corporation.
- Shire of Mingenew.
- Shire of Three Springs.
- Origin Energy.
- AWE Limited.
- Norwest Energy NL.
- UIL Energy.
- Empire Oil and Gas NL.
- Tronox Limited.
- Pipeline operators DBP Transmission and APA Group.
- Landholders.

Warrego Energy engaged consultants KD.1 Pty Ltd (KD.1) to manage its landholder consultation program. Warrego Energy has been consulting with landowners and land managers whose land may be traversed by the project, to make land access arrangements and to identify other relevant issues. Land access agreements to ensure access on acceptable terms with regards to access, timing, land husbandry, operational considerations, compensation and rehabilitation have been finalised with all four landholders in the project area. Warrego Energy will continue to develop land access arrangements with each of the landowners and managers and will honour the conditions of these agreements.

The landholder consultation register is provided as Appendix E. All other consultations made by Warrego Energy and its consultants is summarised in the stakeholder consultation register provided as Appendix F. A summary of consultation with other key regulators is also provided below.

Warrego Energy met with the DMP Petroleum Branch (representatives: Laura McCarthy and Stan Bowes) in February 2012 to discuss the project. Consultation with the DMP Petroleum Branch has indicated that the Project environmental approvals required are an EP and NVCP, along with referral to the now DOTE, and that the Project is unlikely to trigger referral to the EPA under the memorandum of understanding (MOU).

Warrego Energy met with the DMP Native Vegetation Branch (representatives: Adam Buck and Matt Boardman) in June 2012 to discuss the Project. Consultation with the DMP Native Vegetation Branch identified the following:

- The NVCP Application should include the following:
 - Management of significant fauna habitat (e.g. Black Cockatoos).
 - Appropriate biosecurity measures to mitigate against dieback and the spread of weeds.
 - Proposed rehabilitation measures (helpful but not essential), largely assessed through the EP process.
 - Commitments that will assure the DMP that impacts to Threatened (Declared Rare) flora, priority flora and significant fauna habitat will be kept to ALARP or avoided altogether.
- If impacts to DRF are unavoidable, Warrego Energy will be required to obtain a Permit to Take from the DPAW.

Warrego Energy met with the DMP, Petroleum Branch (representatives: Laura McCarthy and Stan Bowes) and Native Vegetation Branch (representative: Alicia Dudzinska) again on 31 October 2013. Both branches of the DMP were happy to see that Warrego Energy had taken measures to avoid, mitigate and manage project impacts since the last meeting. They confirmed the assessment process and recommended prompt submission of the NVCP Application and EP to facilitate meeting the project schedule.

Warrego Energy met with the OEPA (representatives: Peter Tapsell, Maree Heath and Annaleigh Gunston) in November 2012 to discuss the Project. Consultation with the OEPA confirmed that the OEPA believes the project can be adequately assessed by the DMP and would only require the OEPA's involvement in the event that the DMP and/or the DER were concerned that the proposed management of flora impacts was not satisfactory and decided to refer the project. The OEPA recommended that management approaches be developed in consultation with the DMP and DER.

Warrego Energy has had preliminary discussions with the Department of Environment and Conservation (representatives: Kelly Griffiths and Ken Atkins) (now the DER and the DPaW) regarding the potential impacts to Threatened Flora and the Requirement to obtain a 'Permit to Take'.

Warrego Energy also met with the DPAW Environmental Management Branch (representatives: Murray Baker and Grant Lamb) on 29 October 2013. The DPAW Environmental Management Branch recommended that a 'Permit to Take' would be required and an application should be submitted promptly to the Species and Communities Branch to allow parallel assessment with the NVCP application. The DPAW Environmental Management Branch also encouraged:

- The avoidance of Threatened, Priority 1 and Priority 2 flora.
- Implementation of a weed and dieback management plan.
- Development of a communication procedure with the Moora district office.
- Fire management.
- Avoidance of habitat trees.
- The design of access tracks to avoid third party access (i.e. doglegging).
- Rehabilitation monitoring.

Warrego Energy met with the DPAW Species and Communities Branch (representative: Ken Atkins and Anthea Jones, along with Grant Lamb from the Environmental Management Branch for consistency) on 6 November 2013 to discuss potential impacts to Threatened flora and confirm the requirements of a 'Permit to Take' application. The DPAW Species and Communities Branch was pleased with the avoidance, mitigation and management measures in place and believed they generally represented best practice. It was recommended that rubber tyres be used and vehicle movements minimised to maximise the success of natural revegetation of disturbed areas. The preferred mechanism for dieback and weed control (given project activities were to have been undertaken in March) was stated to be air blowing and brushing, with a particular focus on belly plates, rail guards and steps.

Warrego Energy met with the Commonwealth Department of the Environment on 29 October 2013 (representatives: Victoria Press and Erin Pears) to discuss the project. The DOTE were happy to see that Warrego Energy has taken measures to avoid, mitigate and manage impacts to matters of national environmental significance and that offset options were already being investigated should they be required. The DOTE also confirmed the various assessment processes and recommended a rigorous discussion of project impacts so, should it be determined that the project is a controlled action, the project may be assessed under an Assessment on Referral Information (ARI) level of assessment. The project was referred to the DOTE for assessment under the EPBC Act on 14 November 2013 (reference 2013/7054) and a decision was since made (10 December 2013) that the project is a controlled action and will require assessment and approval under the EPBC Act, by ARI.

Discussions with both the DOTE and DMP have also taken place with regards to offsets, particularly in January 2014. A short description of the offset requirements under both state and Commonwealth approval processes is described in Sections 2.1.1 and 2.2.2.

Warrego Energy has also been consulting with the local indigenous group, the Amangu People, who have a Native Title claim (WC04/2) over EP 469, and their representatives the Yamatji Marlpa Aboriginal Corporation since 2008 during the acquisition of this permit. Warrego Energy has a Heritage Protection Agreement with the Amangu People for the undertaking of low impact and ground disturbing petroleum operations on the land within EP 469 (previously referred to as EP 25/07-8) and will continue to honour the conditions of this agreement. As discussed in Section 4.3.1, a cultural heritage survey conducted in February 2014 identified two restricted areas in the vicinity of Sand Plain Creek. The Amangu Traditional Owners will also supply two monitors during the line preparation activities, and at least one Traditional Owner in conjunction with the Yamatji Marlpa Aboriginal Corporation will provide material for and support the delivery of project team inductions.

This page has been left blank intentionally.

9 References

- ABS. 2011a. National Regional Profile: Three Springs (S) (Statistical Local Area). A WWW publication accessed on 14 June 2012 at <http://www.abs.gov.au/AUSSTATS/abs@nrp.nsf/Latestproducts/535158260Population/People12006-2010?opendocument&tabname=Summary&prodno=535158260&issue=2006-2010>. Australian Bureau of Statistics.
- ABS. 2011b. National Regional Profile: Mingenew (S) (Statistical Local Area). A WWW publication accessed on 14 June 2012 at <http://www.abs.gov.au/ausstats/abs@nrp.nsf/Latestproducts/535155530Population/People12006-2010?opendocument&tabname=Summary&prodno=535155530&issue=2006-2010>. Australian Bureau of Statistics.
- ABS. 2011c. National Regional Profile 2006-2010. A WWW publication accessed on 14 June 2012 at <http://www.ausstats.abs.gov.au/ausstats/nrpmmaps.nsf/NEW+GmapPages/national+regional+profile?opendocument>. Australian Bureau of Statistics.
- AHD. 2012. Australian Heritage Database. Australian Government, Department of the Environment, Canberra.
- APPEA. 2008. Code of Environmental Practice. October. Australian Petroleum Production and Exploration Association, West Perth, WA.
- Beard, J. S. 1976. Vegetation Survey of Western Australia: Murchison 1:1,000,000. Map and Explanatory Notes to Sheet 6. University of Western Australia Press, Perth, Western Australia.
- Beard. 1990. Plant Life of Western Australia. Kangaroo Press, New South Wales.
- BOM. 2012. Climate Statistics for Australian Locations – Eneabba. A WWW publication accessed on 16 March 2012 at <http://www.bom.gov.au>. Bureau of Meteorology, Western Australia.
- Coffey Environments. 2013. Level 1 Vertebrate Fauna Survey – West Erregulla Exploration Program. Report prepared for Warrego Energy Ltd by Coffey Environments, Burswood, Western Australia.
- DAFWA. 2013. Western Australian Organism List (WAOL). A WWW publication accessed on 3 December 2013 at <http://www.biosecurity.wa.gov.au/western-australian-organism-list-waol>. Department of Agriculture and Food, Perth, Western Australia.
- DEC. 2012. Listing of species and ecological communities. A WWW publication accessed on 26 June 2012 at <http://www.dec.wa.gov.au/content/view/full/852/2010/1/1/>. Department of Environment and Conservation, Perth, Western Australia.
- Department of Mines. 1991. Guidelines for Onshore Petroleum Geophysical Surveying. In Schedule of Onshore Petroleum Requirements 1991. Perth, Western Australia.
- Desmond, A., and Chant, A. 2001. Geraldton Sandplain 3 (GS3 – Lesueur Sandplain subregion). In A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002. A WWW publication accessed on 14 June 2012 at http://www.dec.wa.gov.au/pdf/science/bio_audit/geraldton_sandplains03_p293-313.pdf.
- DEWHA. 2006. Matters of National Environmental Significance. Significant Impact Guidelines 1.1, Environmental Protection and Biodiversity Conservation Act 1999.
- DIA. 2012. Aboriginal Heritage Inquiry System. Department of Indigenous Affairs, Perth, Western Australia.
- DMP. 2006. Petroleum Guidelines: Environmental Assessment Processes for Petroleum Activities in Western Australia. Department of Mines and Petroleum, Perth, Western Australia.

DMP. 2012. Guidelines for the Preparation and Submission of an Environment Plan. August 2012. Department of Mines and Petroleum, Perth, Western Australia.

DSEWPAC. 2012. EPBC Act Referral Guidelines for Three Threatened Black Cockatoo Species. Department of Sustainability, Environment, Water, Population and Communities. Canberra, ACT.

EPA. 2002. Position Statement No. 3 – Terrestrial Biological Surveys as an Element of Biodiversity Protection. Environmental Protection Authority, Perth, Western Australia.

EPA. 2004a. Guidance for the Assessment for Environmental Factors – No. 51: Terrestrial flora and vegetation surveys for environmental impact assessment in Western Australia. Environmental Protection Authority, Perth, Western Australia.

EPA. 2004b. Guidance for the Assessment for Environmental Factors – No. 56: Terrestrial fauna surveys for environmental impact assessment in Western Australia. June. Environmental Protection Authority, Perth, Western Australia.

EPA. 2010. Technical Guide – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment. Environmental Protection Authority, Perth, Western Australia.

Gleven Consulting. 2012. Warrego Energy *Phytophthora* Dieback Occurrence Assessment. Report prepared for Woodman Environmental Consulting, Perth, Western Australia.

IAGC. 2001. Environmental Manual for Worldwide Geophysical Operations. Report prepared by International Association of Geophysical Contractors, Texas, USA.

RPS. 2011. West Erregulla Groundwater Assessment. Report prepared by RPS Aquaterra for Warrego Energy. Perth, Western Australia.

Shire of Mingenew. 2011. Shire of Mingenew – Places to See. A WWW publication accessed on 14 June 2012 at <http://www.mingenew.wa.gov.au/tourism>. Shire of Mingenew, Mingenew, Western Australia.

Shire of Three Springs. 2011. A WWW publication accessed in 2011 at <http://www.threesprings.wa.gov.au>. Shire of Three Springs, Three Springs, Western Australia.

Terra Rosa. 2014. Report of an archaeological work area clearance heritage survey of West Erregulla project area near Dongara, conducted by the Amangu Traditional Owners and Terra Rosa Cultural Resources Management Pty Ltd for Yamatji Marlpa Aboriginal Corporation and prepared for Warrego Energy Limited. February. Prepared by Terra Rosa Cultural Resources Management Pty Ltd, South Fremantle, Western Australia.

Woodman Environmental. 2013. West Erregulla Project: Flora and Vegetation Assessment. September. Reported prepared for Warrego Energy Limited by Woodman Environmental Consulting Pty Ltd.

10 Glossary

10.1 Acronyms and abbreviations

3D	three-dimensional
ALARP	as low as reasonably practicable
APPEA	Australian Petroleum Production and Exploration Association
BAM Act	<i>Biosecurity and Agriculture Management Act 2007</i>
DAA	Department of Aboriginal Affairs
DER	Department of Environment Regulation
DMP	Department of Mines and Petroleum
DOE	Department of the Environment
DoW	Department of Water
DPAW	Department of Parks and Wildlife
DRF	declared rare flora
EP	environment plan
EP Act	<i>Environmental Protection Act 1986</i>
EPA	Environmental Protection Authority
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ERP	emergency response plan
ESA	environmentally sensitive area
HSEQ	health, safety, environment and quality
IBRA	interim biogeographical regionalisation for Australia
MOU	memorandum of understanding
NGER Act	<i>National Greenhouse and Energy Reporting Act 2007</i>
NVCP	Native vegetation Clearing Permit.
OAC	Office of the Appeals Convenor
OSCAR	Online System for Comprehensive Activity Reporting
OSRP	oil spill response plan
PEC	priority ecological communities
PGER(E) Regulations	Petroleum and Geothermal Energy Resources (Environment) Regulations 2012

RIWI Act	<i>Rights in Water and Irrigation Act 1914</i>
SRE	short-range endemic
TEC	Threatened ecological community
VCL	Vacant Crown Land
VTs	vegetation types
WA	Western Australia
WC Act	<i>Wildlife Conservation Act 1950</i>

10.2 Symbols and units of measure

°C	degrees Celsius
ha	hectare
km	kilometre
L	litre
m	metre
m AHD	metres (Australian Height Datum)

Appendix A

Warrego Energy health, safety, environment and quality policy

Warrego Energy Limited

Health, Safety, Environmental & Quality Policy

A POLICY ESTABLISHING THE FUNDAMENTAL PRINCIPLES UPON WHICH WARREGO ENERGY WILL PROTECT THE:-

- *HEALTH AND SAFETY OF EMPLOYEES*
- *PUBLIC AT LARGE*
- *ENVIRONMENT*

THIS POLICY APPLIES TO ALL BUSINESS ACTIVITIES WITH THE AIM OF INTEGRATING PRINCIPLES OF EFFECTIVE SAFETY, HEALTH, ENVIRONMENTAL AND QUALITY MANAGEMENT INTO ALL ASPECTS OF WARREGO OPERATIONS.

HEALTH, SAFETY, ENVIRONMENTAL & QUALITY ISSUES ARE AN INTEGRAL PART OF CORPORATE DECISION MAKING

Health, Safety, Environmental and Quality goals are of equal importance to the company's economic objectives; they are woven into the decision-making fabric and are used predominately in measuring business performance. Delivery of these goals will ultimately enhance the company's image and performance by reducing injuries, protecting human and environmental resources, and reducing liability and unnecessary losses. Warrego believes that management and minimising of environmental impacts is fundamental to the way the company operates. As it is an integral part of good operational practice, Warrego has a responsibility to ensure that all operations are conducted with due regard for the environment in line with other Safety and Health issues. The principles of Quality Management and continual improvement will ensure that business activities are managed in a cost effective and professional manner.

HEALTH, SAFETY & ENVIRONMENTAL RISK MANAGEMENT

Warrego will minimise Health, Safety and Environmental risks through assigning clear roles and responsibilities, proper contingency planning, engagement of competent contractors and correctly maintained equipment. Clear and effective communication is seen as a key factor in managing risk, particularly amongst those involved in operations. The company will audit its operations for potential risks and hazards to reduce the risks to a level that is as low as is reasonably practicable.

HEALTH, SAFETY AND ENVIRONMENTAL STANDARDS

Warrego will go beyond minimal legislative and industry requirements for the protection of all stakeholders, the general public and the environment and develop a Quality Management System to ensure that project operations comply with current environmental legislation, regulations, guidance and recognised best practices. Environmental programmes will be developed and reviewed as necessary, in line with Australian and European

laws and directives, and the company will ensure that adequate time and resources are made available for effective implementation.

ADEQUATELY RESOURCE THE IMPLEMENTATION OF HEALTH, SAFETY, ENVIRONMENT AND QUALITY PROGRAMMES

Warrego will commit the resources necessary to deliver the objectives of the company's Health, Safety, Environmental and Quality plans. This will include employee training in emergency/crisis management and periodic Health, Safety and Environmental audits, controlled and monitored by the Quality Management System.

Employee involvement in audits and open communications are fundamental to the success of these plans and promotion of the company's policy of environmental awareness in all its operations. Each stakeholder, individually, must be aware of, accountable for, and make a contribution to Warrego's Health, Safety, and Environmental performance. Appraisal of employees and contractors will incorporate a review of Health, Safety and Environmental performance.

GOODS & SERVICES REVIEW

Warrego will review and assess the environmental impact of goods and services provided by suppliers and contractors.

COMMUNITY RESPONSIBILITY

The company will promptly disclose to its employees, contractors and the communities in which it does business, whenever operations pose any significant Health, Safety or Environmental risk to them. This includes working with all third parties, where appropriate, in developing contingency plans. The company will actively engage with affected communities to understand and address concerns and issues arising from time to time.

Warrego is sensitive to and accommodating of relevant cultural and heritage issues and committed to developing a mutually respectful and open dialogue with any community or interest group touched by its operations.

MINIMISE WASTE CREATION – USE RESOURCES EFFICIENTLY

Although the creation of waste materials is an inevitable part of hydrocarbon exploration and production operations, the company will promote/develop and implement strategies to minimise the amount of waste created and any adverse impact on the environment. Treatment and disposal of all waste material will be in a manner consistent with this Policy.

Efficient use of energy and resources will be promoted by Warrego amongst all stakeholders in regard to the company's business and operations.

HSEQ PERFORMANCE REVIEW & REPORTING

Warrego will review and report on its Health, Safety, Environmental and Quality performance annually in an open and transparent fashion. The results of each review will inform future Health, Safety, Environmental and Quality Programmes. The company will ensure, so far as is reasonably practicable, commitment to continually improving HSEQ performance and pollution prevention by means of performance tracking, reporting, systematised learning, feedback and auditing.

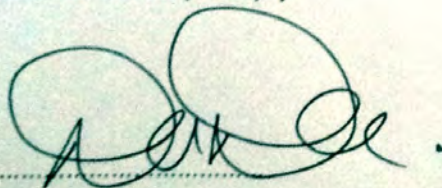
CHANGES IN LEGISLATION AND/OR INDUSTRY BEST PRACTICE

In implementing this policy, compliance with all relevant policies and programmes, legislation, codes of practice and other best practice standards will be deemed to be Warrego's minimum acceptable standard. The company will take account of changing legislation and industry best practice and establish procedures for dissemination of information.

OPERATING PHILOSOPHY

"Warrego will tread lightly on the land"

It is the responsibility of the company and every officer, employee and stakeholder to conduct themselves in accordance with this philosophy.



Dennis W Donald
Managing Director
Warrego Energy Limited

Adopted 31 January 2008

Appendix B

Flora and vegetation assessment

WARREGO ENERGY LIMITED

WEST ERREGULLA PROJECT

FLORA AND VEGETATION ASSESSMENT



SEPTEMBER 2013



woodmanenvironmentalconsulting

A.C.N. 088 055 903

DOCUMENT REVISION HISTORY

Revision	Description	Originator	Internal Reviewer	Internal Review Date	Client Reviewer	Client Review Date
A	Draft report	DC	BL/GW	02/05/2012	Shane Hashim	31/05/2012
0	Final report with client comments incorporated	DC	KK	01/06/2012		
1	Revised report including 2012 data	DC/CG	DC/GW	15/3/2013	Natassja Raymond	12/09/2013
2	Client comments incorporated	DC/CG	DC/GW	16/9/2013	Natassja Raymond	23/9/2013
3	Alteration pg. 112	DC/CG	CG	26/9/2013		

WEC Reference: Warrego12-33-01

Cover Photo: Clockwise from left: *Thelymitra stellata* (Threatened Flora (Declared Rare Flora – Extant)), *Paracaleana dixonii* (Threatened Flora (Declared Rare Flora – Extant)), *Pterostylis sargentii* and *Thelymitra benthamiana*, orchid species growing in the West Erregulla Study Area, 2012 (Photo: Woodman Environmental)

DISCLAIMER

This document is prepared in accordance with and subject to an agreement between Woodman Environmental Consulting Pty Ltd (“Woodman Environmental”) and the client for whom it has been prepared (“Warrego Energy Limited”) and is restricted to those issues that have been raised by the Client in its engagement of Woodman Environmental and prepared using the standard of skill and care ordinarily exercised by Environmental Scientists in the preparation of such Documents.

Any organisation or person that relies on or uses this document for purposes or reasons other than those agreed by Woodman Environmental and the Client without first obtaining the prior written consent of Woodman Environmental, does so entirely at their own risk and Woodman Environmental denies all liability in tort, contract or otherwise for any loss, damage or injury of any kind whatsoever (whether in negligence or otherwise) that may be suffered as a consequence of relying on this document for any purpose other than that agreed with the Client.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	i
1. INTRODUCTION	1
1.1 PROJECT AND STUDY DESCRIPTION	1
1.2 PROJECT AREA AND STUDY AREA.....	2
1.3 AIMS.....	2
2. BACKGROUND	3
2.1 CLIMATE.....	3
2.2 LANDFORMS, GEOLOGY AND SOILS.....	3
2.3 REGIONAL VEGETATION	4
2.4 REGIONAL FLORA	6
2.5 LOCAL FLORA AND VEGETATION SURVEYS	8
2.6 OVERVIEW OF CONSERVATION SIGNIFICANT AND INTRODUCED FLORA RELEVANT TO THE STUDY AREA	13
3. METHODS	19
3.1 PERSONNEL AND LICENSING	19
3.2 INITIAL AERIAL PHOTOGRAPHY INTERPRETATION.....	19
3.3 FIELD SURVEY METHODS.....	20
3.3.1 Reconnaissance Survey	20
3.3.2 Detailed Survey – 2011 Fieldwork.....	20
3.3.3 Detailed Survey – 2012 Fieldwork.....	21
3.4 PLANT COLLECTION AND IDENTIFICATION	24
3.5 FLORISTIC ANALYSIS.....	24
3.6 VEGETATION MAPPING AND DESCRIPTION.....	25
3.7 VEGETATION CONDITION MAPPING.....	26
3.8 SIGNIFICANCE OF CONSERVATION SIGNIFICANT FLORA POPULATIONS AND VEGETATION	26
3.9 LIMITATIONS OF SURVEYS	28
4. RESULTS	30
4.1 FLORA OF THE STUDY AREA	30
4.1.1 Conservation Significant Flora Taxa	30
4.1.2 Distribution Extensions and Distribution Gaps	44
4.1.3 Other Flora of Interest	45
4.1.4 Introduced Taxa.....	46
4.1.5 Significance of Conservation Significant Flora Populations.....	51
4.2 VEGETATION OF THE STUDY AREA	55
4.2.1 Vegetation Type Mapping	55
4.2.2 Other Areas Mapped	100
4.2.3 Vegetation Condition.....	100
4.2.4 Significance of Vegetation	101
5. DISCUSSION	111
5.1 FLORA OF THE STUDY AREA	111
5.2 VEGETATION OF THE STUDY AREA	112
6. RECOMMENDATIONS	114
7. REFERENCES	115

LIST OF FIGURES

Figure 1:	Project Area and Study Area Location
Figure 2:	Average Maximum and Minimum Temperatures (°Celsius) and Average Rainfall (mm) for Eneabba (Bureau of Meteorology 2012a)
Figure 3:	Warrego Energy Limited West Erregulla Project Quadrat and Site Locations and Track Log Legend
Figure 3:	Warrego Energy Limited West Erregulla Project Quadrat and Site Locations and Track Logs
Figure 4	Warrego Energy Limited West Erregulla Project Vegetation Types and Threatened and Potentially Undescribed Flora Legend
Figure 4.0	Warrego Energy Limited West Erregulla Project Threatened and Potentially Undescribed Flora Overview
Figures 4.1 – 4.4:	Warrego Energy Limited West Erregulla Project Threatened and Potentially Undescribed Flora Sheets 1 - 4
Figure 5	Warrego Energy Limited West Erregulla Project Vegetation Types and Priority 1 and 2 Conservation Significant Flora Legend
Figure 5.0	Warrego Energy Limited West Erregulla Project Priority 1 and 2 Flora Overview
Figures 5.1 – 5.4:	Warrego Energy Limited West Erregulla Project Priority 1 and 2 Flora Sheets 1 - 4)
Figure 6	Warrego Energy Limited West Erregulla Project Vegetation Types and Priority 3 and 4 Conservation Significant Flora Legend
Figure 6.0	Warrego Energy Limited West Erregulla Project Priority 3 and 4 Flora Overview
Figures 6.1 – 6.4:	Warrego Energy Limited West Erregulla Project Priority 3 and 4 Flora Sheets 1 – 4
Figure 7	Warrego Energy Limited West Erregulla Project Introduced Flora and Vegetation Condition Legend
Figures 7.1 – 7.4:	Warrego Energy Limited West Erregulla Project Introduced Flora and Vegetation Condition Sheets 1 - 4
Figure 8	Warrego Energy Limited West Erregulla Project Vegetation Types Legend
Figures 8.1 – 8.4:	Warrego Energy Limited West Erregulla Project Vegetation Types Sheets 1 – 4

LIST OF TABLES

Table 1:	Extent of Vegetation Associations within the Study Area (Shepherd <i>et al.</i> 2002; Government of Western Australia 2011)
Table 2	Priority Flora Taxa Recorded within the West Erregulla 2 Well Site Survey Area (Woodman Environmental 2009a)
Table 3:	Priority Flora Taxa Previously Recorded within the Study Area by Woodman Environmental (2009c; 2010)
Table 4:	Conservation Significant Flora Taxa Known to Occur Within or in the Vicinity of the Study Area
Table 5:	Introduced Taxa Known to Occur Within or in the Vicinity of the Study Area
Table 6:	Personnel and Licensing Information
Table 7:	Significance of Local Populations to the Overall Conservation Significance of Taxon
Table 8:	Descriptions of Local Conservation Significance Rankings of Vegetation Types in the Study Area
Table 9:	Limitations of the Flora and Vegetation Survey of the Study Area
Table 10:	Summary of Conservation Significant Taxa Known from the Study Area
Table 11:	Taxa Where Collections Represent Extensions to the Known Distribution of these Taxa, or Fill Distribution Gaps (DEC 2012b)
Table 12:	Summary of Introduced Taxa Known from within the Study Area
Table 13:	Significance of Local Conservation Significant Flora Populations to the Overall Conservation Significance of Each Taxon
Table 14:	Local and Regional Conservation Significance of Vegetation Types

LIST OF PLATES

Plate 1:	<i>Paracaleana dixonii</i> (T (DRF)) (Woodman Environmental)
Plate 2:	<i>Thebymitra stellata</i> (T (DRF)) (Woodman Environmental)
Plate 3:	VT 1a (Quadrat WE-001) (Woodman Environmental)
Plate 4:	VT 1b (Quadrat WE-020) (Woodman Environmental)
Plate 5:	VT 2 (Quadrat WE-096) (Woodman Environmental)
Plate 6:	VT 3 (Quadrat WE-071) (Woodman Environmental)
Plate 7:	VT 4 (Quadrat WE-094) (Photo: Woodman Environmental)
Plate 8:	VT 5 (Quadrat WE-117) (Photo: Woodman Environmental)
Plate 9:	VT 6 (Quadrat WE-122) (Photo: Woodman Environmental)
Plate 10:	VT 7a (Quadrat WE-055) (Photo: Woodman Environmental)
Plate 11:	VT 7b (Quadrat WE-087) (Photo: Woodman Environmental)
Plate 12:	VT 8 (Quadrat WE-081) (Photo: Woodman Environmental)
Plate 13:	VT 9 (Quadrat WE-070) (Photo: Woodman Environmental)
Plate 14:	VT 10 (Quadrat WE-003) (Photo: Woodman Environmental)
Plate 15:	VT 11 (Quadrat WE-080) (Photo: Woodman Environmental)
Plate 16:	VT 12 (Quadrat WE-106) (Photo: Woodman Environmental)
Plate 17:	VT 13a (Quadrat WE-054) (Photo: Woodman Environmental)
Plate 18:	VT 13b (Quadrat WE-083) (Photo: Woodman Environmental)
Plate 19:	VT 14 (Quadrat WE-086) (Photo: Woodman Environmental)

LIST OF APPENDICES

- Appendix A: Definitions, Categories and Criteria for Threatened and Priority Ecological Communities (DEC 2010a)
- Appendix B: Results of Search of the Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) Database with Regard to Environmental Matters of National Significance
- Appendix C: Results of the Interrogation of the Department of Environment and Conservation's W.A Herbarium (WAHerb) Specimen Database, Threatened and Priority Flora Database (TPFL) and Threatened and Priority Flora List (TP List) (DEC 2011b)
- Appendix D: Conservation Codes for Western Australian Flora (DEC 2012a)
- Appendix E: Environmental Weed Strategy - Criteria for the Assessment and Rating of Weeds in Terms of their Environmental Impact on Biodiversity (CALM 1999)
- Appendix F: Vegetation Condition Ranking Scale for the South West Botanical Province (Keighery 1994)
- Appendix G: Vascular Plant Taxa Recorded in the West Erregulla Study Area
- Appendix H: Raw Data Recorded within Quadrats and Sites 2011 - 2012
- Appendix I: Location Details of Conservation Significant Flora and Introduced Flora Recorded within the West Erregulla Study Area
- Appendix J: List of Vascular Plant Taxa Omitted or Grouped Together Within the Data Matrix for Analysis
- Appendix K: Vascular Plant Taxa Recorded within Each Vegetation Type within the West Erregulla Study Area
- Appendix L: Summary Dendogram of Relationships Between Quadrats, 2011-2012 Quadrat Data
- Appendix M: Summary Matrix of Taxon Presence Within Quadrats
- Appendix N: Significant Indicator Taxa of the 12-Group Classification of Vegetation Types

EXECUTIVE SUMMARY

Warrego Energy Limited (Warrego) is proposing to undertake petroleum exploration at its West Erregulla Project (the Project) in Western Australia. This includes conducting a 3D seismic survey within Exploration Permit (EP) 469 and part of EP 419. The seismic survey will be used to collect data pertaining to the commercial potential of a tight-gas reserve. The Project is located approximately 230 km north-east of Perth, and 50 km south-east of Dongara, in the Northern Sandplains region of Western Australia. It includes a large block of vegetation on Vacant Crown Land (VCL), as well as a number of smaller areas of remnant vegetation and cleared paddocks on private property, and on road reserves.

As part of the Environmental Impact Assessment (EIA) process for the Project (in line with the *Environmental Protection Act* 1986), Warrego initially commissioned Woodman Environmental Consulting Pty Ltd (Woodman Environmental) in 2011 to conduct a desktop review of the flora and vegetation of the West Erregulla Study area. Woodman Environmental were subsequently commissioned in 2011 to conduct a flora and vegetation survey of the Study area, with further survey work undertaken in 2012 to map vegetation on private property, as well as undertake survey for conservation significant flora taxa. This report presents an assessment of flora and vegetation over the Study Area.

An initial reconnaissance visit to the Study area was conducted on the 15th September 2011, to identify vehicular access within the Study area, as well as recording notes on preliminary vegetation boundaries and other significant features (wetlands, unusual vegetation types). A detailed survey was conducted over three visits in Spring 2011: from the 26th – 30th September, from the 24th – 27th October, and from the 20th – 26th November. These visits covered the length of the Spring season, during which most taxa in the Northern Sandplains Region are known to flower. A series of 90 permanent flora survey quadrats were established within remnant vegetation located on VCL within the Study area during this time. All quadrats covered an area of 100 m², measuring 10 m by 10 m. Further survey was undertaken over two visits in 2012: from 10th – 13th September and 2nd – 5th October. 29 quadrats and 10 detailed recording sites were established in 2012, in areas that were inaccessible during the 2011 surveys. Targetted searching for conservation significant flora was also undertaken during the 2012 surveys.

Quadrat data was statistically analysed to determine Vegetation Types (VTs) present in the Study area.

A total of 535 discrete vascular flora taxa and one known known hybrid were recorded within the Study area in 2011 and 2012. These taxa represent 64 families and 196 genera. A total of 30 confirmed and two possible conservation significant flora taxa are known in the Study area. This total includes:

- 3 confirmed taxa listed as T (DRF) (the orchids *Thelymitra stellata* and *Paracaleana dixonii*, and the mallee *Eucalyptus crispata*)
- 1 T (DRF) taxon with historical data recorded only (*Eucalyptus leprophloia*) (not re-recorded in 2011 or 2012)

- 23 confirmed taxa listed as Priority flora
- 2 historical locations of Priority flora (not re-recorded in 2011 or 2012)
- 1 possible location of a Priority flora taxon recorded in 2012 (?*Styloidium carnosum* subsp. Narrow leaves (J.A. Wege 490))
- 1 historical location of a possible Priority flora taxon (*Banksia fraseri* ?var. *crebra* P3) (not re-recorded in 2011 or 2012)
- 1 known hybrid Priority flora (*Eucalyptus macrocarpa* x *pyriformis* (P3))

The populations of three of the four taxa listed as T (DRF) and known from the Study area were considered to be of high significance to the overall conservation significance of each taxon. One taxon listed as T (DRF) with historical records known from the Study area, *Eucalyptus leprophloia*, was not recorded during this survey and hence was not ranked in terms of conservation significance. The populations of a number of Priority flora taxa were also considered to be of high significance to the overall conservation significance of each taxon.

A total of 22 introduced flora taxa were recorded in the Study area. One of these taxa, *Echium plantagineum* (Salvation Jane; Patersons Curse) is listed as a Declared Pest in Western Australia under the *Biosecurity and Agriculture Management Act 2007* (BAM Act) (Department of Agriculture and Food 2013), however it is not listed as a Weed of National Significance (WoNS).

Manual dissection of the floristic classification of the 119 quadrats defined 14 vegetation types (VTs), three of which were split further into two sub-types each (total 17 VTs). These VTs comprise four super-groups. The split between the four super-groups is based primarily on soil types, and usually associated topographical location, within the Study area, with distinct differences in species composition between the super-groups.

Super-group 1 is comprised of VTs 1-6, with VT 1 divided into two sub-types. It consists of vegetation on clay or occasionally sandy soils generally characterised by the presence of *Eucalyptus accedens*, however always with a mid stratum dominated by *Melaleuca* spp. Super-group 2 is comprised of VTs 7 to 9, with VT 7 divided into two sub-types. It consists of shrublands, occasionally with a mallee woodland stratum, on upland areas associated with laterite, including breakaways, rises and slopes. Super-group 3 is comprised of VTs 10 - 12. It consists of shrublands on slopes and flats associated with areas of yellow to grey sand. Super-group 4 is comprised of VTs 13 and 14, VT 13 divided into two sub-types. It consists of vegetation on slopes and flats associated with areas of grey sand, with a low woodland of *Eucalyptus todtiana* usually (but not always) present.

In general, most of the vegetation types in the UCL portion of the Survey area were considered to be in pristine condition, with no obvious signs of disturbance. However, several quadrats located under *Eucalyptus accedens* were affected by weeds, present at relatively low levels. Areas of remnant bushland on private property were generally in worse condition, with condition rankings from '2' (Excellent) through to '5' (Poor).

No VTs mapped in the Study area are equivalent to any state-listed Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs), or any

nationally-listed threatened ecological communities, although two TECs are known within the vicinity of the Study area ('Assemblages of organic mound springs of the Three Springs area' and 'Ferricrete floristic community (Rocky Springs type)'), neither were recorded in the Study area. Of the VTs mapped within the Study area, 16 of the 17 are considered to be of high local conservation significance, primarily because of their limited extent in the Study area (less than 1 % of the total Study area) and their occurrence on landforms that were uncommon and restricted in the Study area. However, several VTs, despite being widespread and common in the Study area, are habitat for taxa listed as T (DRF), or restricted Priority flora or undescribed taxa, and hence were also considered to be of high local conservation significance. It is also highly likely that several VTs described within the Study area, namely VTs 5, 8, 9, 11 and 12, are of some regional significance, as they do not appear to have been mapped previously in the region, however without further statistical analysis of regional datasets, this cannot be confirmed.

The following recommendations have been made with regard to potential disturbance associated with the West Erregulla Project:

- Known locations of all Threatened (DRF) flora taxa within the Study area should be avoided by works planned to be undertaken in the area if possible;
- Prior to works being undertaken within the Study area, a Permit to Take should be applied for with regard to incidental taking of *Paracaleana dixonii* (T (DRF)) and *Thelymitra stellata* (T (DRF)), to enable accidental clearing of individuals which have so far not been recorded within the Study area;
- Further material of *Eucalyptus ?crispata* (T (DRF)), *Eucalyptus ?abditata* (P2), *Banksia fraseri ?var. crebra*, *Guichenotia impudica* (both P3), *Cryptandra intermedia* (atypical variant), *Eucalyptus* sp. (unidentified 2), *Leucopogon* sp. and *Acacia ?idiomorpha* (all potentially undescribed) should be collected to determine both taxonomic and conservation status, prior to any ground disturbing activities taking place;
- A *Phytophthora cinnamomi* and weed hygiene management plan should be developed prior to any works being undertaken, to prevent the introduction and/or spread of disease or weeds in the Study area. A weed monitoring programme should also be considered, to ensure that any new infestations, particularly in disturbance areas such as seismic lines, are identified and can be controlled or eradicated;
- The locations of the locally significant VTs (1a – 13a, 14) and potentially regionally significant VTs (5, 8, 9, 11, 12) be considered when planning the location of any future disturbance, to minimise impacts to these VTs as much as is practical;
- An assessment of impacts to flora and vegetation should be conducted when final disturbance footprints are available.

1. INTRODUCTION

1.1 PROJECT AND STUDY DESCRIPTION

Warrego Energy Limited (Warrego) is a private development and production company established to invest in and develop a global portfolio of onshore tight gas assets through the application of innovative drilling and production techniques and technologies. Warrego's initial investment is in Western Australia, where the company is progressing development of the West Erregulla concession in the North Perth Basin.

Warrego is proposing to undertake petroleum exploration at its West Erregulla Project (the Project) in Western Australia. This includes conducting a 3D seismic survey within Exploration Permit (EP) 469 and part of EP 419. The seismic survey will be used to collect data pertaining to the commercial potential of a tight-gas reserve.

The Project is located approximately 230 km north-east of Perth, and 50 km south-east of Dongara, in the Northern Sandplains region of Western Australia (Figure 1). It is located approximately 20 km from both the Dampier-Bunbury and Parmelia pipelines, through which it is proposed that the gas will be transported to market. Gas was first drilled in the area (at West Erregulla-1 well site) by Barrack Energy in 1990.

As part of the Environmental Impact Assessment (EIA) process for the Project (in line with the *Environmental Protection Act* 1986), Warrego initially commissioned Woodman Environmental Consulting Pty Ltd (Woodman Environmental) in 2011 to conduct a desktop review of the flora and vegetation of the Project area. The purpose of the desktop review is to review known information relevant to the Project area through all sources of literature available. Woodman Environmental were subsequently commissioned in 2011 to conduct a flora and vegetation survey of the then Project area. Following changes to the dimensions of the Project area subsequent to the flora and vegetation survey in 2011, Woodman Environmental were commissioned in 2012 to conduct further survey of areas of the new (current) Project area that extended outside the original Project area, and conduct targeted searching for conservation significant flora in the current Project area. The current Project area is shown on Figure 1.

The desktop review and flora and vegetation survey represent the components of a Level 2 survey as defined by the Environmental Protection Authority's (EPA) Guidance Statement No. 51 (EPA 2004). A Level 2 survey with regard to the Project is defined as a background research/desktop study and reconnaissance survey, followed by a detailed survey of the study area (EPA 2004). This level of survey was determined to be the appropriate level of survey for the Project, after review of Table 2 of Guidance Statement No. 51 (EPA 2004), where the Bioregion Group is defined as Group 1 (Geraldton Sandplains), and the nature of the impact is considered to be 'Moderate to High'. A detailed survey was considered appropriate as opposed to a comprehensive survey, as there is relatively detailed information available regarding the flora and vegetation of the Northern Sandplains region (see Section 2).

This report presents both components of the Level 2 survey, with the results of the background research/desktop study summarised in Section 2, and the results of the

detailed survey of the Project area, including survey conducted in both 2011 and 2012 presented in Section 4.

1.2 PROJECT AREA AND STUDY AREA

The current Project area consists of a polygon that covers an area of 9,543 ha, and measures approximately 12.5 km from north to south at its longest point, and approximately 10 km from east to west at its widest point (Figure 1). The majority of the current Project area consists of remnant vegetation on Vacant Crown Land (VCL), with the remaining sections occupying paddocks and small areas of remnant vegetation on private property, and Shire roads and road reserves. The Project area is located within the Shire of Three Springs and the Shire of Mingenew. The nearest town centre is Dongara, located approximately 50 km to the north-west of the centre of the Project area. The Project area is intersected by Tomkins Road, Natta Road, Carey Road and Sand Plain Creek.

As previously mentioned, the current Project area differs from the original Project area provided to Woodman Environmental in 2011 for the flora and vegetation survey in 2011, extending outside the original Project area boundary in several areas, while excising several other areas of the original Project area. For the purposes of this assessment, it was deemed desirable to present all of the data collected during the 2011 survey in this report, including from the areas excised by the current Project area, as this data would provide contextual information when discussing the distributions of conservation significant flora and vegetation. Therefore, a Study area was created, using a combination of the original and current Project area boundaries, in order to present all data collected during the 2011 survey. The Study Area is also shown on Figure 1.

For the purposes of consistent terminology in this report, Study area will hereafter be used.

1.3 AIMS

The aim of this study was to determine the flora and vegetation values of the Study area. The overall objectives of the study were to:

- Compile an inventory of vascular plant taxa present within the Study area, and map conservation significant and introduced flora taxa; and
- Define and map Vegetation Types (VTs) and other communities present within the Study area

The tasks undertaken to meet this aim were:

- Review all existing literature relating to flora, vegetation and other environmental factors relevant to the Study area, including relevant state and federal databases;
- Establish flora survey quadrats throughout all discernible plant communities within all areas of remnant vegetation in the Study area;
- Undertake statistical analysis to define VTs within the Study area;

- Map the distribution of VTs within the Study area using a combination of aerial photograph interpretation and field observation;
- Map and discuss the condition of the vegetation of the Study area;
- Conduct targeted searches for flora species, including Threatened, Priority Flora and introduced taxa that may be present within the Study area; and
- Provide a report and map detailing VTs, conservation significant flora, introduced flora and condition of remnant vegetation within the Study area.

2. BACKGROUND

2.1 CLIMATE

The climate of the region within which the Study area occurs is classified as Mediterranean, with dry warm summers, and cool wet winters. There are 7 – 8 dry months per year (where average precipitation does not exceed evaporation) (Beard 1990). The majority of rainfall is produced by cold fronts, which frequently affect the south-west corner of Western Australia during the winter months.

Figure 2 displays the mean maximum and minimum temperatures (°C) and mean rainfall (mm) experienced at Eneabba, located approximately 45 km south of the Study area. The Eneabba area experiences an average of 495.6 mm of rainfall per year, predominantly in the winter months of May - August (averaged over the years 1964 – 2012) (Bureau of Meteorology 2012a). The highest mean maximum temperature of Eneabba is experienced in January (summer), with the lowest mean minimum temperature experienced in July-August (winter) (Figure 2).

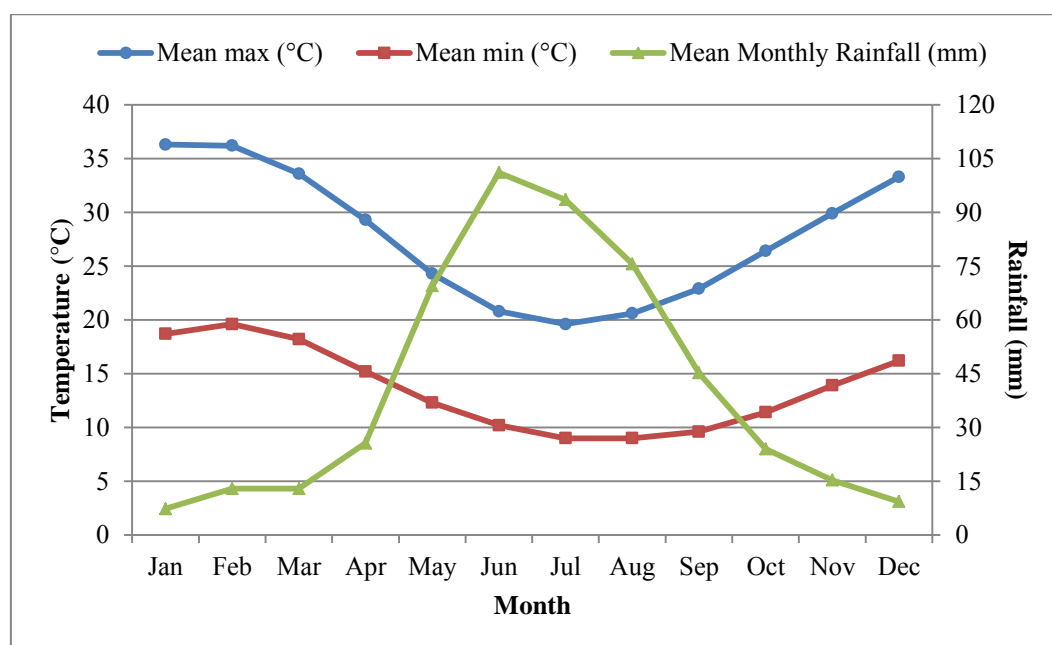


Figure 2: Average Maximum and Minimum Temperatures (°Celsius) and Average Rainfall (mm) for Eneabba (Bureau of Meteorology 2012a)

2.2 LANDFORMS, GEOLOGY AND SOILS

The Study area is located within the Geraldton Sandplains Interim Biogeographic Regionalisation for Australia (IBRA) Bioregion within Western Australia

(Commonwealth of Australia 2012). The Geraldton Sandplains bioregion is situated on the sandy earths of an extensive, undulating, lateritic sandplain mantling Permian to Cretaceous strata (Desmond & Chant 2001). The Study area is located more specifically within the Geraldton Sandplains 3 (GS3): Lesueur Sandplain subregion (Commonwealth of Australia 2012). The GS3 subregion more specifically comprises coastal Aeolian and limestones, and Jurassic siltstones and sandstones (often heavily lateritised), of the central Perth Basin (Desmond & Chant 2001).

The Study area lies in the Northern Sandplains Region (Irwin Botanical District) as described by Beard (1976; 1990). This region is characterised by extensive lateritic sandplains, locally dissected especially near the coast, and almost entirely underlain by sedimentary rocks of a mostly siliceous nature. The sedimentary rocks form a series of plateaux, including the Dandaragan Plateau, on which the Study area is located. While dissected by rivers and eroded by sea on the west, stretches of the plateau surface is still preserved, and forms extensive monotonous sandplains, with lateritic outcrops on ridges and breakaways also common. Sandy soils are found throughout.

2.3 REGIONAL VEGETATION

The Study area is located within the Geraldton Sandplains IBRA bioregion (Commonwealth of Australia 2012), with the vegetation within this bioregion comprised of proteaceous scrub-heaths rich in endemics. York Gum and Jam woodland occur on outwash plains and associated drainage (Desmond and Chant 2001). The vegetation of the GS3 subregion, within which the Study area occurs, consists mainly of shrub-heaths rich in endemics on a mosaic of lateritic mesas, sandplains, coastal sands and limestones, with heath on lateritised sandplains along the north-eastern margins of the subregion.

The Study area is located within the Northern Sandplains Region (Irwin Botanical District) of the South-Western Botanical Province (Beard 1990). The vegetation of the Irwin Botanical District consists of scrub heath on sandplains near the coast, with *Acacia-Casuarina* thickets further inland, and *Acacia* scrub with scattered trees of *Eucalyptus loxophleba* on the hard-setting loams (Beard 1990). The vegetation of the sandplains is kwongan, however structural and compositional changes are evident in relation to changes in climate and soil; north and east of Eneabba to the Greenough River, low heath on dense laterite with *Hakea auriculata* and *Banksia* (formerly *Dryandra*) *fraseri* is present. On lateritic sand, *Hakea obliqua* drops out and the scrub heath is very heterogeneous without any obvious dominance of character species. The *Banksia-Xylomelum* alliance community appears on deep sand, with *Banksia attenuata*, *B. burdettii* and *B. prionotes* being character species (Beard 1990).

The Study area occurs within the Tathra vegetation system, as mapped by Beard (1976). The Tathra system is the most extensive system in the Dongara area, with the western edge being the foot of the slope down to the Eneabba Plain (Eridoon System), and the eastern extent being associated with the Urella Fault. The majority of the Tathra unit is composed of sandplain with a uniform scrub heath assemblage, which has a rich, heterogeneous flora assemblage, within which it is very difficult to assess dominance of any particular species. The scrub heath consists of scattered shrubs between 1 – 2 m in height, with a denser layer of smaller shrubs at <1 m. *Nuytsia*

floribunda was present, as well as *Eucalyptus todtiana* in valleys and deeper sand, with *Banksia attenuata*, *B. menziesii* and *B. prionotes*.

On outcrops of laterite on ridges and breakaways within the Tathra system, a low heath to 60 cm is present with *Hakea auriculata* being a dominant species. Other species such as *Banksia fraseri*, *Melaleuca scabra*, *Allocasuarina* (formerly *Casuarina*) *humilis*, *Petrophile* sp., *Melaleuca radula* and Restionaceae species are also present in these areas.

Shepherd *et al.* (2002) mapped and described vegetation system associations in the Northern Sandplains Region related to physiognomy, expanding on mapping undertaken by Beard (1976). Vegetation associations were described at a scale of 1:250,000. The Study area contains two vegetation system associations which are summarised in Table 1. Table 1 also presents the current extent of each vegetation system association in relation to the pre-European extent, and the extent in Department of Environment and Conservation (DEC)-managed lands, including conservation reserves (Government of Western Australia 2011). Both vegetation system associations are currently at well below their pre-European extents, with very little (less than 25 %) of each association reserved in conservation estate (Table 1).

Table 1: Extent of Vegetation Associations within the Study Area (Shepherd *et al.* 2002; Government of Western Australia 2011)

Vegetation Association	Description	Current Extent (ha)	Percentage of Pre-European Extent Remaining	Percentage of Current Extent Reserved in DEC-Managed Lands
Tathra 49	Shrublands; mixed heath	14,446.7	36.4	24.1
Tathra 379	Shrublands; scrub-heath on lateritic sandplain in the central Geraldton Sandplain Region	130,310.4	23.9	21.8

A search of the DEC Threatened Ecological Communities (TEC) and Priority Ecological Communities (PEC) Database was requested for a 20 km buffer zone surrounding the point location 336000mE, 6743000mN (GDA94, Zone 50) (between Tomkins Road and Sand Plain Creek) (DEC 2011a).

Results of the database search indicate that several occurrences of 2 TECs are known within this area (but outside the Study area): the Endangered TEC ‘Assemblages of organic mound springs of the Three Springs area’ and Vulnerable TEC ‘Ferricrete floristic community (Rocky Springs type)’. The nearest known locations of these TECs are approximately 10 km east of the Study area. No PEC locations are known within the 20 km buffer zone (DEC 2011a). Appendix A presents definitions of categories and criteria for TECs and PECs (DEC 2010a).

A search of the Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) database with regard to environmental matters of national significance as listed under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act), was also performed for the Study area (DSEWPaC 2012a). The results of this search indicate that no nationally-listed

threatened ecological communities are known from the Study area. The results of this search are presented in Appendix B.

2.4 REGIONAL FLORA

The DEC threatened flora databases, including the Western Australian Herbarium (WAHerb) specimen database and the Threatened and Priority Flora database (TPFL), were searched for information regarding conservation significant taxa known from within or in the immediate vicinity of the Study Area (DEC 2011b). The Threatened and Priority Flora list (TP List) was also searched; this list provides information on taxa known to occur in the general region of the Study area. The search was requested for a 15 km buffer zone surrounding the point location 336000mE, 6743000mN (GDA94, Zone 50) (between Tomkins Road and Sand Plain Creek). Appendix C presents the results of the database searches, including the preferred habitat and flowering period of each taxon. Appendix D presents conservation codes for Western Australian flora (DEC 2012a).

A total of nine Threatened (Declared Rare Flora – Extant) (T (DRF)) and 62 Priority flora taxa were returned from the search of the DEC database (DEC 2011b). However, it was discovered that subsequent to the search being conducted, 1 Priority flora taxon returned from the list (*Georgeantha hexandra*) had been removed as a Priority flora taxon (DEC 2012a), therefore bringing the number of Priority flora taxa returned from the search to 61. Of the T (DRF) taxa returned, a WAHerb location of *Eucalyptus leprophloia* occurs within the Study area, however no other T (DRF) taxa are known to occur in the Study area. Nine Priority flora taxa have records in the Study Area. These taxa are highlighted in Appendix C.

Prior to survey in 2012 (see Section 3.3), a search of the WAHerb specimen database and TPFL database for records of conservation significant flora taxa was performed for a 15 km buffer zone around the same point location listed above using the online tool NatureMap (DEC 2012b). This was to determine whether any additional records of conservation significant taxa had been entered into these databases subsequent to the original interrogation of these databases detailed above. No additional conservation significant taxa were found to occur in the search area, with no additional records of taxa previously recorded in the original database interrogation found to occur in the Study area.

The search of the DSEWPaC database (DSEWPaC 2012a) indicates that 17 nationally-listed threatened flora taxa are either likely to occur in the vicinity of the Study area, or habitat for such species is likely to occur in the vicinity of the Study area. The results of the above search are presented in Appendix B. The taxa identified during the search are listed below:

<u>Species</u>	<u>EPBC Act Conservation Status</u>
<i>Banksia serratuloides</i> subsp. <i>perissa</i>	Vulnerable
<i>Centrolepis caespitosa</i>	Endangered
<i>Chorizema humile</i>	Endangered
<i>Conostylis dielsii</i> subsp. <i>teres</i>	Endangered
<i>Conostylis micrantha</i>	Endangered
<i>Daviesia speciosa</i>	Endangered
<i>Eucalyptus balanites</i>	Endangered

<i>Eucalyptus crispata</i>	Vulnerable
<i>Eucalyptus impensa</i> :	Endangered
<i>Eucalyptus leprophloia</i>	Endangered
<i>Eucalyptus rhodantha</i> var. <i>rhodantha</i>	Vulnerable
<i>Hemiandra gardneri</i>	Endangered
<i>Leucopogon obtectus</i>	Endangered
<i>Pityrodia axillaris</i>	Critically Endangered
<i>Schoenia filifolia</i> subsp. <i>subulifolia</i>	Endangered
<i>Stawellia dimorphantha</i>	Vulnerable
<i>Wurmbea tubulosa</i>	Endangered

All species listed above, apart from *Pityrodia axillaris*, *Centrolepis caespitosa*, occur in the Geraldton Sandplains Bioregion. There are no known occurrences of *Centrolepis caespitosa* in the Geraldton Sandplains Bioregion. This species is known from the Swan Coastal Plain around Perth and on the South Coast around Albany (DEC 2012a). *Pityrodia axillaris* is only known from the Avon Wheatbelt, Yalgoo and Swan Coastal Plain Bioregions (DEC 2012a). *Eucalyptus leprophloia* is the only taxon known from the Study area (DEC 2011b).

The results of the search of the DSEWPaC database (DSEWPaC 2012a) also indicate that 4 significant invasive taxa (or habitat for such taxon) potentially occur within the Study area: *Asparagus asparagoides* (Bridal Creeper), *Cenchrus ciliaris* (Buffel Grass), *Lycium ferocissimum* (African Boxthorn) and *Tamarix aphylla* (Athel Pine). All have locations within the Northern Sandplains Bioregion (DEC 2012a).

Asparagus asparagoides and *Tamarix aphylla* are both listed as Declared Pests in Western Australia under the *Biosecurity and Agriculture Management Act 2007* (BAM Act) (Department of Agriculture and Food 2013). These taxa have been placed into Control Category 3 (Management) for the whole of Western Australia (Department of Agriculture and Food 2013). According to the *Biosecurity and Agriculture Management Regulations 2013* (Government of Western Australia 2013a), a Declared Pest is assigned to Category 3 if, in the opinion of the Minister for Agriculture and Food, eradication of the Declared Pest from an area or part of an area for which it is declared is not feasible but that it is necessary to —

- (i) alleviate the harmful impact of the Declared Pest in the area; or
- (ii) reduce the number or distribution of the Declared Pest in the area; or
- (iii) prevent or contain the spread of the Declared Pest in the area.

It is then an obligation of the person or organisation controlling an area to take prescribed control measures to control the Declared Pest, under the BAM Act (Government of Western Australia 2013b).

These taxa were also listed by the Federal Government of Australia as Weeds of National Significance (Australian Weeds Committee 2012), and are under national management for the purpose of restricting their spread, and eradicating them from parts of Australia.

Lycium ferocissimum and *Cenchrus ciliaris* are not listed as Declared Pests in Western Australia (Department of Agriculture and Food 2013) but are considered by the States and Territories to pose a particularly significant threat to biodiversity, as

they are well known to be particularly invasive under certain conditions (Hussey *et al.* 2007; DSEWPaC 2012a).

In Western Australia, *Asparagus asparagoides*, *Cenchrus ciliaris*, *Lycium ferocissimum* and *Tamarix aphylla* are listed under the then-Department of Conservation and Land Management's (CALM) (now DEC) Environmental Weed Strategy for Western Australia (CALM 1999). This strategy assessed and rated environmental weeds in terms of their environmental impact on biodiversity. Each weed species was rated according to 3 criteria, namely invasiveness, distribution and environmental impact, and was assigned a score of 'High', 'Moderate', 'Mild' or 'Low'. These ratings were then used to determine an order of priority for control and/funding. *Asparagus asparagoides*, *Cenchrus ciliaris* and *Lycium ferocissimum* were ranked 'High', while *Tamarix aphylla* was ranked 'Moderate'. Appendix E provides descriptions of each rating in the Environmental Weed Strategy for Western Australia.

A search of the WAHerb specimen database for records of introduced taxa known within the Study area and surrounds was performed using the online tool NatureMap (DEC 2012b). Three introduced taxa were returned from the search: *Corrigiola litoralis* (Strapwort), *Lupinus angustifolius* (Narrowleaf Lupin) and *Lysimachia arvensis* (Pimpernel). None of these taxa are listed as Declared Pests (Department of Agriculture and Food 2013). Under the Environmental Weed Strategy for Western Australia (CALM 1999), *Lysimachia arvensis* was ranked 'Moderate', *Lupinus angustifolius* was ranked 'Mild', and *Corrigiola litoralis* was ranked 'Low'.

2.5 LOCAL FLORA AND VEGETATION SURVEYS

Within the Study area itself, Woodman Environmental undertook a flora survey of the proposed West Erregulla-2 well site in November 2008 (Woodman Environmental 2009a). The area surveyed consisted of a 150 m x 150 m well pad area, as well as surveying existing access tracks from Natta Road to the West Erregulla-2 well pad area. Two plant communities with similar plant species were recorded within the proposed West Erregulla-2 well site area (Woodman Environmental 2009a):

- W1: Very Open Shrub Mallee of *Eucalyptus pleurocarpa* with emergent *Eucalyptus todtiana* over Dwarf Scrub of mixed species dominated by *Hakea incrassata*, *Ecdeiocolea monostachya* and *Lambertia multiflora* on grey sand over laterite
- H1: Low Heath of mixed species dominated by *Hibbertia hypericoides*, *Calothamnus sanguineus*, *Leptospermum erubescens* and *Ecdeiocolea monostachya* with emergent *Eucalyptus pleurocarpa* on grey sand over laterite

Neither of the plant communities above are representative of listed TECs or PECs (DEC 2012c, d). Both plant communities are similar to Floristic Community Type (FCT) 5e mapped within the Tiwest Dongara survey area (Woodman Environmental 2009b), located just to the west of the Study area, which is described as 'Heath to Low Heath dominated by *Banksia* spp. and *Melaleuca* spp. over *Ecdeiocolea monostachya* on grey or brown sandy clay or gravel on lower slopes and plains', and was mapped on the eastern margins of the survey area on the lateritic soils of the Tathra System. FCT 5e was considered to be of relatively high conservation

significance (Woodman Environmental 2009b), due to the presence of *Paracaleana dixonii* (T (DRF)) in this FCT within the survey area. However *Paracaleana dixonii* (T (DRF)) was not recorded within the West Erregulla-2 well site survey area.

A total of 69 flora taxa were recorded within the West Erregulla-2 well site survey area, from 21 families and 49 genera. No introduced (weed) species were recorded (Woodman Environmental 2009a). Eight Priority Flora taxa were recorded within the survey area, as listed in Table 2 below.

Table 2: Priority Flora Taxa Recorded within the West Erregulla 2 Well Site Survey Area (Woodman Environmental 2009a)

Taxon	Conservation Code
<i>Banksia fraseri</i> ?var. <i>crebra</i>	P3
<i>Banksia scabrella</i>	P4
<i>Guichenotia impudica</i>	P3
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	P3
<i>Micromyrtus rogeri</i>	P1
<i>Persoonia filiformis</i>	P2
<i>Stylidium drummondianum</i>	P3
<i>Synaphea ?oulopha</i>	P1

Woodman Environmental undertook a flora and vegetation survey of the proposed Eneabba-Moonyoonooka transmission line route for Western Power, in November 2007 with supplementary work undertaken in July and September 2008 (Woodman Environmental 2009c), and in August and October 2010 (Woodman Environmental 2010). The transmission line route passes roughly through the eastern edge of the large block of VCL within the Study area. A total of 34 plant communities (15 Woodlands and 19 Shrublands (including heaths and thickets)) were described and mapped over the proposed Eneabba-Moonyoonooka transmission line route, with 7 disturbed variations of these plant communities also mapped. Three degraded plant communities were also mapped, including Totally Cleared (C1) and areas of remnant trees existing in paddocks (C1a). No TECs or PECs were recorded along the proposed line route (Woodman Environmental 2009c; 2010).

For the section of the transmission line that lies within the Study area, the following 12 undisturbed plant communities were recorded (Woodman Environmental 2009c):

- W2: Open Low Woodland of *Eucalyptus accedens* over Dwarf Shrubland of *Melaleuca* species and *Hakea lissocarpa* on grey silty-sand over laterite on a midslope;
- W6: Open Low Woodland of *Banksia prionotes* and occasional *Allocasuarina campestris* over Dwarf Shrubland of *Ecdeiocolea monostachya* and *Banksia attenuata* on yellow sand in gullies and on slopes;
- W10: Open Low Woodland of *Eucalyptus ?gittinsii* subsp. *illucida* over Low Heath dominated by *Ecdeiocolea monostachya* and *Melaleuca aspalathoides* on pale brown silty-sand on flats;
- W11: Open Low Woodland of *Eucalyptus todtiana* over Low Heath of mixed species including *Melaleuca ciliosa*, *Ecdeiocolea monostachya*, *Leptospermum erubescens*, *Lambertia multiflora* var. *multiflora* and *Adenanthos cygnorum* on grey-yellow-brown sands on midslopes;
- W12: Open Low Woodland of *Eucalyptus camaldulensis* over Thicket dominated by *Acacia saligna* subsp. *lindleyi* ms and *Melaleuca viminea* subsp. *viminea* on brown sandy-clay on river banks;

- H1: Low Heath dominated by *Melaleuca aspalathoides*, *Melaleuca ?tinkeri* and *Hakea* species on skeletal brown sandy-silt on laterite;
- H4: Thicket of *Allocasuarina campestris* over occasional Dwarf Scrub of *Melaleuca* species on skeletal grey-brown sand on laterite;
- H8: Low Heath of mixed species dominated by *Melaleuca ciliosa*, *Ecdeiocolea monostachya*, *Lambertia multiflora* var. *multiflora*, *Leptospermum erubescens*, *Banksia shuttleworthiana* and *Hibbertia hypericoides* with occasional *Banksia ?lanata*, *Banksia attenuata* and *Banksia hookeriana* and occasional emergent *Eucalyptus todtiana* on yellow-brown and grey sands on mid-upper slopes;
- H10: Heath dominated by *Banksia ?leptophylla* and *Dryandra sessilis* var. *flabellifolia* over Dwarf Scrub dominated by *Hibbertia hypericoides* on grey-brown sandy-silt on a midslope;
- H11: Heath dominated by *Calothamnus quadrifidus* and *Melaleuca hamata* over Open Dwarf Scrub of *Verticordia densiflora* on grey silty sand;
- H17: Occasional Open Scrub of *Acacia rostellifera* over Low Heath dominated by *Melaleuca ?tinkeri* on grey sandy-clay on midslopes; and
- H19: Thicket of *Allocasuarina campestris* over mixed herbs including *Drosera macrantha* subsp. *eremaea*, *Chamaescilla versicolor* and pasture grasses on brown sandy clay on creek banks.

Of the 3 degraded plant communities mapped for the entire transmission line route, 2 were recorded within the Study area, including Totally Cleared (CI) and areas of remnant trees in paddocks (Cla).

A total of 397 discrete vascular plant taxa were recorded along the proposed transmission line route during surveys in 2007-2008 for Western Power (Woodman Environmental 2009c), comprising 56 families and 151 genera. The dominant families were Myrtaceae (74 discrete vascular plant taxa), Proteaceae (70), Papilionaceae (18), Mimosaceae (18) and Cyperaceae (18 including 1 introduced (weed) species). Included in this total were 7 introduced (weed) taxa, 1 of which (*Echium plantagineum*) is a Declared Weed of P1 control code status (throughout the State), under the ARR Act. However, no weeds were recorded within the Study area. A total of 41 conservation-significant flora taxa were recorded, including 5 DRF and 36 Priority Flora taxa. Of these, a total of 11 Priority flora taxa were recorded in or in the vicinity of the Study area, as listed below in Table 3).

Table 3: Priority Flora Taxa Previously Recorded within the Study Area by Woodman Environmental (2009c; 2010)

Taxon	Conservation Code
<i>Banksia fraseri</i> var. <i>crebra</i>	P3
<i>Banksia scabrella</i>	P4

Taxon	Conservation Code
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	P3
<i>Micromyrtus rogeri</i>	P1
<i>Schoenus griffinianus</i>	P3
<i>Stylidium carnosum</i> subsp. Narrow leaves (J.A. Wege 490)	P1
<i>Stylidium drummondianum</i>	P3
<i>Synaphea aephyrsa</i>	P3
<i>Synaphea oulopha</i>	P1

Woodman Environmental (2004) conducted plant community mapping for ARC's Denison 3D seismic survey during Spring 2004. The project encompassed an area of approximately 39,400ha, including 11,455ha of nature reserves (Yardanogo, Beekeepers and Dongara Nature Reserve). The survey area for this study is located approximately 10 km west of the Study area, and not within the Tathra vegetation system. A total of 34 plant communities, 7 disturbed communities and 7 mosaic units were mapped over the Denison 3D survey area in 2004. The plant communities consisted of Forests, Woodlands, Thickets, Scrub, Shrublands and Heaths with the woodland communities recording the highest species richness on average. Two heath communities also recorded high species richness. The condition of vegetation within the survey area varied between Very Poor and Excellent. The vegetation mapped during the Denison 3D survey did not represent any known TECs. However, the wetland system mapped on private property and within the Yardanogo Nature Reserve is considered to be highly conservation significant (Woodman Environmental 2004).

A total of 515 vascular plant taxa belonging to 81 plant families were recorded during the Denison 3D seismic survey, including 1 T (DRF) species (*Stawellia dimorphantha* – now P4) and 8 Priority Flora species. The dominant families recorded during the survey were Myrtaceae (55 native taxa), Proteaceae (38 native taxa), Asteraceae (25 native taxa), Cyperaceae (23 native taxa), Papilionaceae (19 native taxa), Orchidaceae (16 native taxa) (Woodman Environmental 2004).

Woodman Environmental (2009b) conducted detailed flora and vegetation studies of the Tiwest Dongara survey area between 2006 and 2008, to define vegetation type boundaries and identify conservation significant flora. This survey area is located approximately 5 km west of the Study area, and includes a portion of the Tathra vegetation system. It was located within the greater Northern Sandplains Study Area (NSSA), which extends from the Tiwest Dongara survey area through to the Iluka Resources Limited (Iluka) Project Area (commencing north of Eneabba) (Woodman Environmental 2009d), with the study jointly conducted by Tiwest and Iluka. Twenty-one FCTs were mapped and described within the Tiwest Dongara survey area. Supergroup 1 consisted of Woodlands, Thickets and Heaths on well drained sandy soils and sandy clay over lateritic gravel; Supergroup 2 consisted of Woodlands, Thickets, Heaths and Scrub predominantly on heavier clay soils on lower slopes, drainage lines and depressions and sandy soils over limestone. The majority of the vegetation within the survey area was considered to be in Pristine or Excellent condition. None of the FCTs described during the study correspond with known TECs or PECs.

A total of 543 native vascular plant taxa belonging to 72 plant families were recorded within the survey area between 2006 and 2008. The dominant families were Myrtaceae (75 taxa), Proteaceae (64 taxa) and Cyperaceae (30 taxa). One T (DRF) species, *Paracaleana dixonii*, and 21 Priority Flora species were recorded within the survey area (Woodman Environmental 2009b).

The Iluka Project Area surrounds the town site of Eneabba, located approximately 40 km south of the Study area, and abuts the Tiwest Dongara survey area in the north. Within the Iluka Project Area, a total of 36 FCTs were mapped and described (Woodman Environmental 2009d). FCT Super Group 1 consisted of Woodlands, Thickets and Heaths on well drained sandy soils and sandy clays over lateritic gravel, with Super Group 2 consisting of Woodlands, Thickets, Heaths and Scrub predominantly on heavier clay soils on lower slopes, drainage lines and depressions and sandy soils over limestone. The majority of the native vegetation surveyed within the Iluka Project Area was found to be in Very Good to Pristine condition. Several of the FCTs were highly locally restricted, with 2 such FCTs noted as being possibly part of the Rocky Springs TEC, as both contain species listed as occurring within this ecological community.

A total of 940 vascular plant taxa belonging to 74 plant families were recorded within the Iluka Project Area (Woodman Environmental 2009d). The dominant families were Myrtaceae (138 taxa), Proteaceae (134 taxa) and Fabaceae (61 taxa). A total of 11 DRF species have been recorded by within the Iluka Project Area. These are *Eucalyptus crispata*, *Eucalyptus johnsoniana*, *Eucalyptus subarea*, *Grevillea althoferorum*, *Grevillea curviloba* subsp. *incurva*, *Hakea megalosperma*, *Leucopogon* sp. ciliate Eneabba (F. Obbens & C. Godden s.n. 3/7/2003), *Leucopogon obtectus*, *Paracaleana dixonii*, *Tetralthea nephelioides* and *Thelymitra stellata*. A total of 72 Priority Flora species have been recorded in the Iluka Project Area.

2.6 OVERVIEW OF CONSERVATION SIGNIFICANT AND INTRODUCED FLORA RELEVANT TO THE STUDY AREA

A list of conservation significant flora taxa that are either known within or in close proximity to the Study area is presented in Table 4. This list has been compiled from the results of searches of DEC's databases (Appendix C), and from historical local flora surveys undertaken within and in the immediate vicinity of the Study area as detailed above. Conservation significant flora taxa recorded from the local surveys listed above that are outside the Study area were not included, as the surveys were undertaken within different vegetation systems, and were generally located some distance away from the Study area. A total of 73 conservation significant flora taxa, including 9 T (DRF) taxa, are known to occur within or in close proximity to the Study area. Taxa shaded in Table 4 are those that have records within the Study Area.

Table 4: Conservation Significant Flora Taxa Known to Occur Within or in the Vicinity of the Study Area

Taxon	Conservation Code	Preferred Habitat Requirements	Flowering Period
<i>Acacia congesta</i> subsp. <i>cliftoniana</i>	P1	Rocky or lateritic loam	Aug-Sep
<i>Acacia flabellifolia</i>	P3	Rocky loam, lateritic gravelly soils; low hills and ridges	Aug
<i>Acacia lineolata</i> subsp. <i>multilineata</i>	P1	Yellow sand, rocky clay, sand plains	Jun-Aug
<i>Acacia megacephala</i>	P2	White or yellow sand, sandplains	Jul-Sep
<i>Acacia vittata</i>	P2	Grey sand, sandy clay, margins of seasonal lakes	Aug
<i>Baekkea</i> sp. Billeranga Hills (ME Trudgen 2206)	P1	Yellow sand, clayey sand over granite, stoney hills	Sep
<i>Banksia cypholoba</i>	P3	Sand and gravelly loam	Aug
<i>Banksia elegans</i>	P4	Yellow, white or red sand, sandplains, low coastal dunes	Oct-Nov
<i>Banksia fraseri</i> var. <i>crebra</i>	P3	White sand on slope, low lateritic hill, brown gravelly loam, grey sandy gravel	Jul-Aug
<i>Banksia fraseri</i> var. <i>oxycedra</i>	P3	Lateritic gravel, hill slopes and breakaways	Jul-Sep
<i>Banksia scabrella</i>	P4	White, grey or yellow sand, sometimes with lateritic gravel, sandplains, laterite ridges	Sep-Jan
<i>Banksia trifontinalis</i>	P3	Laterite	Aug-Oct
<i>Beyeria gardneri</i>	P3	Yellow sand	Aug-Sep
<i>Calectasia cyanea</i>	T (DRF)	White, grey or yellow sand, gravel	Jun-Oct
<i>Calectasia palustris</i>	P1	White or grey sand, seasonally inundated swamps	Jul-Oct
<i>Calothamnus arcuatus</i>	P2	Clay loam over sandstone, yellow sand over gravel, grey sand, sandstone, grey shallow sand-loam, siltstone; upland areas, hillside, creek bank, drainage lines	Apr/Jun/ Aug
<i>Calytrix chrysantha</i>	P4	Grey or yellow brown sand, flats	Dec-Feb
<i>Calytrix eneabbensis</i>	P4	White, grey or yellow sand over laterite, sandplains	Jul-Oct

Taxon	Conservation Code	Preferred Habitat Requirements	Flowering Period
<i>Comesperma griffinii</i>	P2	Yellow or grey sand, plains	Oct
<i>Daviesia speciosa</i>	T (DRF)	Gravelly lateritic soils, undulating plains, rises	Apr-May
<i>Diuris eburnea</i>	P1	Damp areas near rivers	Nov
<i>Eryngium pinnatifidum</i> subsp. <i>palustre</i> ms	P3	Clay, sandy clay, clay pans, seasonally wet flats	Oct-Nov
<i>Eucalyptus abdita</i>	P2	Laterite, sandy clay with gravel over laterite, slopes, breakaways	Oct?/Feb
<i>Eucalyptus crispata</i>	T (DRF)	Sand, loam with lateritic gravel, lateritic breakaways	Mar-Jun
<i>Eucalyptus leprophloia</i>	T (DRF)	White or grey sand over laterite, valley slopes	Aug-Oct
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	White or grey sand over laterite, hillslopes, ridges, sandplains	Aug-Dec
<i>Eucalyptus macrocarpa</i> x <i>pyriformis</i>	P3	Sand, lateritic sand soils, hills, rocky, ironstone ridges, sandplains	Apr/Aug-Oct
<i>Frankenia glomerata</i>	P3	White, yellow or yellow-brown sand, white-brown sandy clay, margins of or dunes of salt lakes	Nov
<i>Grevillea erinacea</i>	P3	White, grey or yellow sand, gravelly soil or sand, amongst medium or low trees, heathlands, sandplains	Jul-Dec
<i>Grevillea makinsonii</i>	P3	White, yellow or grey sand over laterite, loam, gravel, clay, rocky hills, sandplains, amongst medium or low trees, heathlands, sandplains	Jul-Oct
<i>Grevillea murex</i>	T (DRF)	Yellow, brown or red sand, clay loam, amongst medium or low trees or tall sclerophyll shrubland	Aug-Oct
<i>Guichenotia alba</i>	P3	Sandy and gravelly soils, low lying flats and depressions	Jul-Aug

Taxon	Conservation Code	Preferred Habitat Requirements	Flowering Period
<i>Guichenotia impudica</i>	P3	Undulating plains and hills, clay or sandy loams with laterite	Aug-Oct
<i>Guichenotia quasicalva</i> ms	P2	Sandy clay over laterite, drainage lines	Sep-Oct
<i>Haloragis foliosa</i>	P3	White-grey sand or limestone	Oct
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	Sand, disturbed sites	Feb
<i>Hensmania stoniella</i>	P3	White, grey or lateritic sand, often Winter wet	Sep-Nov
<i>Homalocalyx chapmanii</i>	P2	Yellow or grey-brown sand, undulating plains, weathered granite	Sep-Oct
<i>Hopkinsia anoectocolea</i>	P3	White or grey sand, often saline, Winter wet depressions, floodplains, salt lakes	Sep-Dec
<i>Hypocalymma angustifolium</i> subsp. Hutt River (S. Patrick 2982)	T (DRF)	Moist, brown black peat-clay, peat-loam, peat, grey clay; swamps, creeks	Aug-Sep
<i>Lasiopetalum ogilvieanum</i>	P1	White, grey or yellow sand, stoney loam, undulating plains, lateritic rises	Jul-Oct
<i>Leucopogon marginatus</i>	T (DRF)	Yellow and lateritic gravelly sand, undulating plains	Jul-Aug
<i>Leucopogon</i> sp. Dudawa (M. Hislop & J. Borger MH 3829)	P1	Sandstone breakaways, rocky grey loam over sandstone	Sep
<i>Melaleuca sclerophylla</i>	P3	Gravelly sand, clayey sand, granite outcrops, rises	Jun-Sep
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	P3	White, grey or lateritic sand, clay gravel	Mar-Oct
<i>Micromyrtus rogeri</i>	P1	Yellow-brown sandy soils, gravel, laterite, breakaways	Jul-Oct
<i>Micromyrtus uniovula</i>	P2	Sandy soil over laterite, rises	Sep-Nov
<i>Paracaleana dixonii</i>	T (DRF)	Grey sand over granite	Oct-Jan
<i>Persoonia filiformis</i>	P2	Yellow or white sand over laterite	Nov-Dec
<i>Persoonia rudis</i>	P3	White, grey or yellow sand, often over laterite	Sep-Jan
<i>Pityrodia viscida</i>	P3	Lateritic sand	Sep-Feb

Taxon	Conservation Code	Preferred Habitat Requirements	Flowering Period
<i>Schoenus badius</i>	P2	Grey sand, moist areas	Sep-Oct
<i>Schoenus griffinianus</i>	P3	Grey or white sand, plains and sand dunes	Sep-Oct
<i>Schoenus</i> sp. Eneabba (F. Obbens & C. Godden I154)	P2	Grey, yellow or white sand, undulating sandplains, midslopes, tops of rises	Apr
<i>Scholtzia</i> sp. Yandanooka (R. Soullier 646)	P1	Dry yellow-red sand, granite, sandplains, outcrops	Nov-Dec
<i>Stawellia dimorphantha</i>	P4	White, grey or yellow sand	Jun-Nov
<i>Stylidium carnosum</i> subsp. Narrow leaves (J.A. Wege 490)	P1	Grey sand, plains	Sep
<i>Stylidium drummondianum</i>	P3	Sand or clayey sand over laterite, upper hillslopes, breakaways, low heath, mallee	Aug-Oct
<i>Stylidium</i> sp. Three Springs (J.A. Wege & C. Wilkins JAW 600)	P2	Yellow-brown clayey sand over laterite, yellow-brown clayey loam over granite, ironstone breakaway, loamy soils over granite, clay loams with scattered gravel, rocky hill with lateritic stones	Sep
<i>Stylidium torticarpum</i>	P3	Sandy clay and clay loam over laterite, adjacent to creek lines, depressions, beneath breakaways, heath or mallee shrubland	Sep-Nov
<i>Synaphea aephynsa</i>	P3	Gravelly laterite, sand over laterite	Jul-Oct
<i>Synaphea oulopha</i>	P1	Grey sand, gravelly loam, clay, lateritic breakaways and rises	Jul-Oct
<i>Synaphea sparsiflora</i>	P2	Sandy loam over laterite	Aug-Sep
<i>Thelymitra stellata</i>	T (DRF)	Sand, gravel, lateritic loam	Oct-Nov
<i>Thryptomene</i> sp. Mingenew (Diels & Pritzel 332)	P3	Yellow sand, loam	Jun-Jul
<i>Thysanotus vernalis</i>	P3	Sandy loam	Sep-Oct
<i>Triglochin protuberans</i>	P3	Red loam, grey mud over clay, Winter wet sites, claypans, near salt lakes, margins of pools	Aug-Oct
<i>Verticordia dasystylis</i> subsp. <i>oestopoia</i>	P1	Gritty soils over granite, outcrops	Oct

Taxon	Conservation Code	Preferred Habitat Requirements	Flowering Period
<i>Verticordia densiflora</i> var. <i>roseostella</i>	P3	Sandy, gravelly soils	Sep-Dec
<i>Verticordia luteola</i> var. <i>luteola</i>	P3	Grey sand over gravel, flats	Nov-Dec
<i>Verticordia luteola</i> var. <i>rosea</i>	P1	White sand, flats	Dec-Jan
<i>Verticordia penicillaris</i>	P4	Shallow gritty soils, granite outcrops	Sep-Oct

A list of introduced species known from within or in close proximity to the Study area has been compiled from WAHerb specimen data (Table 3), and from historical local flora surveys as detailed above. As no introduced taxa have previously been recorded in the Study area, only the taxa known from WAHerb specimen data have been included in the list (Table 5).

Table 5: Introduced Taxa Known to Occur Within or in the Vicinity of the Study Area

Taxon	Common Name	Comments
<i>Corrigiola litoralis</i>	Strapwort	Rated as 'Low' under Environmental Weed Strategy for Western Australia (CALM 1999)
<i>Lupinus angustifolius</i>	Narrowleaf Lupin	Rated as 'Low' under Environmental Weed Strategy for Western Australia (CALM 1999)
<i>Lysimachia arvensis</i>	Pimpernel	Rated as 'Low' under Environmental Weed Strategy for Western Australia (CALM 1999)

3. METHODS

3.1 PERSONNEL AND LICENSING

Table 6 lists the personnel involved in both fieldwork and plant identifications for the study. All personnel have had previous field experience in the Northern Sandplains Region, with personnel involved in plant identifications having extensive taxonomic experience with the flora of the Northern Sandplains Region. All plant material was collected under the scientific licences (pursuant to *Wildlife Conservation Act 1950* Section 23C and Section 23F) as listed in Table 6.

Table 6: Personnel and Licensing Information

Personnel	Role	Flora Collecting Permit / Permit to take DRF
Greg Woodman	Fieldwork	SL009403, 145-1011
David Coultas	Fieldwork, Plant Identifications	SL009406; SL009960; 149-1011
Lisa McFarlane	Fieldwork	SL009435, SL009958
Bianca Taylor	Fieldwork	SL009416
Neal Henshaw	Fieldwork	SL009410
Terri Jones	Fieldwork	SL009952
Bethea Loudon	Fieldwork	SL009414; 64-1112
Samuel Coultas	Fieldwork	-
Peter Malajczuk	Fieldwork	-
Melissa Bestwick	Fieldwork	-
Frank Obbens	Fieldwork; Plant Identifications	-
Sharnya Thomson	Fieldwork; Plant Identifications	-

3.2 INITIAL AERIAL PHOTOGRAPHY INTERPRETATION

Initial interpretation of plant community boundaries was conducted with the use of orthorectified aerial photography at a scale of 1:10,000, supplied to Woodman Environmental by Warrego. Preliminary plant community boundaries were transcribed onto the aerial photography based on visible patterns observed, to allow for ground-truthing of these boundaries to be conducted in the field, via quadrat establishment and mapping notes (see Section 3.3.1). Preliminary quadrat locations were also allocated based on these plant community boundaries. A minimum of 3 quadrats were allocated to each discernible plant community type where possible; such replication is required for meaningful results to be produced following statistical analysis of quadrat data, and to provide local context for VT distribution. This process was undertaken prior to field survey in both 2011 and 2012.

3.3 FIELD SURVEY METHODS

3.3.1 Reconnaissance Survey

An initial reconnaissance visit to the Study area was conducted on the 15th September 2011. This visit initially served to identify vehicular access within the Study area in preparation for the detailed survey, as accessibility to some areas could not be determined adequately from aerial photography. Notes on preliminary vegetation boundaries were also recorded, as well as any other significant features (wetlands, unusual vegetation types). Opportunistic recordings of known conservation significant flora taxa and introduced (weed) taxa were also made.

3.3.2 Detailed Survey – 2011 Fieldwork

Field survey in 2011 was conducted over 3 visits in Spring: from the 26th – 30th September, from the 24th – 27th October, and from the 20th – 26th November. These visits covered the length of the spring season, during which most taxa in the Northern Sandplains Region are known to flower. A series of 90 permanent flora survey quadrats were established within remnant vegetation located on VCL within the Study area. Quadrats could not be established in remnant vegetation on private property, as permission was not obtained to access any of the properties located in the Study area. No quadrats were established in any road reserves, as these were generally too narrow to allow for quadrat establishment, and were usually impacted to an extent by edge effects such as road grading and weeds.

All quadrats covered an area of 100 m², measuring 10 m by 10 m. This is in line with the size of quadrats used by Gibson *et al.* (1994) in their floristic survey of the Swan Coastal Plain, and is considered appropriate for the Study area. At least 3 quadrats were established within each plant community initially identified from aerial photography interpretation and following the reconnaissance survey. The quadrats were orientated north-south/east-west where possible, with the bearings of each side recorded for any quadrats that could not be established in this fashion. A steel fence dropper was used to permanently mark the north-west corner. A punched aluminium tag with the quadrat number was then attached to each fence dropper. Quadrats were named with a prefix of 'WE' followed by a 3-digit consecutive number (i.e. 001 etc.).

All vascular taxa that were visually identifiable within each quadrat were recorded, and collected as necessary.

The following information was recorded at each site:

- Personnel
- Unique site number
- Date of survey
- GPS coordinates (GDA94)
- Site photograph
- Topography (including landform type and aspect)
- Soil colour and type (including the presence of any rock outcropping and surface stones)
- Vegetation condition (Keighery (1994), displayed in Appendix F)
- Approximate time since fire

- Presence of disturbance (if any)
- Percentage foliage cover (for each species)
- Height (m) (for each species, excluding climbers/aerial shrubs)

Additional flora taxa were also recorded opportunistically via a search around the general vicinity of each quadrat, and during traverses on foot between quadrats.

Mapping notes of plant community distribution were also taken while traversing the Study area on foot and by vehicle. This was to aid in mapping polygons of plant communities that were not allocated quadrats. Time constraints prevented quadrats being allocated to all plant community polygons.

No specific, targeted searching for conservation significant flora species was undertaken during 2011 surveys. However, conservation significant flora and introduced flora were searched for while undertaking survey of quadrats, and while traversing between quadrats.

If populations of known conservation significant flora taxa were identified, particularly those ranked as T (DRF), a representative collection of material was made, and the abundance and spatial distribution (using GPS coordinates) of individuals within each population was recorded where possible. Any populations of introduced flora identified were treated as for populations of conservation significant flora.

3.3.3 Detailed Survey – 2012 Fieldwork

3.3.3.1 Additional Vegetation Mapping

Field survey of additional areas of vegetation not surveyed in 2011, including areas on private property that could not be accessed in 2011, was undertaken in Spring 2012. The field survey was undertaken over 2 visits: from the 10th – 13th September, and from the 2nd – 5th October. A series of 29 flora survey quadrats were established within remnant vegetation located on VCL and on private property in the Study Area. Quadrats established on VCL were permanently marked as per Section 3.3.2; however quadrats on private property were not permanently marked. Quadrats were surveyed as per methods outlined in Section 3.3.2. Additional flora taxa were also recorded opportunistically via a search around the general vicinity of each quadrat, and during traverses on foot between quadrats.

Additionally, a total of 10 detailed recording sites were surveyed during the field survey in 2012. Detailed recording sites were generally established in areas of vegetation to aid in the mapping VTs, when insufficient time was available to establish a flora survey quadrat. They were also established in degraded areas on private property where the establishment of a flora survey quadrat would have been of little value. Detailed recording sites surveyed an area within a 10 m radius around a central GPS co-ordinate. The same information recorded at flora survey quadrats as outlined in Section 3.3.2 was recorded at the detailed recording sites. Additional flora taxa were also recorded opportunistically via a search around the general vicinity of each detailed recording site, and during traverses on foot between detailed recording sites.

3.3.3.2 Targeted Searching for Conservation Significant Flora

During survey in 2011, several taxa ranked as T (DRF), as well as numerous Priority flora taxa, were recorded in the Study Area. As flora taxa ranked as T (DRF) cannot be removed without special permission under the *Wildlife Conservation Act 1950*, targeted searching for these taxa was required, to attempt to define their distributions and abundance in the Study Area. This would serve to either allow all individuals to be avoided during the seismic survey, or provide supporting data to allow for a 'Permit to Take' individuals to be granted by the Western Australian Minister for the Environment (under the *Wildlife Conservation Act 1950*). It was also deemed desirable to conduct targeted searches for certain Priority flora taxa; Priority flora taxa are generally poorly known, and may be considered for listing as T (DRF) if they are considered to be under threat of extinction following sufficient survey. This would serve to either allow all individuals to be avoided during the seismic survey, or provide supporting data to demonstrate an acceptable level of impact to these taxa.

The following methods for targeted searching for conservation significant flora were devised in consultation with the DEC (Daniel Coffey – Environmental Management Branch):

Searching for *Thelymitra stellata* (T (DRF))

Thelymitra stellata is an orchid species that is generally known from small, isolated colonies of individuals over its range (Hoffman & Brown 2011). Because of this, the aim of the searches for this taxon in 2012 was to inspect all areas of potential habitat and record all individuals present, to allow for total avoidance of this species during the seismic survey. *Thelymitra stellata* flowers in October, and can only be identified confidently when in flower. Therefore, searching for this species was conducted over several survey visits in 2012: from the 2nd – 5th October, from the 8th – 12th October, and from the 22nd – 23rd October.

Potential habitat for this species (based on known locations in the Study area and across the species' range) was considered to be areas where laterite is exposed, with areas considered as primary habitat being tops of breakaways and hills. All areas of primary habitat were inspected in 2012, however not all areas of potential habitat were inspected because of time constraints. Searching of this habitat was conducted on a loose grid, with personnel generally spaced approximately 30 m apart, however this varied depending on density of vegetation, with a finer grid (i.e. approximately 15 m) employed in areas of very dense vegetation. More detailed searching was conducted in the immediate vicinity of any individuals found during the gridding. GPS coordinates of all individuals were recorded; in the case of dense clumps of individuals, the number of individuals within a clump was recorded.

Searching for *Paracaleana dixonii* (T (DRF))

Paracaleana dixonii is an orchid species that is generally known from small populations of scattered individuals in grey or white sandy areas (sometimes over laterite); it has been found at a number of locations (usually consisting of only a handful of plants) in this habitat in the nearby Tiwest Dongara survey area (Woodman Environmental 2009b). Because of its habit of growing at low densities over relatively large areas, the aim of the searches for this taxon in 2012 was to inspect as many areas of potential habitat as possible and record all individuals encountered, to allow for total avoidance during the seismic survey if possible, and provide supporting

data to allow for a 'Permit to Take' individuals to be granted if total avoidance is not possible. *Paracaleana dixonii* generally flowers in November and December, and can only be seen easily when in flower. Therefore, searching for this species was conducted over 2 survey visits in 2012: from the 5th – 9th November, and from the 12th – 16th November.

Potential habitat for this species (based on known locations in the Study area and across the species' range) was considered to be sandy areas, with areas considered as primary habitat being grey or white sandy areas with lateritic gravel, or laterite near the surface. As a vast amount of the Study area was considered to be primary habitat, a selection of areas across the Study area were inspected in 2012; not all areas of primary habitat could be inspected because of time constraints. Searching of this habitat was conducted on a loose grid, with personnel generally spaced approximately 30 - 50 m apart, however this varied depending on density of vegetation, with a finer grid (i.e. approximately 15 m) employed in areas of very dense vegetation. More detailed searching was conducted in the immediate vicinity of any individuals found during the gridding. GPS coordinates were recorded as above.

Searching for *Eucalyptus crispata* and *E. leprophloia* (both Threatened (DRF))

Eucalyptus crispata and *E. leprophloia* are mallee species generally known from small populations of clumps of individuals associated with lateritic hills and breakaways. As these species are large and tend to grow in discrete clumps, the aim of the searches for this taxon in 2012 was to inspect all areas of potential habitat and record all individuals present, to allow for total avoidance of these species during the seismic survey. Flowering material of these species is not necessarily required for identification, with fruits and buds often present year-round, and as the primary habitat for these species overlaps with both *Thelymitra stellata* and (occasionally) *Paracaleana dixonii*, specific searching for these species was not conducted, with searching undertaken while searching for the aforementioned orchid species. GPS coordinates were recorded as above.

Searching for Potentially Undescribed Taxa

Collections of a *Eucalyptus* and a *Schoenus* made in 2011 could not be identified, and may represent undescribed taxa. Under the precautionary principle these taxa are required to be avoided pending a taxonomic resolution. Therefore, searches in 2012 aimed to revisit the known locations to collect more material to facilitate identification, and also to inspect all other areas of potential habitat and record all individuals present, to allow for total avoidance during the seismic survey wherever possible, and provide supporting data to demonstrate an acceptable level of impact to these entities if avoidance is not possible. As the known locations of these entities occur in the primary habitat of *Thelymitra stellata* (lateritic hill tops and breakaways), specific searching for these entities was not conducted, with searching undertaken while searching for the aforementioned orchid species. GPS coordinates were recorded as above.

Searching for Priority 1 and 2 Taxa

A number of Priority 1 and 2 taxa were recorded in the Study area in 2011. Priority 1 and 2 taxa are generally known from few populations that are usually not in secure conservation tenure, and are under threat of habitat destruction or degradation (DEC 2012a). The aim of the searches for these taxa in 2012 was to inspect as many areas of potential habitat as possible and record all individuals encountered, to allow for

avoidance during the seismic survey if practical, and provide supporting data to demonstrate an acceptable level of impact to these taxa if avoidance is not possible. As the primary habitat for the majority of the Priority 1 and 2 taxa overlap with the primary habitat for *Thelymitra stellata* and *Paracaleana dixonii*, searching was conducted while searching for the aforementioned orchid species. Additional targeted searching was also undertaken for species who did not share the primary habitat with the aforementioned orchid species. GPS coordinates and counts were recorded as above.

Searching for Priority 3 and 4 Taxa

Numerous Priority 3 and 4 taxa were recorded in the Study area in 2011. Priority 3 and 4 taxa are generally known from several localities populations that are usually not under imminent threat, and may be in secure conservation tenure (DEC 2012a). The aim of the searches for these taxa in 2012 was to record all individuals encountered while conducting searches for T (DRF), potentially undescribed and Priority 1 and 2 taxa, to allow for avoidance during the seismic survey where practical, and provide supporting data to demonstrate an acceptable level of impact to these taxa when considering their conservation significance. As the primary habitat for the majority of the Priority 3 and 4 taxa overlap with the primary habitat for the T (DRF), potentially undescribed and Priority 1 and 2 taxa known from the Study area, searching for Priority 3 and 4 taxa was undertaken while searching for the aforementioned taxa, with targeted searching not considered necessary. GPS coordinates and counts were recorded as above.

3.4 PLANT COLLECTION AND IDENTIFICATION

Specimens of any unknown taxa were collected and pressed for later identification at the WAHerb. Identifications were undertaken by experienced taxonomists Sharnya Thomson and Frank Obbens, with assistance from David Coultas. Experts of particular Families or Genera were consulted for any specimens considered to be of taxonomic interest. Species nomenclature follows Florabase (DEC 2012a) with all names checked against the current DEC Max database to ensure their validity. The conservation status of each species was checked against Florabase, which provides the most up-to-date information regarding the conservation status of flora taxa in Western Australia.

Specimens of interest (T (DRF) and Priority Flora taxa, range extensions of taxa and potential new taxa) will be vouchered at the WAHerb at the conclusion of the Project. Threatened and Priority Flora Report Forms (TPRFs) will be submitted to the DEC for all locations of T (DRF) and Priority Flora taxa at the conclusion of the Project.

3.5 FLORISTIC ANALYSIS

Quadrat data only was statistically analysed to determine VTs, using methods similar to those used by the DEC in surveys around Western Australia (e.g. Markey & Dillon 2008). Data from all quadrats established within the Study area were included in the analysis (total of 119 quadrats).

Classification analysis was conducted on a data matrix compiled from the quadrat data, with ephemeral taxa, introduced taxa, known and putative hybrids and

opportunistic recordings (i.e. those taxa recorded outside of the quadrat) excluded from the analysis. The presence of ephemeral taxa is strongly influenced by seasonal rainfall, with fewer taxa and individuals of ephemeral taxa usually present following below-average rainfall. Many ephemeral taxa had finished flowering and fruiting by the time survey was conducted in November 2011, and therefore could not be identified during this survey, meaning ephemeral data across the survey area was not consistent. Introduced taxa were excluded as their distributions are generally defined by the presence of disturbance (e.g. clearing, animal movement) rather than habitat types. Hybrids are generally present as isolated individuals and at scattered locations only, and as they are generally of unknown or presumed origin, it was considered desirable to exclude them given this uncertainty.

Singletons (taxa recorded only once in the quadrat dataset) were included in the analysis. This was considered appropriate for this analysis as many taxa in the Northern Sandplains Region are known to occur over short ranges and occupy specific habitat niches (i.e. breakaway slopes), and therefore the removal of such taxa would potentially result in unusual plant communities characterised by the presence of restricted taxa grouping with more widespread communities (i.e. they would not be recognised as distinct).

Various taxa were grouped together within the data matrix for the analysis where taxonomy was unclear or where different infra-taxa were identified within the dataset and not correlated to plant community, landform or soil type. Some taxa were omitted from the analysis as they could not be positively identified because of inadequate material.

Classification analysis was conducted using PATN (V3.03) (Belbin 1989). The Bray-Curtis coefficient was used to generate an association matrix for both the classification analysis. This association matrix consisted of pairwise coefficients of similarities between quadrats based on floristic data. Agglomerative, hierarchical clustering, using flexible UPGMA ($\beta=-0.1$), was used to generate a species and quadrat classification (Sneath & Sokal 1973). A 2-way table of the species and quadrat matrix was produced, with the matrix sorted into groups generated from the species and quadrat classification. Indicator species analysis (INDVAL) was conducted using PC-Ord (McCune & Mefford 1999) using the method of Dufrene & Legendre (1997). The INDVAL measures were used to determine the indicator species for each VT and a Monte Carlo permutation test was used to test for the significance of the indicator species.

3.6 VEGETATION MAPPING AND DESCRIPTION

The species and quadrat classification generated from the statistical analysis of quadrat data was used in conjunction with aerial photography interpretation and field notes taken during the surveys to develop VT mapping polygon boundaries over the Study area. These polygon boundaries were then digitised using Geographic Information System (GIS) software.

VT descriptions have been adapted from the National Vegetation Information System (NVIS) Australian Vegetation Attribute Manual Version 6.0 (ESCAVI 2003). This model follows nationally-agreed guidelines to describe and represent VTs, so that comparable and consistent data is produced nation-wide. For the purposes of this

report, it is considered that a VT is equivalent to a NVIS sub-association as described in ESCAVI (2003). Common taxa within each stratum were generally defined as taxa that occurred in greater than one-third of quadrats established within a particular VT (however, this varied depending on the number of quadrats); these may include taxa not in the VT description, as the VT description is based on dominance within each stratum, as well as the frequency that a taxon was recorded within each VT.

3.7 VEGETATION CONDITION MAPPING

Vegetation condition was recorded at all quadrats and detailed recording sites, and also opportunistically within the Study area where significant areas of disturbance to vegetation were noted (e.g. weed infestations, areas of heavy grazing). Vegetation condition was described using the vegetation condition scale devised by Keighery (1994). This scale is presented in Appendix F. Vegetation condition polygon boundaries were developed using this information in conjunction with aerial photography interpretation, and were digitised as for vegetation mapping polygon boundaries. These polygons are displayed on Figure 7.

3.8 SIGNIFICANCE OF CONSERVATION SIGNIFICANT FLORA POPULATIONS AND VEGETATION

In this report, a population (as defined by the DEC 2010b) is a discrete group of individuals separated from other groups by at least 500 m. A sub-population is also defined in the same way, however is used when it cannot be determined whether groups of individuals are actually separated by at least 500 m because of lack of survey. A local population of a flora taxon is defined as one occurring within the Study area, with the local distribution of a flora taxon or VT defined as the known distribution within the Study area. The regional distribution refers to the total distribution of the taxon or VT in Western Australia, in particular in the Northern Sandplains Region.

The significance of a local population of a conservation significant flora taxon in relation to the regional conservation significance of the taxon depends upon the extent of the regional distribution of the taxon, the number of known populations of the taxon, and the location of local populations within the regional distribution of the taxon. The significance of the local population/s of conservation significant flora taxa within the Study area to the overall or regional conservation significance of the taxon has been determined using Table 7.

Table 7: Significance of Local Populations to the Overall Conservation Significance of Taxon

Ranking	Description
High	<ul style="list-style-type: none"> Known range of taxon either entirely located within the Study Area, or within the Study Area and to a radius of <5 km of the Study Area; and/or Taxon known from <10 discrete populations, including within the Study Area; and/or Study Area populations extend the known regional distribution; and/or Taxon listed as T (DRF) in Western Australia, and/or Threatened under the EPBC Act
Moderate	<ul style="list-style-type: none"> Known range of taxon extends <50 km; and/or Taxon known from 10 or more discrete populations, but < 20 discrete populations; and/or Study Area may be on boundary of known regional distribution
Low	<ul style="list-style-type: none"> Known range of taxa extends >50 km; and Taxon known from 20 or more discrete populations; and Study Area not on boundary of known regional distribution

The local significance of VTs can be measured by the extent of the VT within the Study area, and the type and extent of landforms they are associated with. They may also be significant in being primary habitat for a particularly significant flora taxon that may be uncommon or restricted (e.g. T (DRF) and Priority flora, disjunct occurrence of a particular taxon).

Table 8 presents local conservation significance rankings of VTs in the Study area, based on these criteria, with '1' indicating the lowest conservation significance ranking, and '4' the highest.

Table 8: Descriptions of Local Conservation Significance Rankings of Vegetation Types in the Study Area

Local Conservation Significance Ranking	Description
1	<ul style="list-style-type: none"> VT comprises >10 % of the Study area; and Landform/soil type where VT occurs is locally common and widespread
2	<ul style="list-style-type: none"> VT comprises <10 % of the Study area; and Landform/soil type where VT occurs is locally common and widespread
3	<ul style="list-style-type: none"> VT comprises <10 % of the Study area; and Landform/soil type where VT occurs is locally uncommon and/or restricted
4	<ul style="list-style-type: none"> VT comprises < 1 % of the Study area; and Landform/soil type where VT occurs is locally uncommon and/or restricted; and / or VT is habitat for taxa listed as T (DRF), or is habitat for 1 or more other taxa considered to be of high conservation significance (including, but not limited to, Priority flora taxa and potentially undescribed taxa) that is completely or predominantly restricted to the VT

In terms of the regional conservation significance of VTs mapped within the Study area, the study of the NSSA for Tiwest and Iluka by Woodman Environmental (2009b, d) is the most detailed and up-to-date broad scale plant community mapping survey within the region available. This study is considered relevant to the Study area in providing regional context, as large areas of the Tathra vegetation system were mapped. Although the majority of the mapping of this system occurred near Eneabba, a small area of this system was mapped near the Study area.

However, no definite conclusions can be drawn as to the similarities of VTs mapped in the Study area to FCTs mapped in the NSSA without incorporation of floristic data from the Study area into an analysis with floristic data from the NSSA. As this is not part of the scope of this report, general comparisons have been made instead between VTs mapped in the Study area and FCTs mapped in the NSSA, including comparisons between general floristic, topographic and soil characters. This allows preliminary conclusions to be drawn regarding the regional conservation significance of VTs mapped in the Study area, however it is not possible to rank the significance of VTs in terms of their regional conservation significance in the same manner as conservation significant flora. The preliminary conclusions regarding the regional conservation significance of VTs within the Study area are discussed briefly in Section 4.2.4.

3.9 LIMITATIONS OF SURVEYS

Table 9 presents the limitations of the flora and vegetation survey of the Study Area in accordance with EPA Guidance Statement No. 51 (EPA 2004).

Table 9: Limitations of the Flora and Vegetation Survey of the Study Area

Limitation	Comment
Level of survey.	Level 2 Detailed Survey: A reconnaissance survey, including opportunistic recordings of flora taxa (particularly potentially conservation significant flora and introduced flora), was undertaken in Spring (September) 2011. The initial detailed survey commenced also in Spring (September) 2011, at the beginning of the usual peak flowering season in the Northern Sandplains Region, and extended through the Spring months to November 2011, capturing floristic data over the entire peak flowering season. Further survey was undertaken in September and October 2012. Survey to define previously recorded conservation significant flora populations, and to find new populations, was undertaken in 2012. Survey was not undertaken in any other season; however this is not expected to significantly affect recorded species richness of the Study area. Replicated quadrats were established in each plant community identified on VCL in the Study area, however were not established on private property because of access constraints.
Competency/experience of the consultant(s) carrying out the survey.	Senior personnel have had experience in conducting similar assessments, including in the Northern Sandplains Region, with mentoring given to less experienced botanists throughout the surveys.
Scope (floral groups that were sampled; some sampling methods not able to be employed because of constraints?)	All vascular groups that were present during the reconnaissance and detailed survey were sampled. No constraints prevented appropriate sampling techniques (quadrat establishment, foot transects) employed. Private property sampled in Spring 2012.

Limitation	Comment
Proportion of flora identified, recorded and/or collected.	High proportion of perennial vascular taxa recorded based on intensity and method of survey. High proportion of ephemeral vascular taxa recorded based on intensity and method of survey and high rainfall totals prior to commencement of survey. All vascular taxa recorded had at least 1 reference specimen collected, with specimens identified at the WAHerb.
Sources of information e.g. previously available information (whether historic or recent) as distinct from new data.	Sources include government databases (DEC, EPBC) and numerous unpublished reports in similar nearby areas. Good contextual information was available including other local studies by Woodman Environmental.
The proportion of the task achieved and further work which might be needed.	Level 2 survey complete, including specific searching for conservation significant flora in the Study area. Further survey to describe areas of remnant vegetation on private property was undertaken in Spring 2012.
Timing/weather/season/cycle.	Field survey conducted in Spring, corresponding with the optimum flowering period for the Northern Sandplains Region. Field survey conducted from September to November in 2011 and September to October 2012, with no data capture in other seasons; however this is not expected to significantly affect recorded species richness of the Study area. Peak flowering season generally considered to be good in 2011, with slightly below-average rainfall (340 mm compared to 387 mm on average) (Bureau of Meteorology 2012b) over the usual 'wet' Winter months (May-September). Rainfall poorer in 2012, with 202 mm recorded over May – September (below average) (Bureau of Meteorology 2012b).
Disturbances (e.g. fire, flood, accidental human intervention etc.), which affected results of survey.	Previous fire history of the Study area influenced patterns discernible from aerial photography and also existing structure and composition of the vegetation, however the time since the last fire (at least 5 years based on maturity of vegetation) meant that this did not significantly affect the survey results.
Intensity of survey.	Survey intensity adequate to identify floristic and structural groupings of terrestrial flora as required by a Level 2 survey, with replication of quadrats through plant community types and foot searching. Lower intensity of survey over areas where vehicular access was difficult. Specific searching for conservation significant flora undertaken in 2012, the method of which was agreed upon in consultation with the DEC .
Completeness and mapping reliability.	Survey of Study area considered complete in terms of mapping of plant communities on both VCL and private property. Mapping reliability good as high resolution aerial photography was used, 119 quadrats were established, and foot and vehicle transecting was employed, however fire history affected vegetation patterns discernible on aerial photography. Survey of Study area considered complete in terms of survey for conservation significant flora, in particular Threatened (T), and Priority 1 and 2 listed species.
Resources and experience of personnel.	Adequate resources including experienced field personnel and taxonomists with appropriate expertise in Northern Sandplains Region flora were utilised.
Remoteness and/or access problems.	Access to the Study area was considered mostly adequate, with access to Private Property gained for the 2012 survey.

4. RESULTS

4.1 FLORA OF THE STUDY AREA

A total of 535 discrete vascular flora taxa and 1 known hybrid were recorded within the Study area during survey in 2011 and 2012. These taxa represent 64 families and 196 genera. Of these, 464 were recorded during survey in 2011, with an additional 71 taxa recorded during the 2012 survey. The most well-represented families were Myrtaceae (80 taxa and 1 known hybrid), Fabaceae (65 taxa, including one introduced taxon), Proteaceae (57 taxa), Asteraceae (29 taxa, including four introduced taxa), Cyperaceae (26 taxa, including one introduced taxon), and Stylidiaceae (23 taxa).

All of the vascular plant taxa recorded during the survey were collected at least once and identified at the WAHerb. A full list of taxa is presented in Appendix G, with raw quadrat and site data and parameters presented in Appendix H.

4.1.1 Conservation Significant Flora Taxa

A total of 30 confirmed and 2 probable conservation significant flora taxa are known from the Study area. This total includes the following taxa recorded in the Study area in 2011 and 2012:

- 3 confirmed taxa listed as T (DRF)
- 23 confirmed taxa listed as Priority flora
- 1 probable taxon listed as Priority flora
- 1 hybrid listed as Priority flora

The total above also includes a further 4 conservation significant flora taxa (one of which is a probable record), that have previous records within the Study area but were not recorded during either the 2011 or 2012 surveys. These records are from earlier surveys conducted by Woodman Environmental within the Study area (Woodman Environmental 2009a, d; 2010), or solely from the DEC's threatened flora databases (DEC 2011b). This total includes:

- 1 taxon listed as T (DRF) (*Eucalyptus leprophloia*)
- 3 taxa listed as Priority flora (including 1 probable) (*Banksia fraseri* ?var *crebra* (P3), *Guichenotia impudica* (P3) and *Schoenus griffinianus* (P3))

Several collections of flora potentially represent undescribed taxa and are also considered to be of conservation significance. These are discussed separately in Section 4.1.3.

Table 10 presents a list of conservation significant flora taxa recorded within Study area, including those recorded by Woodman Environmental (historical as well as recent), and records sourced from the DEC's threatened flora databases. Locations of conservation significant flora taxa recorded during surveys in 2011 and 2012 are presented in Appendix I. Locations of T (DRF) taxa and potentially undescribed taxa recorded in the Study area are presented on Figure 4, locations of Priority 1 and 2 taxa are presented on Figure 5, and Priority 3 and 4 taxa are presented on Figure 6. These

figures also present VT mapping of the Study area, which provides an indication of the preferred habitat of each taxon.

Table 10: Summary of Conservation Significant Taxa Known from the Study Area

Taxon	Conservation Code	Total Number of Locations in the Study Area	Number of Individuals Known in Study Area	VTs	Record Type*
<i>Acacia isoneura</i> subsp. <i>isoneura</i>	P3	1	1	5	2012
<i>Allocasuarina grevilleoides</i>	P3	37	1,997	7a, 7b, 8, 13a	2011; 2012
<i>Banksia fraseri</i> ?var. <i>crebra</i>	P3	1	Unknown	7b	2008
<i>Banksia scabrella</i>	P4	463	7,668	7a, 7b, 8, 10, 11, 12, 13a, 13b, 14, C	2008, 2009, 2011, 2012, DEC
<i>Beyeria gardneri</i>	P3	1	2	12	2012
<i>Calytrix chrysantha</i>	P4	1	30	7a	2011
<i>Eucalyptus abdita</i>	P2	6 (potentially 7)	12	1b, 8 (potentially also in 11)	2011, 2012, DEC
<i>Eucalyptus crispata</i>	T	3 (potentially 4)	18	8; 10	2011; 2012
<i>Eucalyptus leprophloia</i>	T	2	Unknown	8; C	DEC
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	121	1,310	3, 7a, 7b, 8, 10, 11, 12, 13a	2009, 2011, 2012, DEC
<i>Eucalyptus macrocarpa</i> x <i>pyriformis</i>	P3	3	19	7b, 8, 11	2011, 2012
<i>Guichenotia impudica</i>	P3	1	Unknown	11	2008
<i>Haemodorum loratum</i>	P3	57	90	3, 7a, 7b, 8, 9, 10, 12, 13a, 13b	2011, 2012
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	22	30	7a, 10, 13a, 13b	2011, 2012
<i>Lasiopetalum ogilvieanum</i>	P1	26	113	7a, 7b, 8, 13a	2011, 2012, DEC
<i>Malleostemon decipiens</i>	P1	2	300	4, 5	2012
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	P3	514	21,527	3, 7a, 7b, 8, 9, 10, 11, 12, 13a, 13b	2008, 2009, 2011, 2012, DEC

Taxon	Conservation Code	Total Number of Locations in the Study Area	Number of Individuals Known in Study Area	VTs	Record Type*
<i>Micromyrtus rogeri</i>	P1	504	17,174	1a, 1b, 3, 7a, 7b, 8, 9, 10, 11, 12, 13b, C	2008, 2009, 2011, 2012, DEC
<i>Paracaleana dixonii</i>	T (DRF)	174	263	7a; 7b; 8; 10; 11; 12; 13a	2011; 2012
<i>Persoonia filiformis</i>	P2	88	190	7a, 7b, 10, 13a	2009, 2011, 2012
<i>Persoonia rudis</i>	P3	17	18	7a, 7b, 8, 10, 11, 12, 13a	2011, 2012
<i>Schoenus badius</i>	P2	7	7^	7a, 10, 13b, 14	2011
<i>Schoenus griffinianus</i>	P3	1	1	13a	2009
<i>Stylidium drummondianum</i>	P3	433	9,294	1a, 1b, 7a, 7b, 8, 8D, 9, 10, 11, 13a, 13b, C	2008, 2009, 2011, 2012, DEC
? <i>Stylidium carnosum</i> subsp. Narrow leaves (J.A. Wege 490)	P1	1	1	10	2012
<i>Stylidium pseudocaespitosum</i>	P2	1	1	13a	2011
<i>Stylidium torticarpum</i>	P3	59	1,111	1a, 1b, 3, 4, 7b, 8, 9, C	2011, 2012, DEC
<i>Synaphea aephynsa</i>	P3	157	1,780	7a, 7b, 8, 9, 10, 12, 13a	2009, 2011, 2012, DEC
<i>Synaphea oulopha</i>	P1	146 (potentially 150)	846	1b, 7a, 7b, 8, 9, 10, 11, 13a, 13b	2009, 2011, 2012
<i>Thelymitra stellata</i>	T (DRF)	139 (potentially 144)	273	7a, 7b, 8, 11, 13a	2011, 2012
<i>Thryptomene</i> sp. Mingenew (Diels & Pritzel 332)	P3	8	221	4, 4D, 5, 7a	2012
<i>Verticordia luteola</i> var. <i>luteola</i>	P3	2	21	13a	2011

*Note: Previous survey indicates records from surveys undertaken for Warrego Energy in 2008 (Woodman Environmental 2009a); 2011 (Woodman Environmental 2012a), and current surveys undertaken in 2012; previous surveys within the area by Woodman Environmental in 2009 (Woodman Environmental 2010), and the DEC's threatened flora databases.

^*Schoenus badius* was not counted at recorded locations, however is an annual species that is likely to be more abundant than indicated in Table 10.

Threatened Flora Taxa

Eucalyptus crispata is a mallee to 7 m (DEC 2012a), and generally occurs in isolated clumps on breakaways and hills. This taxon occurs over a range of approximately 80 km, from near Three Springs in the north to Boothendarra in the south (DEC 2012b). There is an outlying record near Lancelin, however the locality details indicate that the record should be near Eneabba, and therefore the co-ordinates of this record are considered erroneous (DEC 2012b). There are 29 DEC records of this species, representing approximately 12 populations (DEC 2012b). Several of these populations are in secure conservation estate, including Wilson and Boothendarra Nature Reserves, however WAHerb data indicates that most populations consist of relatively few (generally less than 20) individuals. This species is listed as 'Endangered' in Western Australia, and as 'Vulnerable' under the Federal EPBC Act (DEC 2012e).

E. crispata (T) has been positively identified at three locations, and potentially identified (*Eucalyptus ?crispata*) at one other location within the Study Area during surveys in 2011 – 2012 (Figures 4.1, 4.3, 4.4; Appendix I). These represent 3 confirmed populations and 1 potential population. Approximately 18 individuals were recorded across all locations. The species could not be positively identified at the potential location due to the absence of fruiting material.

Eucalyptus leprophloia is a mallee to 8 m (DEC 2012a) that generally occurs on breakaways and hills or valleys associated with such features. It occurs in two disjunct areas over a range of approximately 120 km, from near Mingenew in the north to Boothendarra in the south (DEC 2012b). There are 27 DEC records of this species, representing approximately nine populations (DEC 2012b). One of these populations is in secure conservation estate in Boothendarra Nature Reserve. This species is listed as 'Endangered' in Western Australia, and as 'Endangered' under the Federal EPBC Act (DEC 2012e).

E. leprophloia (T (DRF)) has not been recorded by Woodman Environmental within the Study area. It is known from two DEC records, one from a specimen housed at the WAHerb, the other on the DEFL database (DEC 2011a; b). One location is located in a paddock east of Natta Road (south of Carey Road) (Figure 4.2); this location was inspected during surveys in 2012, and only *Eucalyptus todtiana* was found in this area. The other location is in remnant vegetation to the west of Natta Road. This area was inspected in 2011 and the species was not found. The location details recorded on the DEC database state that the location is in paddock near Natta Road, and therefore it is likely that both records are of the same plant (or group of plants), the locality details of which are erroneous. It is considered possible but unlikely that this species occurs in the Study area.

Paracaleana dixonii (T) is a tuberous, perennial orchid to 0.2 m high (DEC 2012a) (see Plate 1). It is found in small isolated colonies in sandy soils, occasionally over laterite, over a range of approximately 180 km, from south of Dongara in the north to Moore River National Park in the south (DEC 2012b). There are 38 DEC records of this species, representing approximately 21 populations (DEC 2012b). A number of these populations are in secure conservation estate, including Lesueur and Moore River National Parks and Coomallo and South Eneabba Nature Reserves. This

species is listed as ‘Vulnerable’ in Western Australia and as ‘Endangered’ under the Federal EPBC Act (DEC 2012e).

Paracaleana dixonii (T) has been recorded at 174 point locations in the Study area during surveys in 2011 - 2012, representing approximately 30 sub-populations (Figures 4.1 – 4.4; Appendix I). A total of 263 individuals were recorded across all populations. The recording of this species in the Study area represents the northern-most known collections, extending the known range of this species by approximately 10 km. Although this species was recorded in a variety of VTs, it was predominantly recorded in VT 13a (70 locations), followed by VTs 10 and 7b (39 and 29 locations respectively).



Plate 1: *Paracaleana dixonii* (T) (Photo: Woodman Environmental)

Thelymitra stellata (T) is a tuberous, perennial orchid to 0.25 m high (DEC 2012a) (see Plate 2). It is found in small isolated colonies on lateritic soils, often on breakaways and hills. *T. stellata* occurs over a range of approximately 450 km, from Three Springs in the north to near Darkan in the south (DEC 2012b). There are also outlying records to the east as far as Holt Rock, east of Lake Grace. There are 53 DEC records of this species, representing approximately 42 populations (DEC 2012b). A number of these populations are in secure conservation estate, including Lesueur National Park and Coomallo Nature Reserve, however WAHerb data indicates that most populations consist of relatively few (generally less than 20) individuals, and many may no longer exist. This species is listed as ‘Endangered’ in Western Australia, and as ‘Endangered’ under the Federal EPBC Act (DEC 2012e).

Thelymitra stellata (T) was recorded at 139 point locations in the Study area in 2011 – 2012, with a further five locations potentially also representing this species. A total of 18 (possibly 20) sub-populations have been recorded in the Study area (Figure 4.1 – 4.4; Appendix I). A total of 266 individuals were recorded, with a further seven

individuals being identified only to *Thelymitra ?stellata* (flowering material not sufficient for complete identification). The records of this species in the Study area represent the northern-most known collections, extending the known range of this species by approximately 10 km. *Thelymitra stellata* was recorded predominantly in VT 8, with 129 locations in this VT.



Plate 2: *Thelymitra stellata* (T (DRF)) (Photo: Woodman Environmental)

Priority 1 Flora Taxa

Lasiopetalum ogilvieanum (P1) is a shrub to 1.5 m high (DEC 2012a). It is found on undulating plains and lateritic rises over a range of approximately 85 km, from near Burma Road Nature Reserve in the north to near Three Springs in the south (DEC 2012b). There are 18 DEC records of this species, representing approximately seven populations (DEC 2012b). No populations occur in secure conservation estate.

This species was recorded at 26 point locations in the Study area during surveys in 2011 and 2012, with a total of 113 individuals recorded. It was known previously from the Study area, being represented by several records from the DEC's threatened flora databases (DEC 2011b). In total these records represent approximately eight sub-populations (Figure 5.3; Appendix I). Populations of this taxon are concentrated in the south-western corner of the Study area, mainly in VT 13a (15 records).

Malleostemon decipiens (P1) occurs in the Mingenew area, mainly shallow soils on ironstone or granite breakaways (DEC 2012a). It is known from a total of 15 DEC records, including 11 collections housed in the WAHerb, representing approximately 10 populations, and has a range of approximately 40 km (DEC 2012b). None of the populations appear to be in secure conservation tenure.

Two locations of this species were recorded during surveys in 2012, both in remnant vegetation in private property, representing two sub-populations (Figures 5.1, 5.2;

Appendix I), in VTs 4 and 5. A total of 300 individuals were recorded, 100 at one location, and 200 at the other.

Micromyrtus rogeri (P1) is a shrub to 0.4 m high (DEC 2012a). It is found on lateritic rises and breakaways, and has a disjunct range over a distance of approximately 170 km, being known from two general areas: from near Three Springs in the north, and near Mogumber in the south (DEC 2012b). There are 13 DEC records of this species, representing approximately seven populations (DEC 2012b). No populations occur in secure conservation estate.

This species is known from a total of 504 point locations within the Study area, of which 482 point locations were recorded during surveys in 2011 – 2012. A total of 17,174 individuals have been recorded. It was previously recorded in the Study area, being represented by several records from the DEC's threatened flora databases (DEC 2011b), and a number of records from Woodman Environmental (2010). In total these records represent approximately 13 sub-populations (Figure 5.1 – 5.4; Appendix I). Populations of this taxon are located mainly in the north and eastern areas of the Study area, and are concentrated in VT 8 (404 records).

Stylidium carnosum subsp. Narrow leaves (J.A. Wege 490) (P1) is known from five collections housed at the WAHerb, taken from a range of 155 km, from approximately 35 km south-east of Dongara to south-east of Dandaragan (DEC 2012a;b). This species has been previously collected from areas in the vicinity of the Study area. Collections housed at the WAHerb have been taken from areas of grey to white sand, occasionally over laterite.

?*Stylidium carnosum* subsp. Narrow leaves (J.A. Wege 490) (P1) was recorded within the Study area at one location during surveys in 2012, in VT 10. A single individual was recorded at this location. The flowering spike was absent from the collection, and therefore an incomplete identification has been assigned to this entity at this time.

Synaphea oulopha (P1) is a compact shrub to 0.2 m high (DEC 2012a). It is found on lateritic rises and breakaways over a range of approximately 35 km, from near Three Springs in the north to near Eneabba in the south (DEC 2012b). There is an outlying record near Beekeepers Nature Reserve west of the Brand highway, however the locality details indicate that the record should be east of the Brand Highway near the Arrowsmith River, and therefore the co-ordinates of this recorded are considered erroneous (DEC 2012b). There are 14 DEC records of this species, representing approximately seven populations (DEC 2012b). Several populations are in secure conservation estate in Wotto and Wilson Nature Reserves.

This species was recorded at 146 point locations in the Study area during surveys in 2011 – 2012, with a further four potential locations represented by collections with incomplete identifications due to inadequate material (Woodman Environmental 2009a). In total 846 individuals have been recorded in the Study area, including five individuals attributable to *Synaphea ?oulopha*. Approximately 17 sub-populations of this species have been recorded within the Study area (Figures 5.1 – 5.4; Appendix I), with most records being located in VTs 8 and 7a (58 and 50 locations respectively).

Priority 2 Flora Taxa

Eucalyptus abdita (P2) is a mallee to 3 m high (DEC 2012a). It is found on lateritic rises and breakaways over a range of approximately 150 km, from near Three Springs in the north to near Dandaragan in the south (DEC 2012b). There are 18 DEC records of this species, representing approximately seven populations (DEC 2012b). One population is in secure conservation estate in Lesueur National Park.

This species was recorded at six confirmed and one probable point locations in the Study area during surveys in 2011 - 2012, and has also previously been recorded from the Study area, being represented by several records from the DEC's threatened flora databases (DEC 2011b). The probably location was recorded in 2012, and is a result of incomplete identification. These records represent approximately three sub-populations (Figure 5.4; Appendix I). The majority of locations are located in VT 8 (five locations). Approximately 12 individuals were recorded across all locations.

Persoonia filiformis (P2) is a shrub to 0.4 m high (DEC 2012a). It is found in yellow or grey sandy soils on undulating plains over a range of approximately 110 km, from near Dongara in the north to near Badgingarra in the south (DEC 2012b). There are 14 DEC records of this species, representing approximately 11 populations (DEC 2012b). Several populations are in secure conservation estate, including in Lesueur National Park, and Coomallo and South Eneabba Nature Reserves.

This species was recorded at 88 point locations in the Study area during surveys in 2011 - 2012, and has also previously been recorded from the Study area, being represented by records from Woodman Environmental (2009a). A total of 190 individuals were recorded during these surveys. These records represent approximately eight sub-populations (Figure 5.3, 5.4; Appendix I). *Persoonia filiformis* was recorded primarily in VT 10 (55 locations).

Schoenus badius (P2) is a slender, annual grass-like herb to 0.12 m high (DEC 2012a). It is found in grey sandy soils on undulating plains and in moist areas over a range of approximately 240 km, from near Isseka in the north to near Cataby in the south (DEC 2012b). However, the record near Cataby is likely to represent the similar *S. pennisetis* based on Woodman Environmental field observations, and therefore this species is likely to be restricted to between Isseka and near Dongara. There are three DEC records of this species, representing three populations (DEC 2012b). No populations are in secure conservation estate.

This species was recorded at seven point locations in the Study area in 2011, with no locations recorded during surveys in 2012. These represent approximately five populations (Figure 5.3, 5.4; Appendix I). Individuals were not counted, however it was noted as being common at most locations. This species was most commonly recorded in VT 14 (four locations).

Stylidium pseudocaespitosum (P2) is a rosetted, perennial herb to 0.3 m high (DEC 2012a). It is found in sandy soils, usually over laterite on rises and breakaways over a range of approximately 110 km, from near Burma Road Nature Reserve in the north to near Three Springs in the south (DEC 2012b). There are 24 DEC records of this species, representing approximately 14 populations (DEC 2012b). Several populations are in secure conservation estate in Burma Road Nature Reserve.

This species was recorded at a single point location in the Study area in 2011 (Figure 5.3; Appendix I), with a single individual recorded. This location is in VT 13a.

Priority 3 Flora Taxa

Acacia isoneura var. *isoneura* (P3) is an erect open shrub, growing from 0.5 – 3 m in height (DEC 2012a). It is found on yellow-brown sand on flats and low rises, over a range of approximately 60 km, from east of Dongara in the north, to west of Three Springs in the south (DEC 2012b). There are 11 DEC records of this species, representing approximately nine populations (DEC 2012b). There is one population in secure conservation estate, within the Mingenew Nature Reserve.

One location of this species was recorded during surveys undertaken in 2012, in VT 5 (Figure 6.5; Appendix I). The number of individuals in this location was not recorded; a single individual only may have been present. Although there are no previously known recordings of this species from lands surrounding the Study area, the Study area is still within its known range, with collections taken from approximately 20 km to the north housed in the WAHerb.

Allocasuarina grevilleoides (P3) is a low shrub to 0.4 m high (DEC 2012a). It is found in sandy soils over laterite on rises over a range of approximately 250 km, from near Eneabba in the north to near Perth in the south (DEC 2012b). The collections from the Study area represent a range extension for this species. There are 28 DEC records of this species, representing approximately 13 populations (DEC 2012b). Several populations are in secure conservation estate, including within Tathra, Lesueur and Wandoo National Parks.

This species was recorded at 37 point locations in the Study area during surveys in 2011 and 2012, representing approximately five sub-populations (Figure 6.3, 6.4; Appendix I). Approximately 1,997 individuals were recorded during surveys in 2001 and 2012. The majority of locations are present in VTs 8 and 7a (13 and 11 locations respectively). The records of this species in the Study area represent the northernmost known collections, extending the previous known range of this species by approximately 40 km.

Banksia fraseri var. *crebra* (P3) is a low spreading shrub to 0.4 m (DEC 2012a) that generally occurs on lateritic hills and rises over a range of approximately 110 km, from near Dongara in the north to near Jurien Bay in the south (DEC 2012b). There are nine DEC records of this taxon, representing approximately eight populations (DEC 2012b). No populations occur in secure conservation estate.

Banksia fraseri var. ?*crebra* (P3) was previously recorded in the Study area by Woodman Environmental in 2008 at one location (Woodman Environmental 2009a) (Figure 6.3). It was noted that insufficient material was present to confirm whether the collection represented *B. fraseri* var. *crebra*. During the 2011 survey of the Study area, a collection was made that was identified as *B. fraseri* var. ?*fraseri*, again with insufficient material present to confirm the identity of the collection. It is expected that, given the high number of locations in which *B. fraseri* var. ?*fraseri* was recorded in 2011, the collection from 2008 is unlikely to represent *B. fraseri* var. *crebra* (P3), however further material is required to confirm this. This location is present in VT 7b

(Appendix I). It is therefore considered possible but unlikely that this species occurs in the Study area.

Beyeria gardneri (P3) is a shrub to 0.5 m in height, occurring on yellow sand (DEC 2012a). It is known over a range of approximately 360 km, from Nerren Nerren in the north to Watheroo Nature Reserve in the south (DEC 2012b). There are 25 DEC records of this species, representing approximately 19 populations. Several populations are known from secure conservation estate, including Kalbarri National Park, Watheroo National Park, Marchagee Nature Reserve and Indarra Nature Reserve.

This species was recorded in the Study area at a single location for the first time during surveys in 2012 in VT 12. A total of two individuals were recorded at this location (Figure 6.2; Appendix I). The Study area is in the known range of this species.

E. macrocarpa x pyriformis is a hybrid between *E. macrocarpa* and *E. pyriformis*. It is a mallee to 6 m (DEC 2012a), occurring on hills, ridges and plains over a range of approximately 340 km, from near Mingenew in the north to Cunderdin in the south (DEC 2012b). There are 53 DEC records of this species, representing approximately 11 populations (DEC 2012b). No populations appear to be in secure conservation estate.

The presence of *E. macrocarpa x pyriformis* (P3) has been positively identified during the 2012 survey. This species was recorded at 3 point locations during surveys in 2011 – 2012, with a total of approximately 19 plants recorded. The three locations were recorded in three different vegetation types, 7b, 8 and 11 (Figure 6.3).

Guichenotia impudica (P3) is a shrub to 1 m (DEC 2012a) that has a disjunct distribution over a range of approximately 630 km, from Kalbarri National Park to near Northampton in the north, and from Wongan Hills to Corrigin in the south (DEC 2012b). It generally occurs on lateritic soils. There are 26 DEC records of this species, representing approximately 11 populations (DEC 2012b). There are populations in secure conservation estate in Kalbarri National Park and Ogilvie Nature Reserve.

Guichenotia impudica (P3) was not recorded during the surveys conducted in 2011 or 2012, however was previously recorded within the Study area by Woodman Environmental (2009a) at a single location (in VT 11) (Figure 6.4). During both the 2011 and 2012 surveys of the Study area, collections were made of the closely related *G. micrantha*; *Guichenotia sarotes* was also collected in 2012. It is therefore considered possible that the collection of *G. impudica* made by Woodman Environmental (2009a) may have been misidentified. However, this cannot be confirmed without collection of further material at the location of *G. impudica*. It is therefore considered possible but unlikely that this species occurs in the Study area.

Haemodorum loratum (P3) is a bulbaceous, perennial herb to 1.2 m high (DEC 2012a). It is found in sandy soils on plains and rises over a range of approximately 350 km, from near Eneabba in the north to near Yarloop in the south (DEC 2012b). Collections within the Study area represent a range extension for this species. There are 36 DEC records of this species, representing approximately 19 populations (DEC

2012b). Several populations are in secure conservation estate, including within Moore River and Lesueur National Parks, and Coomallo and Bullsbrook Nature Reserves.

This species was recorded at 57 point locations in the Study area during surveys in 2011 and 2012, representing approximately 19 sub-populations (Figure 6.2 – 6.4; Appendix I). A total of 90 individuals were recorded during surveys in 2011 – 2012, located mainly on VTs 10 and 7a (23 and 13 locations respectively). The records of this species in the Study area represent the northern-most known collections, extending the previous known range of this species by approximately 45 km.

Hemiandra sp. Eneabba (H. Demarz 3687) (P3) is a shrub to 0.9 m high (DEC 2012a). It is found in sandy soils on plains and rises over a range of approximately 60 km, from south of Dongara in the north to south of Eneabba in the south (DEC 2012b). There are 23 DEC records of this species, representing approximately 22 populations (DEC 2012b). No populations appear to be in secure conservation estate.

This species was recorded at 22 point locations in the Study area during surveys in 2011 - 2012, representing approximately 11 sub-populations (Figure 3; Appendix I). A total of 30 individuals were recorded across all locations. These records are primarily located in VTs 7a and 13a (12 and 6 locations respectively).

Mesomelaena stygia subsp. *deflexa* (P3) is a small, tufted perennial sedge to 0.5 m high (DEC 2012a). It is found in sandy soils over laterite on plains and rises over a range of approximately 70 km, from south of Dongara in the north to south of Eneabba in the south (DEC 2012b). There are 19 DEC records of this taxon, representing approximately 11 populations (DEC 2012b). Several populations are in secure conservation estate in South Eneabba Nature Reserve.

This taxon is known from 514 point locations within the Study area, of which 503 were recorded during surveys in 2011 – 2012. This taxon was also previously recorded in the area on the DEC's threatened flora databases (DEC 2011b). These locations represent approximately 16 sub-populations (Figure 3; Appendix I), spread throughout the Study area, however in dense numbers in the south-eastern side of the Study area (Figures 6.1 – 6.4; Appendix I). The majority of locations were recorded in VT 8 (220 locations), with VTs 11 and 10 also well represented (81 and 76 locations respectively). This species is generally abundant where it is present, and a total of 21,527 individuals have been recorded within the Study area.

Persoonia rudis (P3) is a shrub to 1 m high (DEC 2012a). It is found in sandy soils, often over laterite, on plains and rises over a range of approximately 270 km, from south of Dongara in the north to near Bullsbrook in the south (DEC 2012b). There are 48 DEC records of this species, representing approximately 32 populations (DEC 2012b). Several populations are in secure conservation estate in Alexander Morrison and Lesueur National Parks, and Boonanarring and South Eneabba Nature Reserves.

This species was recorded at 17 point locations in the Study area during surveys in 2011 - 2012, representing approximately 14 sub-populations (Figures 6.1 – 6.4; Appendix I). A total of 18 individuals have been recorded, within seven different VTs; however, VTs 13a and 10 were the most well represented (a total of 6 and 5 locations respectively).

Schoenus griffinianus (P3) is a small, tufted perennial sedge to 0.1 m (DEC 2012a) that generally occurs in sandy soils over a range of approximately 370 km, from near Geraldton in the north to near Perth in the south (DEC 2012b). There are 40 DEC records of this taxon, representing approximately 21 populations (DEC 2012b). Several populations are in secure conservation estate, including in Alexander Morrison National Park and South Eneabba Nature Reserve.

Schoenus griffinianus (P3) was not recorded during this survey, however was previously recorded within the Study area by Woodman Environmental (2009a) at a single location (Figure 6.2) in VT 13a.

Stylidium drummondianum (P3) is a rosetted, perennial herb to 0.2 m high (DEC 2012a). It is found in sand or clay over laterite on rises and breakaways over a range of approximately 170 km, from near Northampton in the north to near Eneabba in the south (DEC 2012b). There are 30 DEC records of this species, representing approximately 14 populations (DEC 2012b). Several populations are in secure conservation estate in South Eneabba and Wilson Nature Reserves.

This species is known from 433 point locations in the Study area, and has also previously been recorded from the Study area, represented by a number of records from Woodman Environmental (2009a; 2010), and a number of records from the DEC's threatened flora databases (DEC 2011b). These records represent sub-21 populations (Figures 6.1 – 6.4; Appendix I). The majority of locations were recorded in VT 8 (263 locations), with 74 locations also recorded in VT 7a. As with *Mesomelaena stygia* subsp. *deflexa*, numerous individuals were recorded at most locations, with 9,294 individuals recorded within the Study area.

Stylidium torticarpum (P3) is a caespitose, perennial herb to 0.25 m high (DEC 2012a). It is found in clay over laterite at the base of breakaways and near creeklines over a range of approximately 315 km, from south of Kalbarri in the north to near Dandaragan in the south (DEC 2012b). There are 42 DEC records of this species, representing approximately 33 populations (DEC 2012b). Several populations are in secure conservation estate in Lesueur National Park, and Coomallo, South Eneabba, Wotto and Wilson Nature Reserves.

This species is known from a total of 59 point locations in the Study area, being recorded during surveys in 2011 – 2012, and a previous location on the DEC's threatened flora databases (DEC 2011b). These records represent appropriately 12 sub-populations (Figure 6.1 – 6.4; Appendix I). This species was recorded in a variety of VTs, however it was predominantly recorded in VT 8 (28 locations). Although numbers of individuals were not recorded at most locations in 2011, 1,111 individuals have been recorded in the Study area, and it was noted as being common at a number of locations.

Synaphea aephynsa (P3) is a tufted shrub to 0.3 m high (DEC 2012a). It is found in lateritic soils over a range of approximately 330 km, from near Three Springs in the north to west of Beverly in the south (DEC 2012b). There are 46 DEC records of this species, representing approximately 32 populations (DEC 2012b). Several populations are in secure conservation estate, including in Wandoo and Tathra National Parks, and Coomallo, South Eneabba and Wotto Nature Reserves.

This species is known from 157 point locations in the Study area, recorded during surveys in 2011 - 2012, and also previously been recorded from the Study area, being represented by a record from the DEC's threatened flora databases (DEC 2011b). These locations represent 10 sub-populations (Figures 6.1 - 6.4; Appendix I). A total of 1,780 individuals were recorded in 2012; no data relating to number of individuals was recorded in 2011, however at the time it was noted as being uncommon at most locations. *Synaphea aephyrsa* (P3) was recorded predominantly in VTs 7a and 8 (81 and 42 locations respectively).

Thryptomene sp. Mingenew (Diels & Pritzel 332) (P3) is a shrub to 0.6 m high, occurring on yellow sands and loam (DEC 2012a). It is relatively restricted in range, occurring over 60 km between Milo and Depot Hill to the west and north-west of Mingenew respectively, and west of Three Springs to the south (DEC 2012b). There are 32 records of this species on the DEC databases, representing approximately 18 populations. One of these populations is located on Crown Reserve A2360 (Depot Hill Reserve).

A total of eight locations of this species were recorded during surveys in 2012, representing seven sub-populations (Figures 6.1 – 6.2). They were all located in remnant bushland on private property. A total of 221 individuals were recorded. This species was mainly recorded in VT 4 (five locations).

Verticordia luteola var. *luteola* (P3) is a shrub to 1.4 m high (DEC 2012a). It is found in grey sand, sometimes with gravel on undulating plains and rises over a range of approximately 110 km, from near Eradu in the north to near Three Springs in the south (DEC 2012b). There are 25 DEC records of this taxon, representing approximately 16 populations (DEC 2012b). No populations appear to be in secure conservation estate. Although 1 record occurs in Beekeepers Nature Reserve, the locality details indicate that it occurs further to the north-east (DEC 2012a), and hence the co-ordinates of this record are considered erroneous.

This taxon was recorded at 2 point locations in the Study area in 2011, representing 1 population (Figure 6.3; Appendix I), in VT 13a. A total of 21 individuals were recorded. No further individuals of this species were recorded during surveys in 2012.

Priority 4 Flora Taxa

Banksia scabrella (P4) is a much-branched shrub to 2 m high (DEC 2012a). It is found in sandy soils, sometimes with laterite, on sandplains over a range of approximately 110 km, from near Geraldton in the north to near Three Springs in the south (DEC 2012b). There are 45 DEC records of this species, representing approximately 39 populations (DEC 2012b). Several populations are in secure conservation estate in Burma Road Nature Reserve.

This species is known from a total of 463 point locations in the Study area, from surveys conducted in the area in 2008, 2009, 2011 and also known from records on the DEC databases (DEC 2011b). These records represent approximately 26 sub-populations (Figure 6.1 – 6.4; Appendix I). A total of 7,668 individuals have been recorded in the Study area, and it was noted as being relatively common at most

locations. It was predominately recorded in VT 13a (168 locations), and also in VTs 10, 7a, 7b and 13b (72, 66, 52 and 50 locations recorded respectively).

Calytrix chrysantha (P4) is a shrub to 1.3 m high (DEC 2012a). It is found in sandy soils, on flats and in moist areas over a range of approximately 110 km, from near Morawa in the north to near Jurien Bay in the south (DEC 2012b). There are 43 DEC records of this species, representing approximately 16 populations (DEC 2012b). Several populations are in secure conservation estate, including in Coomallo, Lake Logue and South Eneabba Nature Reserves.

This species was recorded at a single point location in the Study area during the surveys in 2011 in VT 7a (Figure 6.3; Appendix I), with approximately 30 individuals noted.

Eucalyptus macrocarpa subsp. *elachantha* (P4) is a sprawling mallee to 4 m high (DEC 2012a). It is found in sandy soils over laterite on undulating plains, hills and breakaways over a range of approximately 240 km, from near Burma Road Nature Reserve in the north to near Regans Ford in the south (DEC 2012b). There are 67 DEC records of this species, representing approximately 41 populations (DEC 2012b). One population is in secure conservation estate in South Eneabba Nature Reserve.

This species is known from 121 point locations in the Study area, during surveys in 2009, 2011 and 2012, and has also previously been recorded from the Study area, being represented by a record from the DEC's threatened flora databases (DEC 2011b). These records represent approximately 19 sub-populations (Figure 6.1 – 6.4; Appendix I). A total of 1,310 individuals have been recorded across all of these populations. It was recorded over a variety of VTs, however VTs 10 and 7a recorded the highest number of locations (35 and 34 locations respectively).

4.1.2 Distribution Extensions and Distribution Gaps

Table 11 presents taxa where the collections from the survey for the Project in 2011 and 2012 represent significant extensions to the known distribution of such taxa, or otherwise fill gaps within the known distribution of such taxa, according to NatureMap (DEC 2012b).

Table 11: Taxa Where Collections Represent Extensions to the Known Distribution of these Taxa, or Fill Distribution Gaps (DEC 2012b)

Taxon	Description
<i>Allocasuarina grevilleoides</i> (P3)	Extension of known distribution to the north
<i>Banksia bipinnatifida</i> subsp. <i>multifida</i>	Extension of known distribution to the north
<i>Cryptandra intermedia</i>	Large extension of known distribution to the north
<i>Dampiera alata</i>	Large extension of known distribution to the north
<i>Dampiera juncea</i>	Extension of known distribution to the north
<i>Dichopogon preissii</i>	Extension of known distribution to the north
<i>Haemodorum loratum</i> (P3)	Extension of known distribution to the north
<i>Lobelia rarifolia</i>	Collection fills a gap within the known distribution
<i>Paracaleana dixonii</i> (T (DRF))	Extension of known distribution to the north

Taxon	Description
<i>Platysace trachymenioides</i>	Extension of known distribution to the west
<i>Platysace xerophila</i>	Collection fills a gap within the known distribution
<i>Schoenus andrewsii</i>	Collection fills a gap within the known distribution
<i>Schoenus minutulus</i>	Extension of known distribution to the north
<i>Stenanthemum ?tridentatum</i>	Large extension of known distribution to the north (pending collection of flowering material)
<i>Stirlingia simplex</i>	Extension of known distribution to the north
<i>Stylidium eriopodum</i>	Extension of known distribution to the north
<i>Tetratheca paucifolia</i>	Extension of known distribution to the north
<i>Thelymitra benthamiana</i>	Large extension of known distribution to the north
<i>Thelymitra stellata</i> (T (DRF))	Extension of known distribution to the north
<i>Trichoclina spathulata</i>	Extension of known distribution to the north-west
<i>Waitzia suaveolens</i>	Extension of known distribution to the north

4.1.3 Other Flora of Interest

A collection of a *Eucalyptus* (*Eucalyptus* sp. (unidentified 2)) made in 2011 could not be identified because of the absence of appropriate material. The collection apparently possessed fruits that did not match any known taxa of *Eucalyptus* from Western Australia, however these may represent galled fruits (resulting from invasion by insects), as no seeds could be found within the fruits. Despite searching, no additional locations of this species were recorded in 2012, and no additional flowering or fruiting material was available at that time. Further investigation of this entity is required, including collection of additional material (as it becomes available), as it may yet represent an undescribed taxon of conservation significance. This entity was rare and restricted in the Study area, with two individuals being recorded from a single location in a small area of VT 11 (Figure 4.4).

Four collections that have been identified to *Cryptandra intermedia* (atypical variant) were made in 2012. Typical *Cryptandra intermedia* is known from 80 km south of the Study area, which represents a large range extension for this species. This variant was recorded at six locations in the Study area (Figures 4.1, 4.3; Appendix I). Further investigative work on this taxon will be required to determine if it is indeed this species, or an undescribed taxon.

A single collection of a *Leucopogon* (*Leucopogon* sp.) was collected in 2012. This collection was examined by *Leucopogon* expert Mike Hislop at WAHerb, who determined that it has affinities with *Leucopogon* sp. Coomallo (R. J. Cranfield 1457), however may represent an undescribed taxon in its own right. Flowering material is required to determine this entity's taxonomic and conservation status. The location of this entity is presented on Figure 4.1 (Appendix I).

A collection identified as *Acacia ?idiomorpha* was made in the Study area in 2011. This collection is unusual in that it is glabrous with scarcely undulate phyllodes. Additional material, including flowering or fruiting material, is required to accurately determine the identity of this collection and its conservation significance. Surveys in 2012 did not obtain such flowering and/or fruiting material. This entity was rare and restricted in the Study area. The location of this entity is presented on Figure 4.1 (Appendix I).

Collections of a *Dampiera* (*D. teres* (broad-leaf variant)) was made in the Study area both in 2011 and 2012 that resembles *D. teres*, however it has flat rather than terete leaves. Typical *D. teres* with terete leaves was also collected from the Study area. Other collections of this entity are lodged under *D. teres* at the WAHerb (M. Hislop pers. comm.), and therefore it is unlikely that this taxon is of conservation significance. This entity was common in the Study area.

Collections of *Stenanthemum* aff. *notiale* subsp. *notiale* were made in both 2011 and 2012, with specimens having teeth either side of the apical point which is not present in true *S. notiale* subsp. *notiale*. However, there are specimens showing apical teeth lodged under *S. notiale* subsp. *notiale* in the WAHerb, and therefore it is considered that this taxon is unlikely to be of conservation significance.

A collection of *Schoenus* sp. nov was collected in 2011; it was again targeted for survey in 2012, and has subsequently been identified as *Schoenus minutulus*, which is a species not of listed conservation significance. However, the collection represents a range extension for this taxon.

Two separate collections that were identified as *Melaleuca leuropoma* based on a published *Melaleuca* key were made in the Study area in 2011, and again in 2012. One collection (*M. leuropoma*) represents a low, multi-stemmed lignotuberous shrub with yellow flowers and relatively short leaves, while the second collection represents a taller, single-stemmed non-lignotuberous shrub with purple flowers and longer leaves, as well as apparently larger fruits. While it is clear that these collections represent distinct taxa, a detailed taxonomic revision of *M. leuropoma* is required to determine the number and rank of any infra-taxa, and their conservation significance. Both taxa were common in the Study area.

The taxonomy of *Lepidosperma* is currently under review, with many new taxa known to exist, however not formally listed as distinct taxa (DEC 2012a). Several collections of *Lepidosperma* made from the Study area could not be matched to any known taxa with certainty. It is not expected that any of the collections from the Study area are of conservation significance, as taxa collected in the Study area were relatively common and widespread.

4.1.4 Introduced Taxa

A total of 22 introduced flora taxa were recorded in the Study area, as listed in Table 12. Locations of each of these taxa are presented in Appendix I, and presented on Figure 7.

One species recorded is listed as a Declared Pest under the BAM Act (Department of Agriculture and Food 2013), however not for the shires within which the Study area is contained. None of the introduced species are listed as Weeds of National Significance (Australian Weeds Committee 2012). Table 12 also presents ratings for each introduced taxon recorded in the Study area under the Environmental Weed Strategy for Western Australia (see Section 2.4; Appendix E). A number of locations of introduced taxa were associated with areas of *Eucalyptus accedens*, and relatively moist sites.

Table 12: Summary of Introduced Taxa Known from within the Study area

Taxon	Number of Locations in Study Area	Vegetation Types	Environmental Weeds Rating (CALM 1999)
<i>Arctotheca calendula</i>	10	1a, 1b, 4, 4D, 10, 14,	Moderate
<i>Avena barbata</i>	2	4D	Moderate
<i>Brassica tournefortii</i>	2	4	High
<i>Briza maxima</i>	4	4	Moderate
<i>Bromus diandrus</i>	2	4, 4D	High
<i>Cuscuta epithymum</i>	1	4	Moderate
<i>Echium plantagineum</i>	3	4, 4D, PC1D	TBA
<i>Ehrharta brevifolia</i>	1	1a	Moderate
<i>Ehrharta calycina</i>	1	1a	High
<i>Ehrharta longiflora</i>	6	4, 5, 7a	Moderate
<i>Erodium cicutarium</i>	4	4, 4D, 6	Moderate
<i>Hypochaeris glabra</i>	14	1a, 1b, 4, 5, 6, 10, 13b, 14	Moderate
<i>Isolepis marginata</i>	1	1a	Not assessed
<i>Lysimachia arvensis</i>	4	1b, 4, 6	TBA
<i>Monoculus monstrosus</i>	1	4D	Mild
<i>Parentucellia latifolia</i>	3	1a, 4, 4D	Moderate
<i>Pentameris airoides</i> subsp. <i>airoides</i>	10	1a, 1b, 4, 6, 8, 13b	Moderate
<i>Petrorhagia dubia</i>	1	4D	Mild
<i>Trifolium campestre</i> var. <i>campestre</i>	1	6	Moderate
<i>Ursinia anthemoides</i>	10	1a, 4, 5, 7a, 14	Moderate
<i>Vulpia myuros</i>	9	4, 4D, 6, 11, 14	Moderate
<i>Wahlenbergia capensis</i>	2	1a, 13a	Moderate

Arctotheca calendula (Cape Weed) is a decumbent, annual herb to 0.3 m high (DEC 2012a). It is a widespread weed of roadsides, agricultural land and other disturbed sites throughout the south-west of Western Australia, and is rapidly increasing in the arid zone (Hussey *et al.* 2007). This species was rated as Moderate under the Environmental Weed Strategy for Western Australia, due to its high level of invasiveness and wide current and potential distribution (CALM 1999). This species is rated as having a High ecological impact and Rapid rate of dispersal (DEC 2008). *A. calendula* was recorded at 10 locations in the Study area in 2011 and 2012. The majority of locations were associated either with remnant bushland on private property, or in the vicinity of tracks and other disturbed areas (Figures 7.1, 7.3, 7.4; Appendix I).

Avena barbata (Bearded Oat) is an erect annual grass to 1 m in height (DEC 2012a). It is found throughout the entire south-west of Western Australia in uncropped situations (Hussey *et al.* 2007). This species was rated as Moderate under the Environmental Weed Strategy for Western Australia, due to its high level of invasiveness and wide current and potential distribution (CALM 1999). This species is rated as having a High ecological impact and Rapid rate of dispersal (DEC 2008). *A. barbata* was recorded at two locations in the Study area in 2012, both within a remnant bushland parcel surrounded by pasture on private property (Figure 7.1; Appendix I).

Brassica tournefortii (Mediterranean Turnip) is an annual herb to 0.6 m high (DEC 2012a). It is a common weed of wasteland, roadsides, grazed woodlands, shrublands and islands, and is also a widespread weed in cropping areas (Hussey *et al.* 2007). It was rated as High under the Environmental Weed Strategy for Western Australia, due to its combined High level of invasiveness, distribution and level of ecological impact (CALM 1999). This species is rated as having a High ecological impact and Rapid rate of dispersal (DEC 2008). It was recorded in two locations in the Study area in 2012, in a remnant bushland parcel surrounded by pasture on private property (Figure 7.1; Appendix I).

Briza maxima (Blowfly Grass) is an annual grass to 0.6 m in height (DEC 2012a). It is a widespread and common weed of wasteland, granite rocks, wetlands and woodlands from Geraldton through to Esperance (Hussey *et al.* 2007). This species was rated as Moderate under the Environmental Weed Strategy for Western Australia, due to its high level of invasiveness and wide current and potential distribution (CALM 1999). This species is also rated as having an unknown ecological impact and Rapid rate of dispersal (DEC 2008). It was recorded in four locations within the Study area in 2012, all in areas of remnant bushland surrounded by pasture on private property (Figures 7.1, 7.2; Appendix I).

Bromus diandrus (Great Brome) is an annual grass to 0.7 m in height (DEC 2012a). It is widespread weed of offshore islands, wetlands, road verges, granite rocks, pasture and crops throughout the south-west and parts of the eastern Goldfields regions of Western Australia (Hussey *et al.* 2007). This species was rated as High under the Environmental Weed Strategy for Western Australia, due to its high High level of invasiveness, distribution and level of ecological impact (CALM 1999). This species is also rated as having a High ecological impact and Rapid rate of dispersal (DEC 2008). It was recorded in two locations in the Study area, both within a parcel of remnant bushland surrounded by pasture on private property (Figure 7.1; Appendix I).

Cuscuta epithymum (Lesser Dodder) is a parasitic, climbing annual herb or climber, often found in sandy soils over limestone or granite (DEC 2012a). It parasites annual herbs from Kalbarri to Busselton (Hussey *et al.* 2007). This species was rated as Moderate under the Environmental Weed Strategy for Western Australia, due to its high level of invasiveness and wide current and potential distribution (CALM 1999). This species is also rated as having an unknown ecological impact and Rapid rate of dispersal (DEC 2008). This species was recorded in one location in 2012, in a parcel of remnant bushland surrounded by pasture on private property (Figure 7.2; Appendix I).

Echium plantagineum (Salvation Jane; Patersons Curse) is an erect annual or biennial herb to 1 m high (DEC 2012a). This species is widespread throughout the south-west of Western Australia in agricultural land, roadsides and reserves and is a target for biological control (Hussey *et al.* 2007). It was noted as having a High ecological impact and Rapid rate of dispersal (DEC 2008). *E. plantagineum* is a Declared Pest (DP) under the BAM Act (Department of Agriculture and Food 2013), however not for the shires of Three Springs and Mingenew, within which the Study area is located. Three locations of this species were recorded, all within a parcel of remnant bushland surrounded by pasture on private property (Figure 7.1; Appendix I).

Ehrharta brevifolia (Annual Veldt Grass) is an annual grass to 0.4 m in height (DEC 2012a). It is a widespread weed of mainly coastal dunes and shrublands from Shark Bay to Eucla (Hussey *et al.* 2007). This species was rated as Moderate under the Environmental Weed Strategy for Western Australia, due to its high level of invasiveness and wide current and potential distribution (CALM 1999). This species is also rated as having an unknown ecological impact and Rapid rate of dispersal (DEC 2008). It was recorded in one location in the Study area in 2012, in *Eucalyptus accedens* woodland (VT 2) (Figure 7.4; Appendix I).

Ehrharta calycina (Perennial Veldt Grass) is a perennial grass to 0.7 m high (DEC 2012a). It is also a widespread weed of roadsides, agricultural land and other disturbed sites throughout the south-west of Western Australia, however also invades undisturbed bushland, particularly following fire (DEC 2012a; Hussey *et al.* 2007). This species was rated as High under the Environmental Weed Strategy for Western Australia, due to its high level of invasiveness, wide current and potential distribution, and high level of environmental impact to structure, composition and function of ecosystems (CALM 1999). It was ranked as having a High ecological impact and rapid rate of dispersal (DEC 2008). *E. calycina* was recorded at one location in the Study area in 2011, within an area of *Eucalyptus accedens* woodland (Figure 7.4).

Ehrharta longiflora (Annual Veldt Grass) is an annual grass to 0.6 m in height (DEC 2012a), and is found on offshore islands, coastal dunes and sandy soils from Shark bay to Eucla, and inland on disturbed creeklines and grazed woodlands in the wheatbelt (Hussey *et al.* 2007). This species was rated as Moderate under the Environmental Weed Strategy for Western Australia, due to its high level of invasiveness and wide current and potential distribution (CALM 1999). It was ranked as Unknown in terms of its ecological impact, and Rapid in its rate of dispersal (DEC 2008). It was recorded in six locations in the Study area in 2012, in two separate bushland remnants surrounded by pasture on private property (Figures 7.1, 7.2; Appendix I).

Erodium cicutarium (Common Storksbill) is a decumbent, ascending or erect annual or biennial herb to 0.2 m high (DEC 2012a), and is a common weed on sandy soils from Dirk Hartog Island to the Nullarbor (Hussey *et al.* 2007). This species was rated as Moderate under the Environmental Weed Strategy for Western Australia, due to its high level of invasiveness and wide current and potential distribution (CALM 1999). It was ranked as Low in terms of its ecological impact, and Rapid in its rate of dispersal (DEC 2008). It was recorded in two areas of remnant bushland surrounded by pasture on private property, at 4 point locations (Figures 7.1, 7.2; Appendix I).

Hypochaeris glabra (Smooth Catsear) is a rosetted, annual or perennial herb to 0.5 m high (DEC 2012a). It is a widespread weed of roadsides, agricultural land, disturbed sites and bushland throughout the south-west of Western Australia (Hussey *et al.* 2007). This species was rated as Moderate under the Environmental Weed Strategy for Western Australia, due to its high level of invasiveness and wide current and potential distribution (CALM 1999). *H. glabra* was recorded at 14 locations in the Study area in 2011 and 2012 (Figures 7.1 – 7.4; Appendix I). The majority of locations were recorded on parcels of remnant bushland surrounded by pasture, as well as some association with *Eucalyptus accedens* woodland and other relatively moist sites.

Isolepis marginata (Coarse Club-rush) is a tufted, annual sedge to 0.2 m high (DEC 2012a). It is common and widespread in Winter-wet areas throughout the south-west of Western Australia, and is considered by some to be native, however may have been introduced from South Africa (Hussey *et al.* 2007). This species was not assessed under the Environmental Weed Strategy for Western Australia (CALM 1999). *I. marginata* was recorded at a single location in the Study area in 2011, within an area of *Eucalyptus accedens* woodland (Figure 7.4).

Lysimachia arvensis (Pimpernel) is a spreading, annual herb to 0.3 m high, and is a widespread weed of gardens, paddocks, granite rocks and disturbed bushland throughout the south-west of Western Australia, extending in to the arid zone (Hussey *et al.* 2007). This species was rated as Moderate under the Environmental Weed Strategy for Western Australia, due to its high level of invasiveness and wide current and potential distribution (CALM 1999). *L. arvensis* was recorded at four locations in the Study area in 2011 and 2012, including three locations in remnant bushland surrounded by pasture, and also within an area of *Eucalyptus accedens* woodland (Figure 7.1, 7.2, 7.4; Appendix I).

Monoculus monstrosus (Stinking Roger) is an annual herb to 0.7 m high (DEC 2012a). It is widespread on roadsides and open bushland throughout the south-west (Hussey *et al.* 2007). This species was rated as Mild under the Environmental Weed Strategy for Western Australia, due to its wide current and potential distribution (CALM 1999). It was ranked as having an Unknown ecological impact and Rapid rate of dispersal (DEC 2008). It was recorded in one location in remnant bushland surrounded by pasture (Figure 7.1; Appendix I).

Parentucellia latifolia (Common Bartsia) is an erect, annual herb to 0.3 m high (DEC 2012a). It is a widespread weed of wetlands, woodlands and granite rocks throughout the south-west of Western Australia (Hussey *et al.* 2007). This species was rated as Moderate under the Environmental Weed Strategy for Western Australia, due to its high level of invasiveness and wide current and potential distribution (CALM 1999). *P. latifolia* was recorded at three locations in the Study area in 2011 - 2012, within areas of remnant bushland in private property, and in an area of *Eucalyptus accedens* woodland (Figure 7.1, 7.2, 7.4; Appendix I).

Pentameris airoides subsp. *airoides* (False Hairgrass) is a delicate, annual grass to 0.15 m high, and is a common and widespread weed of granite rocks, woodlands, shrublands and disturbed sites throughout the south-west and adjacent arid zone of Western Australia (Hussey *et al.* 2007). This species was rated as Moderate under the Environmental Weed Strategy for Western Australia, due to its high level of invasiveness and wide current and potential distribution (CALM 1999). *P. airoides* subsp. *airoides* was recorded at 10 locations in the Study area in 2011 – 2012, associated with remnant bushland on private property, *Eucalyptus accedens* woodland and other relatively moist sites (Figure 7.1, 7.2, 7.4; Appendix I).

Petrorhagia dubia (Velvet Pink) is an erect herb to 0.7 m high (DEC 2012a). It is a common weed of paddock edges, wasteland, road verges, granite rocks and disturbed woodland and shrubland from Perth to Albany (Hussey *et al.* 2007); although locations of this species are known to extend from Geraldton through to Esperance (DEC 2012a). This species was rated as Mild under the Environmental Weed Strategy for Western Australia, due to its wide current and potential distribution

(CALM 1999). It was ranked as having a Low ecological impact and Rapid rate of dispersal (DEC 2008). It was recorded at one location within the Study area in 2012, in remnant bushland surrounded by paddocks in private property (Figure 7.1; Appendix I).

Trifolium campestre var. *campestre* (Hop clover) is a prostrate, ascending or erect annual herb to 0.3 m high (DEC 2012a). It is a widespread weed of roadsides, wasteland, grazed woodland, cultivated land and heavily grazed pastures from Northampton to Cape Arid (Hussey *et al.* 2007). This species was rated as Moderate under the Environmental Weed Strategy for Western Australia, due to its high level of invasiveness and wide current and potential distribution (CALM 1999). It has a High level of ecological impact and a Moderate rate of dispersal (DEC 2008). It was recorded at one location in the Study area in 2012, in a remnant bushland parcel surrounded by pasture (Figure 7.2; Appendix I).

Ursinia anthemoides (Ursinia) is an erect, annual herb to 0.5 m high (DEC 2012a). It is a widespread weed of various habitats, including both disturbed and undisturbed bushland, throughout the south-west of Western Australia (Hussey *et al.* 2007). This taxon was rated as Moderate under the Environmental Weed Strategy for Western Australia, due to its high level of invasiveness and wide current and potential distribution (CALM 1999). *U. anthemoides* was recorded at 10 locations in the Study area in 2011 – 2012, associated with remnant bushland on private property, *Eucalyptus accedens* woodland or relatively moist sites (Figure 7.1 – 7.4; Appendix I).

Vulpia myuros (Rat's Tail Fescue) is a tufted, annual grass to 0.7 m high (DEC 2012a). It is a widespread weed of crops, pasture, other disturbed sites and undisturbed bushland throughout the south-west of Western Australia and the adjacent arid zone (Hussey *et al.* 2007). This species was rated as Moderate under the Environmental Weed Strategy for Western Australia, due to its high level of invasiveness and wide current and potential distribution (CALM 1999). *V. myuros* was recorded at 9 locations in the Study area in 2011 - 2012, associated with remnant bushland parcels on private property, or relatively moist sites (Figure 7.1 – 7.3; Appendix I).

Wahlenbergia capensis (Cape Bluebell) is an erect, annual herb to 0.5 m high (DEC 2012a). It is a widespread weed of roadsides, other disturbed sites and undisturbed bushland throughout the south-west of Western Australia (Hussey *et al.* 2007). This species was rated as Moderate under the Environmental Weed Strategy for Western Australia, due to its high level of invasiveness and wide current and potential distribution (CALM 1999). *W. capensis* was recorded at two locations in the Study area in 2011, one was associated with *Eucalyptus accedens* woodland while the other as associated with *Eucalyptus todtiana* woodland (Figure 7.3, 7.4; Appendix I).

4.1.5 Significance of Conservation Significant Flora Populations

Table 13 presents the significance of local conservation significant flora populations to the overall conservation significance of each taxon, as determined from Table 7.

The populations of *Eucalyptus crispata*, *Paracaleana dixonii* and *Thelymitra stellata* (all T (DRF)) in the Study area were all ranked as being of 'High' significance to the overall conservation significance of each taxon (Table 7; 13).

The significance of the local populations (in terms of the species regional conservation significance) of *Lasiopetalum ogilvieanum* (P1), *Micromyrtus rogeri* (P1), *Synaphea oulopha* (P1), *Eucalyptus abdita* (P2), *Schoenus badius* (P2) and ?*Stylidium carnosum* subsp. *Narrow leaves* (J.A. Wege 490) (P1) were all ranked as 'High' because they are currently known from less than 10 discrete populations (DEC 2012b; Table 7; 13).

The local populations of both *Allocasuarina grevilleoides* (P3) and *Haemodorum loratum* (P3) were ranked as 'High' because the populations in the Study area represent the northern-most known occurrences of these species (current collections represent range extensions), while *Cryptandra intermedia* (atypical variant), *Eucalyptus* sp. (unidentified 2) and *Leucopogon* sp. were ranked as 'High' as they are likely to represent new taxa, and are therefore likely to be of conservation significance.

The significance of the local populations of *Persoonia filiformis* (P2), *Acacia isoneura* subsp. *isoneura* (P3), *Stylidium pseudocaespitosum* (P2), *Beyeria gardneri* (P3), *Eucalyptus ?macrocarpa x pyriformis* (P3), *Guichenotia impudica* (P3), *Mesomelaena stygia* subsp. *deflexa* (P3), *Malleostemon decipiens* (P1), *Stylidium drummondianum* (P3) and *Thryptomene* sp. *Mingenew* (Diels & Pritzel 332) (P3), *Verticordia luteola* var. *luteola* (P3) and *Calytrix chrysantha* (P4) were all ranked 'Moderate' (in terms of the species regional conservation significance), as they are all currently known from more than 10, but less than 20, discrete populations (Table 7; 13).

The significance of the local populations of *Hemiandra* sp. *Eneabba* (H. Demarz 3687) (P3), *Persoonia rudis* (P3), *Schoenus griffinianus* (P3), *Stylidium torticarpum* (P3), *Synaphea aephynsa* (P3), *Banksia scabrella* (P4) and *Eucalyptus macrocarpa* subsp. *elachantha* (P4), were all ranked as 'Low', as they are all currently known from 20 or more discrete populations.

Eucalyptus leprophloia (T (DRF)), *Banksia fraseri* ?var. *crebra* and *Guichenotia impudica* (both P3) were not ranked, as they were not recorded and are not expected to occur in the Study area.

Table 13: Significance of Local Conservation Significant Flora Populations to the Overall Conservation Significance of Each Taxon

Taxon	Conservation Code	Range of Taxon (km)	Approximate Number of Populations (sub-populations) Known in the Study area	Approximate Number of Populations Known Regionally (DEC 2012a; b)	Comments	Significance of Local Populations to the Overall Conservation Significance of Taxon
<i>Acacia isoneura</i> subsp. <i>isoneura</i>	P3	60	1	9	Not on edge of range	Moderate
<i>Allocasuarina grevilleoides</i>	P3	250	1 (5)	13	Edge of range (range ext)	High
<i>Banksia fraseri</i> ?var. <i>crebra</i>	P3	110	Unknown#	8	Not on edge of range	NA
<i>Banksia scabrella</i>	P4	110	1 (26)	39	Not on edge of range	Low
<i>Beyeria gardneri</i>	P3	360	1	19	Not on edge of range	Low
<i>Calytrix chrysantha</i>	P4	110	1	16	Not on edge of range	Moderate
<i>Cryptandra intermedia</i> (atypical variant)	-	-	1 (2)	-	-	High
<i>Eucalyptus abdita</i>	P2	150	1 (3)	7	Edge of range	High
<i>Eucalyptus crispata</i>	T (DRF)	80	4	12	Edge of range	High
<i>Eucalyptus leprophloia</i>	T (DRF)	120	Unknown*	9	Not on edge of range	NA
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	240	1 (19)	41	Not on edge of range	Low
<i>Eucalyptus</i> ? <i>macrocarpa</i> x <i>pyriformis</i>	P3	340	1 (3)	11	Not on edge of range	Moderate
<i>Eucalyptus</i> sp. (unidentified 2)	-	-	1	-	-	High
<i>Guichenotia impudica</i>	P3	630	Unknown#	11	Not on edge of range	NA
<i>Haemodorum loratum</i>	P3	350	1 (19)	19	Edge of range (range ext)	High
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3	60	1 (11)	22	Not on edge of range	Low
<i>Lasiopetalum ogilvieanum</i>	P1	85	1 (8)	7	Not on edge of range	High
<i>Leucopogon</i> sp.	-	-	1	-	-	High
<i>Malleostemon decipiens</i>	P1	40	1 (2)	10	Edge of range	Moderate
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	P3	70	1 (16)	11	Not on edge of range	Moderate
<i>Micromyrtus rogeri</i>	P1	170	1 (13)	7	Not on edge of range	High
<i>Paracaleana dixonii</i>	T (DRF)	180	1 (30)	21^	Edge of range (range ext)	High
<i>Persoonia filiformis</i>	P2	110	1 (8)	11	Not on edge of range	Moderate

Taxon	Conservation Code	Range of Taxon (km)	Approximate Number of Populations (sub-populations) Known in the Study area	Approximate Number of Populations Known Regionally (DEC 2012a; b)	Comments	Significance of Local Populations to the Overall Conservation Significance of Taxon
<i>Persoonia rudis</i>	P3	270	1 (14)	32	Not on edge of range	Low
<i>Schoenus badius</i>	P2	240	1 (5)	3	Not on edge of range	High
<i>Schoenus griffinianus</i>	P3	370	1	21	Not on edge of range	Low
<i>Stylidium drummondianum</i>	P3	170	1 (21)	14	Not on edge of range	Moderate
<i>Stylidium pseudocaespitosum</i>	P2	110	1	14	Not on edge of range	Moderate
<i>Stylidium torticarpum</i>	P3	315	1 (12)	33	Not on edge of range	Low
? <i>Stylidium carnosum</i> subsp. Narrow leaves (J.A. Wege 490)	P1	155	1	5	Edge of range	High
<i>Synaphea aephynsa</i>	P3	330	1 (10)	32	Edge of range	Low
<i>Synaphea oulopha</i>	P1	35	1 (17)	7	Edge of range	High
<i>Thelymitra stellata</i>	T (DRF)	450	1 (20)	42	Edge of range (Range ext)	High
<i>Thryptomene</i> sp. Mingenew (Diels & Pritzel 332)	P3	60	1 (7)	32	Edge of range	Moderate
<i>Verticordia luteola</i> var. <i>luteola</i>	P3	110	1	16	Not on edge of range	Moderate

Note: * - No individuals were located during the 2011 or 2012 surveys.

- Further material needs to be collected to determine whether *Banksia fraseri* var. *crebra* (P3) and *Guichenotia impudica* (P3) occur in the Study area.

^ - data from DEC DEFL database

4.2 VEGETATION OF THE STUDY AREA

4.2.1 Vegetation Type Mapping

Statistical analysis of taxon presence/absence data was performed on 119 quadrats, using 390 vascular taxa. Ephemeral taxa were not included in the analysis as consistent ephemeral taxon data was not recorded across all quadrats (many ephemeral taxa could not be identified in November because they had senesced or were absent altogether). A preliminary analysis that included ephemeral taxon data (undertaken in 2011) also demonstrated very little change in the floristic classification.

Numerous taxa were removed from the analysis or amalgamated with other taxa because of identification issues resulting from poor available material in the field, these are listed in Appendix J. Manual dissection of the resultant floristic classification of the 119 quadrats defined 14 VTs, three of which were split further into two sub-types each. These VTs comprise four super-groups. The split between the four super-groups is based primarily on soil types, and usually associated topographical location, within the Study area, with distinct differences in species composition between the super-groups.

Appendix K presents a list of vascular plant taxa recorded in each VT within the Study area (quadrat data only). Appendix L presents the summary dendrogram of relationships between each quadrat. Appendix M presents a 2-way table (summary matrix) of the species and quadrats. Appendix N presents significant indicator taxa for each VT.

Vegetation Type mapping is presented on Figures 8.0 – 8.4.

Super-group 1

Super-group 1 is comprised of VTs 1 - 6, with VT 1 divided into two sub-types. It consists of vegetation on clay or occasionally sandy-loam soils, generally on or near drainage lines, to mid-slopes. The overstorey was for the most part characterised by the presence of *Eucalyptus accedens*, however an overstorey was not always present, with the understory varying from a mid shrubland dominated by *Melaleuca* species, to a low sparse shrubland and forbland of mixed species.

VTs 4, 5 and 6 were not mapped during the 2011 assessment.

The average species richness per quadrat of VTs within Super-group 1 varied from 20.0 ± 0.0 taxa per quadrat in VT 1b, to 3.0 ± 0.0 in VT 2, the lowest of all VTs. The highest number of taxa recorded was 101 (63 used in the analysis) in VT 4, with the lowest being 10 (five used in the analysis) taxa in VT 2, the lowest of all VTs. The species diversity in Super-group 1 was likewise low in comparison to the other Super-groups, as reflected by the species and quadrat (dendrogram order) matrix (Appendix M). Species Groups A, B, K and R were predominately recorded in quadrats from Super-group 1, with fewer records of species from all other Species Groups, including the dominant groups I, O, P and S (Appendix M).

VTs 1 - 6 are described below.

VT 1a: Mid open forest of *Eucalyptus accedens* over mid open shrubland dominated by *Gastrolobium spinosum*, *Olearia rudis* and *Anthocercis genistoides* over low open forbland and rushland dominated by *Calandrinia calyptrata*, *Calandrinia corrigioloides*, *Millotia myosotidifolia*, *Trachymene pilosa* and *Conostylis aculeata* subsp. *breviflora* on grey sand on mid slopes

Total Area: 25.42 ha

Percentage of Study area: 0.27 %

Sampling: 2 quadrats (WE001; WE112)

Common taxa recorded within each stratum:

Stratum	Descriptor	Taxa
Upper Stratum 1	Mid Open Forest (Trees 10 - 30 m)	<i>Eucalyptus accedens</i>
Mid Stratum 1	Mid Open Shrubland (Shrubs 1 - 2 m)	<i>Gastrolobium spinosum</i> , <i>Olearia rudis</i> , <i>Hakea lissocarpha</i> , <i>Macrozamia fraseri</i> , <i>Anthocercis genistoides</i>
Lower Stratum 1	Low Forbland and Rushland (<0.5 m)	<i>Calandrinia calyptrata</i> , <i>Calandrinia corrigioloides</i> , <i>Trachymene pilosa</i> , <i>Conostylis aculeata</i> subsp. <i>breviflora</i> , <i>Crassula colorata</i> var. <i>acuminata</i> , <i>Millotia myosotidifolia</i>

Indicator Taxa:

<i>Anthocercis genistoides</i> *
<i>Eucalyptus accedens</i> *
<i>Gastrolobium spinosum</i> ***
<i>Gompholobium pungens</i> ***
<i>Olearia rudis</i> ***

Landform Types: Mid-slopes

Soil Types: Grey, white sand

VT 1a was mapped in four small areas in the south-east corner of the Study area, two of which are located in private property (Figure 8.4). VT 1a is similar to VT 1b in possessing *Eucalyptus accedens* as the dominant taxon; however VT 1b occurs on sandy- and clay- loams, which is reflected in the differing understory composition of VTs 1a and 1b.

A total of 37 vascular plant taxa were recorded in and surrounding the two quadrats that comprise VT 1a (Appendix K), of which 17 were used in the analysis. The average taxon richness per quadrat within VT 1a was 11.0 ± 1.4 . Three conservation significant flora taxa were recorded in VT 1a (*Micromyrtus rogeri* (P1), *Stylidium drummondianum* (P3) and *Stylidium torticarum* (P3)), however VT 1a was not the preferred habitat for any of these species. A further nine introduced taxa were recorded (*Arctotheca calendula*, *Ehrharta brevifolia*, *Ehrharta calycina*, *Hypochaeris glabra*, *Isolepis marginata*, *Parentucellia latifolia*, *Pentameris airoides* subsp. *airoides*, *Ursinia anthemoides* and *Wahlenbergia capensis*).

The condition of the vegetation in most polygons of VT 1a was ranked '2' (Excellent), because of the presence of numerous introduced taxa, albeit at relatively low levels (Keighery 1994; Appendix F) (Figure 7.4). The condition of the vegetation at one polygon was ranked '1' (Pristine) (Figure 7.4).



Plate 3: VT 1a (Quadrat WE-001) (Photo: Woodman Environmental)

VT 1b: Mid open forest of *Eucalyptus accedens* over low open shrubland dominated by *Gastrolobium plicatum* and *Dodonaea divaricata* over low open forbland of mixed species including *Goodenia berardiana*, *Rhodanthe manglesii*, *Podolepis lessonii* and *Acanthocarpus canaliculatus* on grey-brown sandy or clay loams on mid-upper slopes

Total Area: 41.62 ha

Percentage of Study area: 0.44 %

Sampling: 2 quadrats (WE020; WE046)

Common taxa recorded within each stratum:

Stratum	Descriptor	Taxa
Upper Stratum 1	Mid Open Forest (Trees 10 - 30 m)	<i>Eucalyptus accedens</i>
Lower Stratum 1	Low Open Shrubland (Shrubs <1 m)	<i>Gastrolobium plicatum</i> , <i>Goodenia berardiana</i>
Lower Stratum 2	Low Forbland and Rushland (<0.5 m)	<i>Trachymene cyanopetala</i>

Indicator Taxa:

<i>Acanthocarpus canaliculatus</i> ***
<i>Desmocladius asper</i> *
<i>Dianella revoluta</i> **
<i>Dodonaea divaricata</i> ***
<i>Gastrolobium plicatum</i> ***
<i>Glischrocaryon aureum</i> *
<i>Orthrosanthus laxus</i> var. <i>laxus</i> ***
<i>Ptilotus manglesii</i> *
<i>Rhagodia preissii</i> subsp. <i>preissii</i> **
<i>Stylidium torticarpum</i> *
<i>Velleia trinervis</i> ***

Landform Types: Upper and mid slopes

Soil Types: Grey or brown clay and sandy loams

VT 1b was mapped in 11 separate small areas near the south-eastern edge of the Study area (Figure 8.4). As previously mentioned, VT 1b is similar to VT 1a in possessing *Eucalyptus accedens* as the dominant taxon. However VT 1b occurs on sandy and clay loams, which is reflected in the differing understory composition of VTs 1a and 1b.

A total of 49 vascular plant taxa were recorded in and surrounding the quadrats which grouped to form VT 1b (Appendix K), of which 28 were used in the analysis. Average taxon richness per quadrat within VT 1b was 20.0 ± 0 . Five conservation significant flora taxa are known to occur in VT 1b (*Eucalyptus abdita* (P2), *Micromyrtus rogeri* (P1), *Stylidium drummondianum* (P3), *Synaphea oulopha* (P1) and *Stylidium torticarpum* (P3)), however VT 1b is not the preferred habitat for any of

these species. Four introduced taxa are also known to occur within this VT (*Arctotheca calendula*, *Hypochaeris glabra*, *Lysimachia arvensis* and *Pentameris airoides* subsp. *airoides*).

The condition of the vegetation in VT 1b was ranked '1' or 'Pristine' in 1 quadrat, however the second quadrat established in this VT was ranked '2' due to the presence of numerous weed taxa, albeit at relatively low levels (Keighery 1994; Appendix F). Areas mapped as VT 1b were ranked '1', '1/2' or '2' (Figure 7.4), depending upon the level of disturbance and introduced flora noted in the area during the surveys in 2012.



Plate 4: VT 1b (Quadrat WE-020) (Photo: Woodman Environmental)

VT 2: Mid open forest of *Eucalyptus accedens* or low open forest *E. loxophleba* subsp. *loxophleba* over mid open shrubland dominated by *Rhagodia preissii* subsp. *preissii* and *Melaleuca acutifolia* on grey-brown sandy loams on flats and slopes

Total Area: 5.66 ha

Percentage of Study area: 0.06 %

Sampling: 2 quadrats (WE096; WE100)

Common taxa recorded within each stratum:

Stratum	Descriptor	Taxa
Upper Stratum 1	Mid Woodland (Trees 10 - 30 m)	<i>Eucalyptus accedens</i> , <i>Eucalyptus loxophleba</i> subsp. <i>loxophleba</i>
Mid Stratum 1	Mid Shrubland (Shrubs 1 - 2 m)	<i>Rhagodia preissii</i> subsp. <i>preissii</i> , <i>Melaleuca acutifolia</i>

Indicator Taxa: None

Landform Types: Flats to Midslopes

Soil Types: Brown to grey or white sandy loam

VT 2 was mapped in two small areas near the north-western edge of the Study area (Figure 8.1). VT 2 shows close affinity to VT 1a and 1b (Appendix L), however the overstorey was variously dominated by *E. accedens* or *E. loxophleba* subsp. *loxophleba*, over a very species poor understorey on sandy loam. Both quadrats which grouped into VT 2 were newly established in 2012.

A total of 10 vascular plant taxa were recorded in and surrounding both quadrats which form VT 2 (Appendix K), of which five were used in the analysis. Average taxon richness per quadrat within VT 2 was 3.0 ± 0 . No conservation significant flora taxa, or introduced taxa, were recorded in this VT during 2012.

The condition of the vegetation in VT 2 was ranked '1' or 'Pristine' in both quadrats, and has been mapped as such (Figure 7.1).



Plate 5: VT 2 (Quadrat WE-096) (Photo: Woodman Environmental)

VT 3: Occasional mid woodland of *Eucalyptus accedens* over mid shrubland dominated by *Melaleuca concreta*, *M. marginata* and *M. acutifolia* over low isolated mixed shrubs and sedges including *Acacia ericksoniae* and *Lepidosperma* sp. A2 Inland Flat (G.J. Keighery 7000) on pink-brown or white clay loams on flats

Total Area: 21.52 ha

Percentage of Study area: 0.23 %

Sampling: 3 quadrats (WE029, WE071, WE098)

Common taxa recorded within each stratum:

Stratum	Descriptor	Taxa
Upper Stratum 1	Mid Woodland (Trees 10 - 30 m)	<i>Eucalyptus accedens</i>
Mid Stratum 1	Mid Shrubland (Shrubs 1 - 2 m)	<i>Allocasuarina campestris</i> , <i>Melaleuca concreta</i> , <i>Melaleuca marginata</i> , <i>Melaleuca radula</i> , <i>Gastrolobium bennettsianum</i>
Lower Stratum 1	Low Isolated Shrubs and Sedges (<0.5 m)	<i>Acacia ericksoniae</i> , <i>Lepidosperma</i> sp. A2 Inland Flat (G.J. Keighery 7000)

Indicator Taxa:

<i>Acacia ericksoniae</i> ***
<i>Baeckea crispiflora</i> var. <i>tenuior</i> **
<i>Comesperma volubile</i> **
<i>Gastrolobium bennettsianum</i> **
<i>Melaleuca concreta</i> *
<i>Melaleuca radula</i> *

Landform Types: Drainage lines or flats, upper slope

Soil Types: Brown or pink-brown clay or clay loam, sand

VT 3 was mapped in a single area near the north-western edge of the Study area (Figure 8.1). All three quadrats had a defining Mid Stratum dominated by a mix of *Melaleuca concreta* with *M. marginata* and *M. acutifolia* also co-dominating over isolated low shrubs and sedges, however, only one of these quadrats (WE071) also had an upper stratum dominated by *Eucalyptus accedens*.

A total of 35 vascular plant taxa were recorded in and surrounding quadrats which grouped to form VT 3 (Appendix K), of which 34 were used in the analysis. Average taxon richness per quadrat within VT 3 was 15.7 ± 4.5 . The conservation significant flora taxa *Haemodorum loratum* (P3), *Mesomelaena stygia* subsp. *deflexa* (P3), *Stylidium torticarpum* (P3) and *Eucalyptus macrocarpa* subsp. *elachantha* (P4) are known to occur in VT 3, with no introduced taxa recorded. VT 3 is not the preferred habitat of any of the conservation significant taxa recorded. The condition of the vegetation all three quadrats in VT 3 was ranked '1' or 'Pristine' (Keighery 1994; Appendix F; Figure 7.1).



Plate 6: VT 3 (Quadrat WE-071) (Photo: Woodman Environmental)

VT 4: Tall closed to open shrubland dominated by *Allocasuarina campestris* or occasionally *Acacia neurophylla* subsp. *neurophylla* over mid open shrubland and sedgeland of mixed species including *Grevillea biternata*, *Melaleuca radula*, *Melaleuca concreta*, *Thryptomene* sp. Mingenew (Diels & Pritzel 332) (P3), *Ecdeiocolea monostachya* and *Thryptomene racemulosa* on grey-brown sand, sandy loam or clay loam, occasionally with granitic pebbles, on slopes and flats adjacent to seasonal creeks

Total Area: 47.89 ha

Percentage of Study area: 0.50 %

Sampling: 7 quadrats (WE091, WE093, WE094, WE092, WE120, WE121, WE127); also includes Site 04)

Common taxa recorded within each stratum:

Stratum	Descriptor	Taxa
Mid Stratum 1	Mid Shrubland (Shrubs 1 - 3 m)	<i>Acacia neurophylla</i> subsp. <i>neurophylla</i> , <i>Allocasuarina campestris</i> , <i>Hakea trifurcata</i> , <i>Melaleuca radula</i> , <i>Melaleuca concreta</i> , <i>Scholtzia laxiflora</i> , <i>Thryptomene</i> sp. Mingenew (Diels & Pritzel 332)
Lower Stratum 1	Low Isolated Shrubs and Sedges (<0.5 m)	<i>Borya sphaerocephala</i> , <i>Ecdeiocolea monostachya</i> , <i>Desmocladus asper</i> , <i>Opercularia vaginata</i>

Indicator Taxa:

<i>Austrostipa elegantissima</i> *
<i>Austrostipa variabilis</i> **
<i>Grevillea biternata</i> *

Landform Types: Flat, lower slopes, mid slopes, upper slopes

Soil Types: Brown – grey to Grey sand to sandy loam to clay loam

VT 4 was mapped in a seven small polygons adjacent to Sand Plain Creek located on private property in the north of the Study area (Figures 8.1, 8.2). A mid stratum usually dominated by *Allocasuarina campestris* over *Melaleuca* spp. was present. Four quadrats which grouped into VT 4 were located on or adjacent to a drainage line, on at least partially clay soils; three were located on upper-mid slopes on sand.

A total of 101 vascular plant taxa were recorded in VT 4 (Appendix K), of which 63 were used in the analysis. Average taxon richness per quadrat within VT 4 was 19.7 ± 4.2 . The conservation significant flora taxa *Malleostemon decipiens* (P1), *Stylidium torticarum* (P3) and *Thryptomene* sp. Mingenew (Diels & Pritzel 332) (P3) were recorded in VT 4. Five of the eight known locations of *Thryptomene* sp. Mingenew (Diels & Pritzel 332) (P3) are known from this VT, with 1 of the 2 known locations of *Malleostemon decipiens* (P1) also known from this VT; VT 4 is the preferred habitat for both of these taxa within the Study area.

A total of 14 introduced taxa recorded in VT 4 (Table 12). This reflects the state of the vegetation in VT 4, mainly due to its location both on private property in remnant bushland, and also in close proximity to a drainage line. Each of these taxa are common pasture weeds, however the Declared Pest *Echium plantagineum* (Salvation Jane; Patersons Curse) was also recorded in this VT. The condition of the vegetation in the majority of quadrats was ranked variously from '1' (Pristine) to '3' (Very Good), with the overall condition of these areas being mapped as '3' or '4' (Keighery 1994; Appendices F, H; Figures 7.1, 7.2).



Plate 7: VT 4 (Quadrat WE094) (Photo: Woodman Environmental)

Two areas of degraded VT 4 (VT 4D) were mapped (Figure 8.1). Site 01 was undertaken in one of these areas, and the condition of the vegetation was ranked as '5' (Very Poor: Basic vegetation structure severely impacted by disturbance) (Keighery 1994; Appendix F). A total of 12 species was recorded at this site, of which only two were native (*Acacia acuminata* and *Acacia saligna*). The conservation significant taxon *Thryptomene* sp. Mingenew (Diels & Pritzel 332) (P3), as well as the Declared Pest *Echium plantagineum* were recorded in VT 4D.

VT 5: Tall closed shrubland to shrubland dominated by *Allocasuarina campestris* with occasional *Acacia aciphylla*, *Acacia neurophylla* subsp. *neurophylla* and *Melaleuca viminea* subsp. *viminea* over sparse low shrubland and sedgeland of mixed species including *Ecdeiocolea monostachya* and *Thryptomene racemulosa* over open forbland and grassland of mixed introduced species including **Ehrharta longiflora* and *Ursinia anthemoides* on grey or brown sandy or clay loams within and on the banks of seasonal creeks

Total Area: 39.69 ha

Percentage of Study area: 0.42 %

Sampling: 2 quadrats (WE095, WE117); also includes Site 03)

Common taxa recorded within each stratum:

Stratum	Descriptor	Taxa
Mid Stratum 1	Mid Shrubland (Shrubs 1 - 3 m)	<i>Acacia neurophylla</i> subsp. <i>neurophylla</i> , <i>Allocasuarina campestris</i>
Lower Stratum 1	Low Isolated Shrubs and Sedges (<0.5 m)	<i>Ecdeiocolea monostachya</i> , * <i>Ursinia anthemoides</i>

Indicator Taxa:

<i>Acacia aciphylla</i> ***
<i>Acacia neurophylla</i> subsp. <i>neurophylla</i> **
<i>Allocasuarina campestris</i> *

Landform Types: Flat, Drainage Line

Soil Types: Brown – grey sand to sandy loam to clay loam

VT 5 was mapped in 11 small polygons on and adjacent to Sand Plain Creek located on private property in the north of the Study area (Figures 8.1, 8.2). The vegetation was generally dominated by a mid stratum of *Allocasuarina campestris* with other species occasionally present. The lower stratum of VT 5 was invariably dominated by introduced species; this is due to both the location of the VT on private property in close proximity to pasture, and to its location on a drainage line.

A total of 16 vascular plant taxa were recorded in and surrounding quadrats which grouped to form VT 5 (Appendix K), of which 11 were used in the analysis. Average taxon richness per quadrat within VT 5 was 7.5 ± 0.7 . Quadrat WE105, which originally grouped into VT 5 in the statistical analysis, was manually moved to VT 8 due to the soil type and location in the landscape (grey sandy loam on upper slope of ridge), and has therefore not been included in this VT.

The conservation significant flora taxa *Malleostemon decipiens* (P1) and *Thryptomene* sp. *Mingenew* (Diels & Pritzel 332) (P3) were recorded in VT 5, although this VT is not the preferred habitat for either of these species. In addition, the only location of *Acacia isoneura* subsp. *isoneura* (P3) recorded within the Study area was recorded in VT 5.

A total of 3 introduced taxa were recorded in VT 5 (Table 12), one of which (*Ursinia anthemoides*) was dominant in the understorey. Each of these taxa are commonly found in pasture lands and disturbed bushland in the south-west of Western Australia, and are not Declared Pests.

The condition of the vegetation of the three quadrats which grouped to VT 5 were ranked as '3' (Very Good), with the single site located in this VT ranked as '4' (Good). The condition of the vegetation in VT 5 was various mapped as '3' and '4' (Keighery 1994; Appendices F, H; Figures 7.1, 7.2).



Plate 8: VT 5 (Quadrat WE-117) (Photo: Woodman Environmental)

VT 6: Open woodland of *Eucalyptus loxophleba* subsp. *loxophleba* over mid closed shrubland dominated by *Melaleuca marginata* over sparse forbland of mixed species including *Rhodanthe polycephala* on grey-brown clay on slopes above seasonal creeks

Total Area: 3.20 ha

Percentage of Study area: 0.03 %

Sampling: 1 quadrats (WE122)

Common taxa recorded within each stratum:

Stratum	Descriptor	Taxa
Upper Stratum 1	Low Woodland (Trees <10 m)	<i>Eucalyptus loxophleba</i> subsp. <i>loxophleba</i>
Mid Stratum 1	Mid Shrubland (Shrubs 1 - 2 m)	<i>Melaleuca marginata</i>
Lower Stratum 1	Low Isolated Forbs and Grasses (<0.5 m)	Various introduced species

Indicator Taxa: None (single quadrat)

Landform Types: Midslope

Soil Types: Brown – grey light clay

VT 6 was mapped at one location within remnant bushland on private property, in the north-east of the Study area (Figure 8.2). One quadrat was established in this VT during 2012, with the upper stratum dominated by *Eucalyptus loxophleba* subsp. *loxophleba* (York Gum), which historically may have been typical throughout this area on lower slopes to midslopes on clay soils prior to cultivation. The mid stratum was a dense layer of *Melaleuca marginata* with some *Allocasuarina campestris*, and this coupled with the low species richness are the reasons why this quadrat was grouped in Supergroup 1. The lower stratum was very sparse, and dominated by a mix of introduced species.

A total of 12 vascular plant taxa were recorded in and surrounding the quadrat which forms VT 6 (Appendix K). No conservation significant flora taxa were recorded in this VT. A total of six introduced species were recorded in VT 6 (Table 12), which together dominated the understorey, although none had particularly high foliage covers (Appendix H). Each of the six introduced taxa are commonly found in pasture lands and disturbed bushland in the south-west of Western Australia. None of the introduced taxa are Declared Pests. The condition of the vegetation in this VT was ranked '1' (Pristine) despite the presence of these taxa, and has been mapped as such (Keighery 1994; Appendices F, H; Figure 7.2).



Plate 9: VT 6 (Quadrat WE-122) (Photo: Woodman Environmental)

Super-group 2

Super-group 2 is comprised of VTs 7 to 9, with VT 7 divided into two sub-types. It consists of vegetation on upland areas associated with laterite, including breakaways, rises and slopes. Surface expression of laterite in the form of outcropping or gravel was not always present, however the vegetation composition was strongly influenced even when not present.

Generally, the vegetation mapped as Super-group 2 consisted of mid shrublands often dominated by *Allocasuarina campestris*, or occasionally *Melaleuca concreta* and *M. marginata*, over species-rich low shrublands. However, there were frequently isolated mallees, grading to mallee woodland in several large areas, with *Eucalyptus conveniens* the dominant species. VT 7 was manually split into sub-types based on distinct differences in understory composition and soil type.

The average taxon richness per quadrat of VTs within Super-group 2 varied from 56.2 ± 10.3 taxa per quadrat in VT 7b (the highest of all VTs in the Study area), to 32.7 ± 5.9 in VT 9. The highest number of taxa recorded was 203 (188 used in the analysis) in VT 7b (the highest of all VTs in the Study area), with the lowest being 91 (84 used in the analysis) taxa in VT 9. VTs forming this Super-group also are the preferred habitat for a number of conservation significant flora taxa.

The species diversity in Super-group 2 was relatively high in relation to the other Super-groups (especially Super-group 1). Species from Species Groups C, I, M, P, Q and S were predominately recorded in quadrats from Super-group 2, with fewer records of species from Species Group O (Appendix M).

VTs 7 through to 9 are described below.

VT 7a: Mid mallee woodland to isolated mallees of *Eucalyptus conveniens* or mid open shrubland of *Allocasuarina campestris* over low shrubland and sedgeland of mixed species frequently dominated by *Ecdeiocolea monostachya* and *Melaleuca aspalathoides*, or occasionally *M. tinkeri*, *Hakea auriculata* or *Hakea lissocarpha*, on gravelly grey or brown clay loams or sands, usually with laterite on or near the surface, on slopes and crests

Total Area: 799.11 ha

Percentage of Study area: 8.37 %

Sampling: 13 quadrats (WE002, WE005, WE051, WE055, WE058, WE009; WE033, WE010, WE014, WE085, WE026, WE077, WE119)

Common taxa recorded within each stratum:

Stratum	Descriptor	Taxa
Upper Stratum 1	Mid Mallee Woodland (Mallees <10 m)	<i>Eucalyptus conveniens</i>
Mid Stratum 2	Mid Open Shrubland (Shrubs 1 - 2 m)	<i>Allocasuarina campestris</i> , <i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i> ,
Lower Stratum 1	Low Shrubland and Sedgeland (Shrubs and Sedges <1 m)	<i>Ecdeiocolea monostachya</i> , <i>Hakea lissocarpha</i> , <i>Allocasuarina microstachya</i> , <i>Melaleuca aspalathoides</i> , <i>Borya sphaerocephala</i> , <i>Hakea auriculata</i> , <i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A), <i>Hibbertia hypericoides</i> , <i>Hakea incrassata</i> , <i>Schoenus clandestinus</i> , <i>Banksia carlinoides</i> , <i>Banksia fraseri</i> ?var. <i>fraseri</i> , <i>Melaleuca tinkeri</i> , <i>Petrophile chrysantha</i> , <i>Melaleuca trichophylla</i>

Indicator Taxa:

<i>Allocasuarina microstachya</i> *
<i>Boronia cymosa</i> ***
<i>Daviesia oxyclada</i> *
<i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A)*
<i>Neurachne alopecuroidea</i> **

Landform Types: Upper slopes, mid slopes, crests

Soil Types: Grey or brown sand or clay loam, often with lateritic pebbles, occasionally with lateritic outcropping

VT 7a was mapped widely and over large portions of upland areas throughout the Study area (Figures 8.1 – 8.4). Generally, the vegetation mapped as VT 7a consisted of a mid shrubland of *Allocasuarina campestris* over a low shrubland and sedgeland of mixed species, with *Melaleuca aspalathoides*, *Melaleuca tinkeri* and *Ecdeiocolea monostachya* frequently dominating. However, occasionally a low mallee woodland

or isolated mallees of *Eucalyptus conveniens* replaced or occurred with *Allocasuarina campestris*, with some areas not possessing an upper stratum of either of *E. conveniens* or *Allocasuarina campestris*. Of the 13 quadrats which grouped into VT 7a, 12 were established in 2011, with only one established in 2012 (WE119).

VT 7a is most similar to VT 7b, however VT 7a generally occurs in areas where laterite is expressed on the surface, with VT 7b generally occurring in sandier areas. This is reflected in the taxon composition of the lower stratum, including species such as *Hakea auriculata* being more common in areas of VT 7a. The indicator species of VT 7a are commonly found on lateritic sands.

A total of 176 vascular plant taxa were recorded in and surrounding quadrats which grouped to form VT 7a (Appendix K), of which 156 were used in the analysis. The average taxon richness per quadrat within VT 7a was 46.5 ± 7.8 . The conservation significant flora taxa *Paracaleana dixonii*, *Thelymitra stellata* (both T (DRF)), *Lasiopetalum ogilvieanum*, *Micromyrtus rogeri*, *Synaphea oulopha* (all P1), *Persoonia filiformis*, *Schoenus badius* (both P2), *Allocasuarina grevilleoides*, *Haemodorum loratum*, *Hemiandra* sp. Eneabba (H. Demarz 3687), *Mesomelaena stygia* subsp. *deflexa*, *Persoonia rudis*, *Stylidium drummondianum*, *Synaphea aephyrsa*, *Thryptomene* sp. Mingenew (Diels & Pritzel 332) (all P3), *Banksia scabrella*, *Calytrix chrysantha* and *Eucalyptus macrocarpa* subsp. *elachantha* (all P4) are known to occur in VT 7a.

VT 7a has preferred habitat for a variety of conservation significant taxa including *Banksia scabrella* (P4), *Eucalyptus macrocarpa* subsp. *elachantha* (P4), *Haemodorum loratum* (P3), *Hemiandra* sp. Eneabba (H. Demarz 3687) (P3), *Synaphea aephyrsa* (P3) and *Synaphea oulopha* (P1), and is habitat for the only known location of *Calytrix chrysantha* (P3).

Only two introduced species were recorded: *Ehrharta longiflora* and *Ursinia anthemoides* (Table 12). Both of these are common pasture weeds and are not Declared Pests. The condition of the vegetation in all quadrats in VT 7a was ranked '1' or 'Pristine' (Keighery 1994; Appendix F), and has been mapped as such (Figures 7.1 – 7.4).



Plate 10: VT 7a (Quadrat WE-055) (Photo: Woodman Environmental)

VT 7b: Mid mallee woodland to isolated mallees of *Eucalyptus conveniens* or mid open shrubland of *Allocasuarina campestris* over low shrubland and sedgeland of mixed species dominated by *Banksia carlinoides*, *Ecdeiocolea monostachya*, *Hakea incrassata*, *Hibbertia hypericoides* and *Melaleuca aspalathoides* on gravelly grey or brown clay loams or sands, usually with laterite on or near the surface, on slopes and crests

Total Area: 663.65 ha

Percentage of Study area: 6.95 %

Sampling: 13 quadrats (WE012, WE039, WE074, WE030, WE041, WE013, WE017, WE044, WE047, WE087, WE062, WE082, WE090)

Common taxa recorded within each stratum:

Stratum	Descriptor	Taxa
Upper Stratum 1	Mid Mallee Woodland (Mallees <10 m)	<i>Eucalyptus conveniens</i>
Mid Stratum 2	Mid Open Shrubland (Shrubs 1 - 2 m)	<i>Allocasuarina campestris</i>
Lower Stratum 1	Low Shrubland and Sedgeland (Shrubs and Sedges <1 m)	<i>Hibbertia hypericoides</i> , <i>Calothamnus sanguineus</i> , <i>Schoenus clandestinus</i> , <i>Petrophile brevifolia</i> , <i>Mesomelaena pseudostygia</i> , <i>Hakea incrassata</i> , <i>Schoenus brevisetis</i> , <i>Neurachne alopecuroidea</i> , <i>Gastrolobium plicatum</i> , <i>Eremaea beaufortioides</i> var. <i>microphylla</i> , <i>Ecdeiocolea monostachya</i> , <i>Caustis dioica</i> , <i>Banksia carlinoides</i> , <i>Allocasuarina humilis</i> , <i>Melaleuca aspalathoides</i> , <i>Hakea lissocarpha</i> , <i>Dampiera lindleyi</i> , <i>Cassytha glabella</i> forma <i>bicallosa</i> , <i>Banksia shuttleworthiana</i> , <i>Babingtonia camphorosmae</i> , <i>Opercularia vaginata</i> , <i>Hibbertia crassifolia</i> , <i>Verticordia pennigera</i> , <i>Scaevola canescens</i> , <i>Melaleuca</i> aff. <i>leuropoma</i> , <i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509), <i>Hypocalymma hirsutum</i> , <i>Goodenia coerulea</i> , <i>Hakea stenocarpa</i> , <i>Daviesia daphnoides</i> , <i>Conostylis canteriata</i> , <i>Boronia cymosa</i> , <i>Banksia dallanneyi</i> subsp. <i>media</i> , <i>Baekkea grandiflora</i> , <i>Stylidium diuroides</i> subsp. <i>paucifoliatum</i> , <i>Melaleuca leuropoma</i> , <i>Lepidobolus preissianus</i> subsp. <i>preissianus</i> , <i>Hakea trifurcata</i> , <i>Daviesia pedunculata</i> , <i>Darwinia speciosa</i> , <i>Cristonia biloba</i> , <i>Calytrix flavescens</i> , <i>Burchardia congesta</i> , <i>Allocasuarina microstachya</i> , <i>Acacia dilatata</i> , <i>Verticordia laciniata</i> , <i>Stylidium drummondianum</i> , <i>Stylidium crossocephalum</i> , <i>Melaleuca trichophylla</i> , <i>Leptospermum spinescens</i> , <i>Hakea spathulata</i> , <i>Hakea circumalata</i> , <i>Hakea auriculata</i> , <i>Cryptandra myriantha</i> , <i>Conostylis androstemma</i> , <i>Cassytha ?pomiformis</i> , <i>Beaufortia elegans</i> , <i>Banksia scabrella</i> , <i>Banksia fraseri</i> var. <i>?fraseri</i> , <i>Acacia acuarua</i>

Indicator Taxa:

<i>Banksia carlinoides</i> **
<i>Calothamnus sanguineus</i> ***
<i>Caustis dioica</i> *
<i>Hakea incrassata</i> ***
<i>Hakea stenocarpa</i> *
<i>Hibbertia hypericoides</i> ***
<i>Petrophile brevifolia</i> ***
<i>Schoenus brevisetis</i> ***

Landform Types: Upper slopes, mid slopes, lower slopes, crests, ridges

Soil Types: Grey, brown or grey-brown sand, sandy loam or clay loam, often with lateritic pebbles.

VT 7b was mapped widely and over large portions of upland areas throughout the Study area (Figures 8.1 – 8.4). As for VT 7a, the vegetation mapped as VT 7b generally consisted of a mid shrubland of *Allocasuarina campestris* over a low shrubland and sedgeland of mixed species, with *Banksia carlinoides*, *Ecdeiocolea monostachya*, *Hakea incrassata*, *Hibbertia hypericoides* and *Melaleuca aspalathoides* frequently dominating. However, occasionally a low mallee woodland or isolated mallees of *Eucalyptus conveniens* replaced or occurred with *Allocasuarina campestris*, and some areas did not possess an upper stratum of either *E. conveniens* and/or *Allocasuarina campestris*. All of the 13 quadrats which grouped into VT 7b were established in 2011.

As previously mentioned, VT 7b is most similar to VT 7a, however VT 7a was mapped generally in areas where laterite was expressed on the surface, with VT 7b generally occurring in sandier areas. All of the indicator species of VT 7b commonly occur on sand over lateritic soils, or lateritic sands.

A total of 203 vascular plant taxa were recorded in and surrounding quadrats which grouped to form VT 7b (Appendix K), of which 188 were used in the analysis. Average taxon richness per quadrat within VT 7b was 56.2 ± 10.3 . This is the highest average taxon richness of any VT mapped within the Study area. Numerous conservation significant flora taxa were recorded in VT 7b, including *Paracaleana dixonii*, *Thelymitra stellata* (both T (DRF)), *Lasiopetalum ogilvieanum*, *Micromyrtus rogeri*, *Synaphea oulopha* (all P1), *Persoonia filiformis* (P2), *Allocasuarina grevilleoides*, *Banksia fraseri* ?var. *crebra*, *Eucalyptus* ?*macrocarpa* x *pyriformis*, *Haemodorum loratum*, *Mesomelaena stygia* subsp. *deflexa*, *Persoonia rudis*, *Stylidium drummondianum*, *Stylidium torticarpum*, *Synaphea aephyrsa* (all P3), *Banksia scabrella* and *Eucalyptus macrocarpa* subsp. *elachantha* (both P4).

VT 7b is preferred habitat for several conservation significant taxa, including *Banksia scabrella* (P4) and *Paracaleana dixonii* (T (DRF)), and holds the only known location of *Banksia fraseri* var. ?*crebra* (P3).

No introduced taxa were recorded within VT 7b, and the condition of the vegetation in all quadrats in VT 7b was ranked '1' ('Pristine'); the vegetation condition has therefore been mapped as such (Keighery 1994; Appendix F; Figures 7.1 – 7.4).



Plate 11: VT 7b (Quadrat WE-087) (Photo: Woodman Environmental)

VT 8: Mid mallee woodland to isolated mallees of *Eucalyptus conveniens* over mid shrubland to open shrubland dominated by *Allocasuarina campestris* over low shrubland and sedgeland of mixed species dominated by *Ecdeiocolea monostachya*, *Hakea auriculata*, *Melaleuca radula*, *M. aspalathoides* and *Banksia fraseri* var. *fraseri* on gravelly grey or brown clay loams usually over massive laterite on breakaway tops, ridges and lateritic rises

Total Area: 443.93 ha

Percentage of Study area: 4.65 %

Sampling: 17 quadrats (WE004, WE011, WE028, WE022, WE043, WE042, WE081, WE056, WE059, WE063, WE065, WE068, WE069, WE102, WE111, WE113; WE105); also includes Site 09

Common taxa recorded within each stratum:

Stratum	Descriptor	Taxa
Upper Stratum 1	Mid Mallee Woodland (Mallees <10 m)	<i>Eucalyptus conveniens</i>
Mid Stratum 2	Mid Shrubland to Open Shrubland (Shrubs 1 - 2 m)	<i>Allocasuarina campestris</i>
Lower Stratum 1	Low Shrubland and Sedgeland (Shrubs and Sedges <1 m)	<i>Hakea auriculata</i> , <i>Banksia fraseri</i> var. <i>fraseri</i> , <i>Neurachne alopecuroidea</i> , <i>Ecdeiocolea monostachya</i> , <i>Boronia cymosa</i> , <i>Melaleuca radula</i> , <i>Hakea lissocarpa</i> , <i>Stylidium drummondianum</i> (P3), <i>Patersonia graminea</i> , <i>Opercularia vaginata</i> , <i>Hibbertia hypericoides</i> , <i>Glischrocaryon aureum</i> , <i>Schoenus armeria</i> , <i>Melaleuca aspalathoides</i> , <i>Dodonaea ericoides</i> , <i>Daviesia</i> sp. (unidentified), <i>Schoenus clandestinus</i> , <i>Petrophile shuttleworthiana</i> , <i>Lepidosperma tenue</i> , <i>Dampiera lindleyi</i> , <i>Cryptandra myriantha</i> , <i>Conostylis androstemma</i> , <i>Hibbertia spicata</i> subsp. <i>spicata</i> , <i>Gastrolobium plicatum</i> , <i>Mesomelaena pseudostygia</i> , <i>Goodenia hassallii</i> , <i>Baeckea grandiflora</i> , <i>Polianthion wichuriae</i> , <i>Micromyrtus rogeri</i> (P1), <i>Mesomelaena preissii</i> , <i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A), <i>Lepidobolus preissianus</i> subsp. <i>preissianus</i> , <i>Jacksonia foliosa</i> , <i>Isopogon divergens</i> , <i>Hakea incrassata</i> , <i>Hakea circumalata</i> , <i>Calothamnus longissimus</i> , <i>Banksia shuttleworthiana</i> , <i>Acanthocarpus</i> sp. <i>Ajana</i> (C.A. Gardner 8596), <i>Acacia acuaria</i>

Indicator Taxa:

<i>Banksia fraseri</i> var. <i>fraseri</i> ***
<i>Hakea auriculata</i> **
<i>Petrophile shuttleworthiana</i> *

Landform Types: Upper slopes, mid slopes, crests, ridges, breakaways

Soil Types: Grey, brown or grey brown clay or sandy loams, usually with lateritic pebbles and exposed lateritic outcropping

VT 8 was also mapped widely over upland areas throughout the Study area, however usually in relatively small areas associated specifically with very rocky breakaways, rises and slopes (Figures 8.1 – 8.4). As for VTs 7a and 7b, the vegetation mapped as VT 8 generally consisted of a mid shrubland of *Allocasuarina campestris* over a low shrubland and sedgeland of mixed species, with *Ecdeiocolea monostachya*, *Hakea auriculata*, *Melaleuca radula*, *M. aspalathoides* and *Banksia fraseri* var. *?fraseri* frequently dominating. However, occasionally a low mallee woodland or isolated mallees of *Eucalyptus conveniens* occurred. VT 8 is most similar to VT 9 (Appendix L), however VT 9 is associated with weathered and decaying breakaways with clay soils; this is reflected in its taxon composition.

Quadrat WE105 was manually dissected from other quadrats forming VT 5 (Appendix L), due to the nature of the substrate and soils upon which this area is located (Figure 8.1). VT 5 is located on grey or brown sandy or clay loams within and on the banks of seasonal creeks, and the area upon which WE105 is located is grey sandy loam on the upper slope of a ridge. Quadrat WE105 grouped with VT 5 (as per the dendrogram shown on Appendix L) due to the relatively low number of species recorded in this quadrat, with seven species recorded in the quadrat as opposed to an average species richness of 33.8 for VT 8. However it is considered to represent VT 8 and has been mapped as such.

A total of 168 vascular plant taxa were recorded in and surrounding quadrats which grouped to form VT 8 (Appendix K), of which 144 were used in the analysis. Average taxon richness per quadrat within VT 8 was 33.8 ± 10.3 . Numerous conservation significant flora taxa were recorded in VT 8, including: *Paracaleana dixonii*, *Thelymitra stellata*, *Eucalyptus crispata* (all T (DRF)), *Lasiopetalum ogilvieanum*, *Micromyrtus rogeri*, *Synaphea oulopha* (all P1), *Eucalyptus abdita* (P2), *Allocasuarina grevilleoides*, *Eucalyptus macrocarpa* x. *pyriformis*, *Haemodorum loratum*, *Mesomelaena stygia* subsp. *deflexa*, *Persoonia rudis*, *Stylidium drummondianum*, *Stylidium torticarpum*, *Synaphea aephyntsa* (all P3), *Eucalyptus macrocarpa* subsp. *elachantha* and *Banksia scabrella* (P4) are known to occur in VT 8, with historical DEC records of *Eucalyptus leprophloia* (T (DRF)) also occurring in this VT.

VT 8 also contains preferred habitat for a variety of conservation significant taxa, including *Allocasuarina grevilleoides* (P3), *Eucalyptus abdita* (P2), *Eucalyptus crispata* (T (DRF)), *Mesomelaena stygia* subsp. *deflexa* (P3), *Micromyrtus rogeri* (P1), *Stylidium drummondianum* (P3), *Stylidium torticarpum* (P3), *Synaphea oulopha* (P1) and *Thelymitra stellata* (T (DRF)).

The introduced taxon *Pentameris airoides* subsp. *airoides* was recorded in VT 8. The condition of the vegetation in all quadrats in VT 8 was ranked '1' or 'Pristine' and has been mapped as such (Keighery 1994; Appendix F; Figures 7.1 – 7.4).



Plate 12: VT 8 (Quadrat WE-081) (Photo: Woodman Environmental)

Three small areas of degraded VT 8 (VT 8D) were also mapped (Figure 8.4), having a total area of 9.49 ha, which is 0.1 % of the Study area. These are remnant areas on rocky slopes surrounded by pasture on private property.

VT 9: Mid to low open shrubland of *Allocasuarina campestris*, *Melaleuca concreta* and *Melaleuca marginata* over low shrubland dominated by *Melaleuca tinker* and occasionally *Gastrolobium plicatum* over low shrubland and forbland dominated by *Stylidium torticarpum* (P3), *Leucopogon* sp. Yandanooka (M. Hislop 2507) and *Micromyrtus rogeri* (P1) on gravelly pink-brown or white-grey clay or clay loam over decaying laterite on breakaway tops and slopes

Total Area: 50.2 ha

Percentage of Study area: 0.53 %

Sampling: 6 quadrats (WE015, WE061, WE036, WE076, WE045, WE070)

Common taxa recorded within each stratum:

Stratum	Descriptor	Taxa
Mid Stratum 1	Mid to Low Open Shrubland (Shrubs <2 m)	<i>Melaleuca concreta</i> , <i>Allocasuarina campestris</i> , <i>Melaleuca marginata</i>
Lower Stratum 1	Low Shrubland (Shrubs <1 m)	<i>Melaleuca tinker</i> , <i>Hakea lissocarpa</i> , <i>Gastrolobium plicatum</i> , <i>Dodonaea ericoides</i> , <i>Petrophile chrysantha</i> , <i>Melaleuca aspalathoides</i> , <i>Hibbertia hypericoides</i> , <i>Astroloma pedicellatum</i> ms, <i>Eceidocolea monostachya</i>
Lower Stratum 2	Low Shrubland and Forbland (Shrubs and Forbs <0.5 m)	<i>Neurachne alopecuroidea</i> , <i>Leucopogon</i> sp. Yandanooka (M. Hislop 2507), <i>Lepidosperma</i> sp. A2 Inland Flat (G.J. Keighery 7000), <i>Lepidosperma tenue</i> , <i>Glischrocaryon aureum</i> , <i>Borya sphaerocephala</i> , <i>Stylidium torticarpum</i> (P3), <i>Mirbelia floribunda</i> , <i>Amhipogon caricinus</i> , <i>Schoenus clandestinus</i> , <i>Micromyrtus rogeri</i> (P1), <i>Dampiera lindleyi</i> , <i>Conostylis androstemma</i> , <i>Cassytha glabella</i> forma <i>bicallosa</i>

Indicator Taxa:

<i>Dodonaea ericoides</i> **
<i>Lepidosperma</i> sp. A2 Inland Flat (G.J. Keighery 7000)**
<i>Leucopogon</i> sp. Yandanooka (M. Hislop 2507)***
<i>Melaleuca marginata</i> *
<i>Melaleuca tinker</i> ***
<i>Micromyrtus rogeri</i> *
<i>Mirbelia floribunda</i> *

Landform Types: Breakaway tops and slopes, flats below breakaways

Soil Types: Brown, pink, grey, white or grey-white clay or clay loam, often with lateritic gravel, often with exposed decaying laterite outcropping

VT 9 was mapped in small, scattered areas across the Study area, and was always associated with decaying, weathered breakaways (Figures 8.1 – 8.3). Generally, the vegetation mapped as VT 9 consisted of a mid shrubland of *Allocasuarina campestris*, *Melaleuca concreta* and *Melaleuca marginata* over a low shrubland frequently dominated by *Melaleuca tinkerii*. Occasionally, *Gastrolobium plicatum* was also dominant. There was also usually a low shrubland and forbland, with *Leucopogon* sp. Yandanooka (M. Hislop 2507) generally dominant, along with *Micromyrtus rogeri* (P1) and *Stylidium torticarpum* (P3). However, one unusual quadrat consisted of a low shrubland and forbland of mixed species, with no species dominating (WE045, Appendix H). As previously mentioned, VT 9 is most similar to VT 8, however VT 9 is associated with weathered and decaying breakaways with relatively unusual clay soils. This is reflected in the taxon composition of VT 9.

A total of 91 vascular plant taxa were recorded in and surrounding quadrats which grouped to form VT 9 (Appendix K), of which 84 were used in the analysis. Average taxon richness per quadrat within VT 9 was 32.7 ± 5.9 . The conservation significant flora taxa *Micromyrtus rogeri*, *Synaphea oulopha* (both P1), *Haemodorum loratum*, *Mesomelaena stygia* subsp. *deflexa*, *Stylidium drummondianum*, *Stylidium torticarpum* and *Synaphea aephynsa* (all P3) and are known to occur in VT 9; however VT 9 is not the preferred habitat for any conservation significant species recorded.

No introduced taxa were recorded in VT 9. The condition of the vegetation in all quadrats in VT 9 was ranked '1' ('Pristine') (Keighery 1994; Appendix F) and has been mapped as such (Figures 7.1 – 7.3).



Plate 13: VT 9 (Quadrat WE-070) (Photo: Woodman Environmental)

Super-group 3

Super-group 3 is comprised of VTs 10, 11 and 12. It consists of vegetation on slopes and flats associated with areas of yellow or grey-brown sand. The yellow sand was not always expressed on the surface, however was noted as being at relatively shallow depths when not on the surface. Generally, the vegetation mapped as Super-group 3 consisted of mid shrublands often dominated by *Calothamnus quadrifidus* subsp. *angustifolius*, *Grevillea biformis* subsp. *biformis* and *Allocasuarina campestris*, over species-rich low shrublands and sedgeland. The proteaceous shrubs *Banksia attenuata* and *Xylomelum angustifolium* were also often recorded in the mid shrub layer. Sedge species including *Ecdeiocolea monostachya* and *Mesomelaena pseudostygia* also often replaced shrub species as the dominant growth form in the lower stratum.

The average taxon richness per quadrat of VTs within Super-group 3 varied from 47.5 ± 5.3 taxa per quadrat in VT 10, to 26.3 ± 7.1 in VT 12. The highest number of taxa recorded was 175 in VT 10, with 96 taxa recorded in VT 12.

The species diversity in Super-group 3 was relatively high in relation to the other Supergroups (especially Super-group 1). Species from Species Groups O were predominately recorded in quadrats from Super-group 3, with fewer records of species from Species Group P, I and S (Appendix M).

VTs 10 through to 12 are described below.

VT 10: Mid sparse to open shrubland of mixed species including *Calothamnus quadrifidus* subsp. *angustifolius*, *Grevillea biformis* subsp. *biformis* and *Banksia attenuata* over low shrubland and sedgeland of mixed species dominated by *Ecdeiocolea monostachya*, *Melaleuca leuropoma*, *Daviesia divaricata* subsp. *divaricata* ms, *Mesomelaena pseudostygia* and *Banksia shuttleworthiana* on yellow-brown or occasionally grey sand on slopes and valley floors

Total Area: 1032.53 ha

Percentage of Study area: 10.82 %

Sampling: 15 quadrats (WE003, WE019, WE016, WE052, WE057, WE089, WE084, WE023, WE025, WE048, WE078, WE079, WE031, WE067, WE027),

Common taxa recorded within each stratum:

Stratum	Descriptor	Taxa
Mid Stratum 1	Mid Sparse to Open Shrubland (Shrubs 1 - 2 m)	<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i> , <i>Grevillea biformis</i> subsp. <i>biformis</i>
Lower Stratum 1	Low Shrubland and Sedgeland (Shrubs and Sedges <1 m)	<i>Pileanthus filifolius</i> , <i>Melaleuca leuropoma</i> , <i>Ecdeiocolea monostachya</i> , <i>Mesomelaena pseudostygia</i> , <i>Banksia shuttleworthiana</i> , <i>Schoenus clandestinus</i> , <i>Lepidobolus preissianus</i> subsp. <i>preissianus</i> , <i>Hibbertia hypericoides</i> , <i>Conospermum boreale</i> subsp. <i>?ascendens</i> , <i>Scholtzia laxiflora</i> , <i>Stylidium repens</i> , <i>Scaevola canescens</i> , <i>Opercularia vaginata</i> , <i>Leptospermum oligandrum</i> , <i>Hakea polyanthema</i> , <i>Daviesia divaricata</i> subsp. <i>divaricata</i> ms, <i>Dampiera spicigera</i> , <i>Hibbertia crassifolia</i> , <i>Goodenia coerulea</i> , <i>Daviesia nudiflora</i> , <i>Neurachne alopecuroidea</i> , <i>Monotaxis bracteata</i> , <i>Hakea circumalata</i> , <i>Eremaea violacea</i> subsp. <i>violacea</i> , <i>Daviesia pedunculata</i> , <i>Dampiera oligophylla</i> , <i>Acacia auronitens</i> , <i>Stylidium adpressum</i> , <i>Geleznovia verrucosa</i> , <i>Darwinia speciosa</i> , <i>Verticordia grandis</i> , <i>Stylidium diuroides</i> subsp. <i>paucifoliatum</i> , <i>Pimelea angustifolia</i> , <i>Leptospermum spinescens</i> , <i>Isopogon tridens</i> , <i>Hakea cygna</i> subsp. <i>cygna</i> , <i>Burchardia congesta</i> , <i>Allocasuarina microstachya</i> , <i>Acanthocarpus</i> sp. <i>Ajana</i> (C.A. Gardner 8596), <i>Petrophile macrostachya</i> , <i>Melaleuca aspalathoides</i> , <i>Cryptandra myriantha</i> , <i>Cassytha glabella</i> forma <i>bicallosa</i> , <i>Astroloma serratifolium</i> , <i>Astroloma microdonta</i>

Indicator Taxa:

<i>Acacia auronitens</i> *
<i>Astroloma microdonta</i> *
<i>Astroloma serratifolium</i> *
<i>Banksia shuttleworthiana</i> ***
<i>Conospermum boreale</i> subsp. <i>?ascendens</i> **

<i>Ecdeiocolea monostachya</i> ***
<i>Eremaea violacea</i> subsp. <i>violacea</i> *
<i>Isopogon tridens</i> *
<i>Melaleuca leuropoma</i> ***
<i>Mesomelaena pseudostygia</i> **
<i>Monotaxis bracteata</i> *
<i>Pileanthus filifolius</i> ***
<i>Pimelea angustifolia</i> *
<i>Stylidium adpressum</i> *

Landform Types: Upper slopes, mid slopes, lower slopes, flats, crests

Soil Types: Yellow, yellow-brown, brown or grey sand or sandy loam

VT 10 was mapped widely over large areas across the Study area, generally associated with slopes and valley floors, including a large valley running roughly north-south through the centre of the Study area (Figures 8.1 – 8.4). Generally, the vegetation mapped as VT 10 consisted of a mid sparse to open shrubland of *Calothamnus quadrifidus* subsp. *angustifolius* and *Grevillea biformis* subsp. *biformis*, however *Banksia attenuata* and *Xylomelum angustifolium* were also occasionally present. There was always a species-rich low shrubland and sedgeland present, with taxa from the family Proteaceae comprising a large percentage of this stratum. The shrubs *Melaleuca leuropoma*, *Daviesia divaricata* subsp. *divaricata* ms and *Banksia shuttleworthiana*, and the sedges *Ecdeiocolea monostachya* and *Mesomelaena pseudostygia*, were frequently the dominant taxa in the lower stratum.

VT 10 is most similar to VT 11 (Appendix L), however in comparison VT 10 was mapped on areas lower in the landscape on deeper soils, with a diverse array of shrubs dominating the lower stratum in comparison to VT 11. All quadrats which grouped into VT 10 were established in 2011.

A total of 173 vascular plant taxa were recorded in and surrounding quadrats which grouped to form VT 10 (Appendix K), of which 152 were used in the analysis. Average taxon richness per quadrat within VT 10 was 47.5 ± 5.3 . The conservation significant flora taxa *Eucalyptus crispata*, *Paracaleana dixonii* (both T (DRF)), *Micromyrtus rogeri*, ?*Stylidium carnosum* subsp. *Narrow leaves*, *Synaphea oulopha* (J.A. Wege 490) (all P1), *Persoonia filiformis*, *Schoenus badius* (both P2), *Haemodorum loratum*, *Hemiandra* sp. *Eneabba* (H. Demarz 3687), *Mesomelaena stygia* subsp. *deflexa*, *Persoonia rudis*, *Schoenus griffinianus*, *Stylidium drummondianum*, *Synaphea aephynsa* (all P3), *Banksia scabrella* (P4) and *Eucalyptus macrocarpa* subsp. *elacantha* (P4) are known to occur in VT 10. VT 10 is preferred habitat for *Banksia scabrella* (P4), *Eucalyptus macrocarpa* subsp. *elacantha* (P4), *Haemodorum loratum* (P3), *Paracaleana dixonii* (T (DRF)) and *Persoonia filiformis* (P2).

The introduced species *Arctotheca calendula* and *Hypochaeris glabra* were also recorded in VT 10. The condition of the vegetation in all quadrats in VT 10 was ranked '1' or 'Pristine' (Keighery 1994; Appendix F), and has been mapped as such (Figures 7.1 – 7.4).



Plate 14: VT 10 (Quadrat WE-003) (Photo: Woodman Environmental)

One area of degraded VT 10 (VT 10D) was mapped surrounded by pasture (Figure 8.1). No site was undertaken in this area, however the vegetation condition of the area was ranked '5' (Basic vegetation structure severely impacted by disturbance) (Keighery 1994; Appendix F). This area covers 4.74 ha, 0.05 % of the Study area.

VT 11: Mid sparse to open shrubland of *Allocasuarina campestris* and *Grevillea biformis* subsp. *biformis* over low shrubland and sedgeland dominated by *Hakea circumalata*, *Lepidobolus preissianus* subsp. *preissianus*, *Mesomelaena pseudostygia* and *M. stygia* subsp. *deflexa* (P3) on yellow or yellow-brown sand or sandy loam on mid to upper slopes

Total Area: 538.35 ha

Percentage of Study area: 5.64 %

Sampling: 6 quadrats (WE032, WE040, WE064, WE053, WE072, WE080); also includes Site 05 and Site 10

Common taxa recorded within each stratum:

Stratum	Descriptor	Taxa
Mid Stratum 1	Mid Sparse to Open Shrubland (Shrubs 1 - 2 m)	<i>Grevillea biformis</i> subsp. <i>biformis</i> , <i>Allocasuarina campestris</i> , <i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>
Lower Stratum 1	Low Shrubland and Sedgeland (Shrubs and Sedges <1 m)	<i>Schoenus clandestinus</i> , <i>Lepidobolus preissianus</i> subsp. <i>preissianus</i> , <i>Hakea circumalata</i> , <i>Ecdeiocolea monostachya</i> , <i>Dampiera spicigera</i> , <i>Scaevola canescens</i> , <i>Opercularia vaginata</i> , <i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (P3), <i>Mesomelaena pseudostygia</i> , <i>Borya sphaerocephala</i> , <i>Tricoryne humilis</i> , <i>Patersonia graminea</i> , <i>Neurachne alopecuroidea</i> , <i>Daviesia divaricata</i> subsp. <i>divaricata</i> ms, <i>Boronia coerulescens</i> subsp. <i>spinescens</i> , <i>Amphipogon caricinus</i> , <i>Thryptomene ?racemulosa</i> , <i>Scholtzia laxiflora</i> , <i>Pileanthus filifolius</i> , <i>Melaleuca leuropoma</i> , <i>Dampiera oligophylla</i> , <i>Cassytha glabella</i> forma <i>bicallosa</i>

Indicator Taxa:

<i>Boronia coerulescens</i> subsp. <i>spinescens</i> *
<i>Dampiera spicigera</i> ***
<i>Grevillea biformis</i> subsp. <i>biformis</i> **
<i>Hakea circumalata</i> ***
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i> ***
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i> *
<i>Schoenus clandestinus</i> ***

Landform Types: Upper slopes, mid slopes

Soil Types: Yellow or yellow-brown sand or sandy loam

VT 11 was mapped over a number of relatively large areas predominantly in the northern half of the Study area, and was generally associated with upland areas with sandy or sandy loam soils, rather than gravelly clay or clay loam soils (Figures 8.1 –

8.4). Generally, the vegetation mapped as VT 11 consisted of a mid sparse to open shrubland dominated by *Allocasuarina campestris*, with *Grevillea biformis* subsp. *biformis* usually present, and *Calothamnus quadrifidus* subsp. *angustifolius* often recorded. One unusual quadrat also possessed a low mallee woodland stratum, dominated by *Eucalyptus conveniens*, *E. pyriformis* and *E. sp. unidentified 2* (WE053). There was always a low shrubland and sedgeland present, however sedges were generally more dominant, with *Mesomelaena pseudostygia*, *M. stygia* subsp. *deflexa* (P3) and *Lepidobolus preissianus* subsp. *preissianus* generally dominant. As previously mentioned, VT 11 is most similar to VT 10, however in comparison VT 11 was generally found higher in the landscape on shallower soils, with *Allocasuarina campestris* frequently dominating the mid stratum, and sedges replacing shrubs as the dominant growth form in the lower stratum. All quadrats which grouped into VT 11 were established in 2011.

A total of 97 vascular plant taxa were recorded in and surrounding quadrats which grouped to form VT 11 (Appendix K), of which 84 were used in the analysis. Average taxon richness per quadrat within VT 7 was 30.7 ± 7.7 . The conservation significant flora taxa *Paracaleana dixonii*, *Thelymitra stellata* (both T (DRF)), *Micromyrtus rogeri*, *Synaphea oulopha* (both P1), *Eucalyptus macrocarpa* x *pyriformis*, *Guichenotia impudica*, *Mesomelaena stygia* subsp. *deflexa*, *Persoonia rudis*, *Stylidium drummondianum* (all P3), *Banksia scabrella*, *Eucalyptus macrocarpa* subsp. *elachantha* (both P4) and *Eucalyptus sp. unidentified 2* are known to occur in VT 11. However, VT 11 is not the preferred habitat for any of these species, except *Guichenotia impudica* (P3), where the only known location of this species in the Study area is located.

Vulpia myuros is the only introduced taxon known from VT 11. The condition of the vegetation in all quadrats in VT 11 was ranked '1' ('Pristine') (Keighery 1994; Appendix F) and it has been mapped as such (Figures 7.1 – 7.4).



Plate 15: VT 11 (Quadrat WE-080) (Photo: Woodman Environmental)

VT 12: Occasional mid sparse to open shrubland of *Allocasuarina campestris* and *Grevillea biformis* subsp. *biformis* over low shrubland and sedgeland dominated by *Beaufortia elegans*, *Hibbertia hypericoides* and *Ecdeiocolea monostachya* on grey or brown sand or sandy loam on mid to upper slopes

Total Area: 243.32 ha

Percentage of Study area: 2.55 %

Sampling: 6 quadrats (WE035, WE101, WE103, WE106, WE104, WE099)

Common taxa recorded within each stratum:

Stratum	Descriptor	Taxa
Upper Stratum 1	Occasional Low Open Woodland (Trees <10 m)	<i>Eucalyptus todtiana</i>
Mid Stratum 1	Mid Sparse to Open Shrubland (Shrubs 1 - 2 m)	<i>Banksia sessilis</i> var. <i>flabellifolia</i> , <i>Allocasuarina campestris</i> , <i>Grevillea biformis</i> subsp. <i>biformis</i> , <i>Hakea trifurcata</i>
Lower Stratum 1	Low Shrubland and Sedgeland (Shrubs and Sedges <1 m)	<i>Melaleuca</i> aff. <i>leuropoma</i> , <i>Melaleuca leuropoma</i> , <i>Hibbertia hypericoides</i> , <i>Beaufortia elegans</i> , <i>Ecdeiocolea monostachya</i> , <i>Hakea circumalata</i> ,

Indicator Taxa:

<i>Beaufortia elegans</i> ***
<i>Drosera erythrorhiza</i> *
<i>Leptospermum oligandrum</i> *

Landform Types: Mid slopes, upper slopes

Soil Types: Grey-white to Brown sand to sandy loam

VT 12 was mapped over several relatively large areas on the north-western corner of the Study area, on mid to upper slopes with sandy to sandy loam soils. The vegetation of VT 12 was dominated by a low shrubland and sedgeland of mixed species, dominated mainly by proteaceous and myrtaceous species including *Beaufortia elegans*, *Melaleuca leuropoma* and *Hibbertia hypericoides*, with sedge species such as *Ecdeiocolea monostachya* also being prevalent. A mid stratum was occasionally present, dominated by species such as *Allocasuarina campestris*, and at one quadrat there was an upper stratum of *Eucalyptus todtiana*.

VT 12 is composed of quadrats which were mainly established in 2012, however WE035 was established in 2011, and was originally incorporated into VT 8b (equivalent to VT 13b in this report). It shows similar characteristics to VTs 10 and 11 in the type of soil and position in the landscape, with the main differences in terms of species being the presence of forbs including *Drosera* spp..

A total of 95 vascular plant taxa were recorded in and surrounding quadrats which grouped to form VT 12 (Appendix K), of which 84 were used in the analysis. Average taxon richness per quadrat within VT 7 was 26.3 ± 7.1 . The conservation significant flora taxa *Paracaleana dixonii* (T (DRF)), *Micromyrtus rogeri* (P1), *Beyeria gardneri*, *Haemodorum loratum*, *Mesomelaena stygia* subsp. *deflexa*, *Persoonia rudis*, *Synaphea aephynsa*, (all P3), *Banksia scabrella* and *Eucalyptus macrocarpa* subsp. *elachantha* (both P4) are known to occur in VT 12. However, VT 12 is not the preferred habitat for any of these species, except *Beyeria gardneri* (P3), where the only known location of this species in the Study area is located.

No introduced taxa are known from VT 12. The condition of the vegetation in all quadrats in VT 12 was ranked '1' ('Pristine') (Keighery 1994; Appendix F) and it has been mapped as such (Figures 7.1 – 7.4).



Plate 16: VT 12 (Quadrat WE-106) (Photo: Woodman Environmental)

Super-group 4

Super-group 4 is comprised of VTs 13 and 14, with VT 13 divided into 2 sub-types. It consists of vegetation on slopes and flats associated with areas of grey sand. Generally, the vegetation mapped as Super-group 4 consisted of a low woodland of *Eucalyptus todtiana*, however in some sites this species was absent. Species-rich mid and low shrubland layers were always present, with VT 14 generally characterised by a greater proportion of taxa common to wetter sites.

The average taxon richness per quadrat of VTs within Super-group 4 varied from 47.9 ± 10.7 taxa per quadrat in VT 13a, to 32.9 ± 10.2 in VT 14. The highest number of taxa recorded was 155 in VT 14, with the lowest number of taxa being 140 in VT 13b.

The species diversity in Super-group 4 was relatively high in relation to the other Super-groups (especially Super-group 1). Species from Species Groups I and S were predominately recorded in quadrats from Super-group 4, with fewer records of species from Species Groups O and P (Appendix M).

VTs 13 through to 14 are described below.

VT 13a: Low open woodland of *Eucalyptus todtiana* over mid to low shrubland of mixed species dominated by *Allocasuarina humilis*, *Banksia scabrella* (P4), *Calothamnus sanguineus*, *Eremaea beaufortioides* var. *microphylla*, *Melaleuca* aff. *leuropoma* and *Hibbertia hypericoides* over low shrubland and sedgeland of mixed species including *Banksia dallanneyi* subsp. *media*, *Conostylis canteriata*, *Mesomelaena pseudostygia* and *Caustis dioica* on grey or brown sand on lower and mid slopes

Total Area: 1740.14 ha

Percentage of Study area: 18.23 %

Sampling: 9 quadrats (WE006, WE083, WE018, WE049, WE054, WE060, WE021, WE107, WE109)

Common taxa recorded within each stratum:

Stratum	Descriptor	Taxa
Upper Stratum 1	Low Open Woodland (Trees <10 m)	<i>Eucalyptus todtiana</i>
Mid Stratum 2	Mid to Low Shrubland (Shrubs < 2 m)	<i>Pityrodia verbasina</i> , <i>Melaleuca leuropoma</i> , <i>Eremaea beaufortioides</i> var. <i>microphylla</i> , <i>Calothamnus sanguineus</i> , <i>Allocasuarina humilis</i> , <i>Melaleuca</i> aff. <i>leuropoma</i> , <i>Hibbertia hypericoides</i> , <i>Hibbertia crassifolia</i> , <i>Gompholobium tomentosum</i> , <i>Banksia scabrella</i> , <i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i> , <i>Lambertia multiflora</i> var. <i>multiflora</i> , <i>Hakea trifurcata</i> , <i>Beaufortia elegans</i> , <i>Scholtzia laxiflora</i> , <i>Nuytsia floribunda</i> , <i>Lomandra hastilis</i> , <i>Hakea psilorrhyncha</i> , <i>Banksia sessilis</i> var. <i>flabellifolia</i>
Lower Stratum 1	Low Shrubland and Sedgeland (Shrubs and Sedges <0.5 m)	<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509), <i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i> , <i>Conostylis canteriata</i> , <i>Banksia dallanneyi</i> subsp. <i>media</i> , <i>Anigozanthos humilis</i> subsp. <i>humilis</i> , <i>Stylidium repens</i> , <i>Lyginia imberbis</i> , <i>Leucopogon</i> sp. Northern ciliate (R. Davis 3393), <i>Lasiopetalum drummondii</i> , <i>Hibbertia subvaginata</i> , <i>Goodenia coerulea</i> , <i>Eremaea ectadioclada</i> , <i>Desmocladius semiplanus</i> , <i>Calytrix sapphirina</i> , <i>Stylidium rigidulum</i> , <i>Stylidium crossocephalum</i> , <i>Patersonia occidentalis</i> , <i>Opercularia vaginata</i> , <i>Mesomelaena pseudostygia</i> , <i>Desmocladius parthenicus</i> , <i>Conostylis hiemalis</i> , <i>Chordifex sinuosus</i> , <i>Caustis dioica</i> , <i>Cassytha ?pomiformis</i> , <i>Xanthosia huegelii</i> , <i>Trachymene pilosa</i> , <i>Stachystemon axillaris</i> , <i>Schoenus curvifolius</i> , <i>Schoenus brevisetis</i> , <i>Podotheca gnaphalioides</i> , <i>Neurachne alopecuroidea</i> , <i>Lysinema pentapetalum</i> , <i>Isotropis cuneifolia</i> , <i>Daviesia nudiflora</i> , <i>Conostylis aculeata</i> subsp. <i>breviflora</i> , <i>Boronia ramosa</i> subsp. <i>anethifolia</i> , <i>Acacia stenoptera</i> , <i>Hakea polyanthema</i>

Indicator Taxa:

<i>Acacia stenoptera</i> *
<i>Alexgeorgea nitens</i> **
<i>Allocasuarina humilis</i> **
<i>Anigozanthos humilis</i> subsp. <i>humilis</i> ***
<i>Banksia dallanneyi</i> subsp. <i>media</i> ***
<i>Banksia sessilis</i> var. <i>flabellifolia</i> *
<i>Calytrix sapphirina</i> **
<i>Conostylis canteriata</i> *
<i>Conostylis hiemalis</i> ***
<i>Desmocladius semiplanus</i> *
<i>Eremaea ectadioclada</i> *
<i>Eucalyptus todtiana</i> **
<i>Gompholobium tomentosum</i> *
<i>Hakea psilorrhyncha</i> **
<i>Hibbertia subvaginata</i> *
<i>Isotropis cuneifolia</i> *
<i>Lambertia multiflora</i> var. <i>multiflora</i> *
<i>Lasiopetalum drummondii</i> **
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)***
<i>Leucopogon</i> sp. Northern ciliate (R. Davis 3393)*
<i>Lyginia imberbis</i> *
<i>Lysinema pentapetalum</i> *
<i>Patersonia occidentalis</i> **
<i>Quooya verbascina</i> ***
<i>Stachystemon axillaris</i> *
<i>Xanthosia huegelii</i> *

Landform Types: Mid slopes, lower slopes, plain

Soil Types: Grey-white or brown sand or sandy loam

VT 13a was mapped widely over large areas predominantly in the southern half of the Study area, and was generally associated with slopes and valley floor areas with grey sandy soils, rather than gravelly clay or clay loam soils (Figures 8.1 – 8.4). VT 13a was the most widespread mapped VT within the Study area. Generally, the vegetation mapped as VT 13a consisted of a low open woodland of *Eucalyptus todtiana*, over a mid to low, species rich shrubland, with *Allocasuarina humilis*, *Banksia scabrella* (P4), *Calothamnus sanguineus*, *Eremaea beaufortioides* var. *microphylla* and *Hibbertia hypericoides* often dominating. A low shrubland and sedgeland was also usually present, with *Banksia dallanneyi* subsp. *media* and several sedge species usually recorded. VT 13a is most similar to VT 13b, however VT 13a was generally

found in slightly drier sites, and this was reflected in the different understory composition.

A total of 143 vascular plant taxa were recorded in and surrounding quadrats which grouped to form VT 13a (Appendix K), of which 130 were used in the analysis. The conservation significant flora taxa *Paracaleana dixonii*, *Thelymitra stellata* (both T (DRF)), *Lasiopetalum ogilvieanum*, *Synaphea oulopha* (both P1), *Persoonia filiformis*, *Stylidium pseudocaespitosum* (both P2), *Allocasuarina grevilleoides*, *Haemodorum loratum*, *Hemiandra* sp. Eneabba (H. Demarz 3687), *Mesomelaena stygia* subsp. *deflexa*, *Persoonia rudis*, *Schoenus griffinianus*, *Stylidium drummondianum*, *Synaphea aephyrsa*, *Verticordia luteola* var. *luteola* (all P3), *Banksia scabrella* and *Eucalyptus macrocarpa* subsp. *elachantha* (both P4) are known to occur in VT 13a. This VT also is preferred habitat for *Banksia scabrella* (P4), *Lasiopetalum ogilvieanum* (P1), *Hemiandra* sp. Eneabba (H. Demarz 3687) (P3), *Paracaleana dixonii* (T (DRF)), as well as for *Schoenus griffinianus* (P3) and *Stylidium pseudocaespitosum* (P2) which are only known from one location each in the Study area.

The only introduced species known from VT 13a is *Wahlenbergia capensis*. The condition of the vegetation in all quadrats in VT 13a was ranked '1' ('Pristine') (Keighery 1994; Appendix F), and it has been mapped as such (Figures 7.1 – 7.4).



Plate 17: VT 13a (Quadrat WE-054) (Photo: Woodman Environmental)

Three small areas of degraded VT 13a (VT 13aD) were mapped in remnant bushland surrounded by pasture (Figures 8.2, 8.4). These areas cover a total of 5.02 ha (0.05 % of the Study area). The vegetation condition in these areas was ranked '5' (Basic vegetation structure severely impacted by disturbance') (Keighery 1994; Appendix F).

VT 13b: Low open woodland of *Eucalyptus todtiana* over mid to low shrubland of mixed species dominated by *Allocasuarina humilis*, *Calothamnus sanguineus*, *Hakea trifurcata*, *Hibbertia hypericoides* and *Melaleuca leuropoma* over low shrubland and rushland of mixed species including *Banksia dallanneyi* subsp. *media*, *Conostylis aculeata* subsp. *breviflora* and *Conostylis canteriata* on grey, brown or yellow sand on flats, in depressions and on slopes

Total Area: 547.55 ha

Percentage of Study area: 5.74 %

Sampling: 7 quadrats (WE034, WE088, WE050, WE066, WE073, WE038, WE075)

Common taxa recorded within each stratum:

Stratum	Descriptor	Taxa
Upper Stratum 1	Low Open Woodland (Trees <10 m)	<i>Eucalyptus todtiana</i>
Mid Stratum 2	Mid to Low Shrubland (Shrubs < 2 m)	<i>Acacia blakelyi</i> , <i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i> , <i>Banksia scabrella</i> , <i>Beaufortia elegans</i> , <i>Hakea polyanthema</i> , <i>Scholtzia laxiflora</i> , <i>Verticordia densiflora</i> , <i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i> , <i>Gompholobium tomentosum</i> , <i>Hibbertia crassifolia</i> , <i>Allocasuarina humilis</i> , <i>Eremaea beaufortioides</i> var. <i>microphylla</i> , <i>Hakea trifurcata</i> , <i>Hibbertia hypericoides</i> , <i>Melaleuca leuropoma</i> , <i>Calothamnus sanguineus</i> , <i>Jacksonia hakeoides</i>
Lower Stratum 1	Low Shrubland and Rushland (Shrubs and Rushes <0.5 m)	<i>Babingtonia camphorosmae</i> , <i>Calytrix sapphirina</i> , <i>Hypocalymma hirsutum</i> , <i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i> , <i>Lepidobolus preissianus</i> subsp. <i>preissianus</i> , <i>Trachymene pilosa</i> , <i>Anigozanthos humilis</i> subsp. <i>humilis</i> , <i>Cassytha glabella</i> forma <i>bicallosa</i> , <i>Caustis dioica</i> , <i>Conostylis aculeata</i> subsp. <i>breviflora</i> , <i>Lyginia imberbis</i> , <i>Schoenus clandestinus</i> , <i>Mesomelaena pseudostygia</i> , <i>Conostylis canteriata</i> , <i>Neurachne alopecuroidea</i> , <i>Banksia dallanneyi</i> subsp. <i>media</i>

Indicator Taxa: No indicator taxa

Landform Types: Mid slopes, lower slopes, flats, drainage depressions

Soil Types: Grey, brown or yellow sand or sandy loam

VT 13b was mapped in several large areas, predominantly in the northern half of the Study area, and was generally associated with mid to lower slopes, flats and depressions with grey and occasionally brown sandy soils (Figures 8.1 – 8.4). Generally, the vegetation mapped as VT 13a consisted of a low open woodland of *Eucalyptus todtiana* (although this stratum was occasionally not present) over a mid to low, species rich shrubland, with *Allocasuarina humilis*, *Calothamnus sanguineus*, *Hakea trifurcata*, *Hibbertia hypericoides* and *Melaleuca leuropoma* often dominating.

A low shrubland and sedgeland was also usually present, with *Banksia dallanneyi* subsp. *media* and several species of *Conostylis* usually recorded. As previously mentioned, VT 13b is most similar to VT 13a, however VT 13b was generally found in slightly wetter sites and this was reflected in the different understory composition, including the more frequent presence of taxa such as *Hakea trifurcata* and *Conostylis aculeata* subsp. *breviflora*.

A total of 140 vascular plant taxa were recorded in and surrounding quadrats which grouped to form VT 13b (Appendix K), of which 120 were used in the analysis. Average taxon richness per quadrat within VT 13b was 36.7 ± 11.8 . The conservation significant flora taxa *Micromyrtus rogeri*, *Synaphea oulopha* (both P1), *Schoenus badius* (P2), *Haemodorum loratum*, *Hemiandra* sp. Eneabba (H. Demarz 3687), *Mesomelaena stygia* subsp. *deflexa*, *Stylidium drummondianum* (all P3) and *Banksia scabrella* (P4) are known to occur in VT 13b, however it is preferred habitat only for *Banksia scabrella* (P4).

The introduced taxa *Hypochaeris glabra* and *Pentameris airoides* subsp. *airoides* were also recorded in VT 13b. The condition of the vegetation in all quadrats in VT 13b was ranked '1' or 'Pristine' (Keighery 1994; Appendix F), and has been mapped as such (Figures 7.1 – 7.4).



Plate 18: VT 13b (Quadrat WE-083) (Photo: Woodman Environmental)

VT 14: Low open shrubland dominated by *Calothamnus quadrifidus* subsp. *angustifolius*, *Banksia carlinoides*, *Hakea lissocarpa* and *Verticordia densiflora* over low open shrubland, sedgeland and forbland dominated by *Dampiera teres* (broad-leaf variant), *Jacksonia angulata*, *Harperia lateriflora*, *Opercularia vaginata* and *Melaleuca trichophylla* on grey-brown sands, sandy loams and clay loams in minor drainage lines and on flats

Total Area: 166.89 ha

Percentage of Study area: 1.75 %

Sampling: 8 quadrats (WE007, WE086, WE008, WE037, WE024, WE097, WE109, WE110)

Common taxa recorded within each stratum:

Stratum	Descriptor	Taxa
Lower Stratum 1	Low Open Shrubland (Shrubs < 1 m)	<i>Melaleuca leuropoma</i> , <i>Banksia carlinoides</i> , <i>Verticordia densiflora</i> var. <i>densiflora</i> , <i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i> , <i>Hakea lissocarpa</i>
Lower Stratum 2	Low Open Shrubland, Sedgeland and Forbland (Shrubs, Sedges and Forbs <0.5 m)	<i>Acacia dilatata</i> , <i>Babingtonia camphorosmae</i> , <i>Borya sphaerocephala</i> , <i>Caustis dioica</i> , <i>Drosera menziesii</i> , <i>Grevillea umbellulata</i> , <i>Hakea spathulata</i> , <i>Hibbertia acerosa</i> , <i>Isotoma hypocrateriformis</i> , <i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i> , <i>Podotheca gnaphalioides</i> , <i>Ptilotus manglesii</i> , <i>Schoenus clandestinus</i> , <i>Trachymene pilosa</i> , <i>Conostylis aculeata</i> subsp. <i>breviflora</i> , <i>Dampiera teres</i> (broad-leaf variant), <i>Harperia lateriflora</i> , <i>Schoenus badius</i> , <i>Stylidium dichotomum</i> , <i>Calytrix depressa</i> , <i>Jacksonia angulata</i> , <i>Neurachne alopecuroidea</i> , <i>Opercularia vaginata</i> , <i>Melaleuca trichophylla</i> , <i>Melaleuca concreta</i> , <i>Hibbertia hypericoides</i> ,

Indicator Taxa:

<i>Calytrix depressa</i> *
<i>Drosera menziesii</i> subsp. <i>menziesii</i> *
<i>Harperia lateriflora</i> *
<i>Jacksonia angulata</i> *
<i>Opercularia vaginata</i> ***

Landform Types: Mid slopes, lower slopes, flats, drainage lines, wetlands, depressions

Soil Types: Grey, grey-white, brown or grey-brown sand, sandy loam or clay loam

VT 14 was mapped in several small areas in the western part of the Study area, and was generally associated with wet flats and drainage lines (Figures 8.1, 8.3).

Generally, the vegetation mapped as VT 14 consisted of a low open shrubland, with *Banksia carlinoides* usually dominating, along with *Calothamnus quadrifidus* subsp. *angustifolius*, *Hakea lissocarpha* and *Verticordia densiflora*. A species-rich low shrubland, sedgeland and forbland was always present, with *Dampiera teres* (broad-leaf variant), *Jacksonia angulata*, *Harperia lateriflora*, *Opercularia vaginata* and *Melaleuca trichophylla* usually recorded as dominants. Although VT 14 is most closely aligned with VT 13a and 13b (Appendix L), it is not similar to any other VTs mapped in the Study area. This is reflected by the presence of a number of forb, sedge and low shrub species either not recorded or recorded infrequently elsewhere.

A total of 153 vascular plant taxa were recorded in and surrounding quadrats which grouped to form VT 14 (Appendix K), of which 119 were used in the analysis. Average taxon richness per quadrat within VT 9 was 32.9 ± 10.2 . The conservation significant flora taxa *Schoenus badius* (P2) and *Banksia scabrella* (P4) were recorded in VT 14, however this VT is not preferred habitat for either of these species.

Several introduced taxa were recorded in VT 14, including *Arctotheca calendula*, *Hypochaeris glabra*, *Ursinia anthemoides* and *Vulpia myuros*. The condition of the vegetation in all quadrats in VT 14 was ranked '1' or 'Pristine' (Keighery 1994; Appendix F), and has been mapped as such (Figures 7.1, 7.3).



Plate 19: VT 14 (Quadrat WE-086) (Photo: Woodman Environmental)

4.2.2 Other Areas Mapped

PC 1D: Low woodland of *Acacia acuminata* over introduced pasture grasses and isolated native forbs including *Ptilotus manglesii* and *Arthropodium dyeri* on grey-brown clay loams on flats adjacent to seasonal creeks

One area of PC1D has been mapped (Figure 8.1). This area is located on a flat adjacent to Sand Plain Creek on private property, surrounded for the most part by pasture but also by communities VT 4 and VT 4D. This area covers 9.5 ha (0.1 % of the Study area). One site was undertaken in this unit (Site 02), and the condition of the vegetation was ranked '4' (Good) (Keighery 1994; Appendix F). An upper stratum of *Acacia acuminata* over a very species poor lower stratum of *Arthropodium dyeri* and *Ptilotus manglesii* was recorded, along with the Declared Pest *Echium plantagineum*.

C: Cleared Land

Areas where no native vegetation was present due to human disturbance (predominantly paddocks) were mapped as 'Cleared Land' (Figures 8.1 – 8.4). A total of 3099.26 ha of Cleared Land was mapped in the Study area.

4.2.3 Vegetation Condition

In general, most of the vegetation in the Study area within the VCL was ranked and mapped as '1' or 'Pristine' (Keighery 1994; Appendix F), with the vegetation being pristine or nearly so, with no obvious signs of disturbance (Figure 7.1 - 7.4). Relatively few weeds were recorded in areas ranked and mapped as '1'.

Several quadrats located under *Eucalyptus accedens* (VTs 1a and 1b) within the VCL were ranked as '2', with these areas being structurally intact, with disturbance affecting individual species and the presence of some weeds of non-aggressive species. With regard to mapping the condition of these areas, some were noted as having both '1' and '2' condition rankings within the area, and were therefore mapped as a condition mosaic of 1/2 (Figure 7.4).

There were also small disturbed areas noted that are associated with historical petroleum exploration, however much of these areas have recovered to the point of resembling surrounding areas of vegetation.

Within the remnant bushland on private property within the Study area, relatively few areas were mapped as '1', including VTs 6, 8, 7a and 11 (Figures 7.2, 7.4). In these areas although some weeds were noted they were relatively scarce. These areas were also not situated on or near creeklines, which typically have a much greater disturbance history and weed loading. Several areas were mapped as '2' (Excellent), again mainly due to the presence of weeds of non-aggressive species, and were related to various VTs, including 1a, 8, 11, 13a, and 13b. Areas on private property which were mapped as vegetation condition rankings '1' and '2' were mostly a reflection of rockier soils on uplands, which are less suited to pasture and cropping in comparison to loamier soils on lower slopes and consequently the vegetation has had less disturbance.

Areas on private property where the vegetation condition has been mapped '3' (Very Good), '4' (Good) and '5' (Poor) were mainly related to remnant bushland surrounding Sand Plain Creek (Figures 7.1, 7.2). In these areas, the vegetation has experienced a decline in native species diversity due to clearing, as well as increased impact due to grazing by stock, and increased weed loading. Weed loading in these areas is increased due to a combination of greater availability of water, loamier soils, close proximity of pasture areas, and introduction of weed seeds through both grazing stock and from areas upstream after rain and flood events.

4.2.4 Significance of Vegetation

No VTs mapped in the Study area are equivalent to any state-listed TECs or PECs, or any nationally-listed threatened ecological communities (DEC 2012c, d; DSEWPac 2012b). Searches of the DEC TEC and PEC database have been undertaken, and results showed that no TECs or PECs are known from within the Study area (DEC 2011a), although two TECs are known within the vicinity of the Study area ('Assemblages of organic mound springs of the Three Springs area' and 'Ferricrete floristic community (Rocky Springs type)'), neither were recorded in the Study area.

Table 14 presents the local significance of each VT, as defined in Table 8. The local significance of all VTs except VTs 13b and 14 was ranked 4, with these VTs considered highly significant, as outlined below:

- VTs 1a, 1b, 2, 3, 4, 5, 6 and 9 each comprised less than 1 % of the Study area, and generally occurred on landforms and soils that were restricted in the Study area, including decaying breakaways, clay and sandy soils supporting *Eucalyptus accedens*, or in the vicinity of drainage lines.
- VTs 7a, 7b, 8, 10, 11, 12, and 13a, although comprising 1-10 % (or > 10 % in the case of VTs 10 and 13a) of the Study area, and occurring on landforms that were common and widespread locally, provided habitat for one or more taxa listed as T (DRF), as well as numerous Priority flora taxa, some of which were restricted to one or a few of these VTs.
- VT 14 was ranked 3, and was considered to be of moderate local significance; it comprises 1-10 % of the Study area and occurs on landforms that were locally uncommon and restricted, and while it is habitat for several Priority flora taxa, was not primary habitat for any of these taxa.
- VT 13b was ranked 2, and was not considered to be of local significance; it comprises 1-10 % of the Study area and occurs on landforms that were common and widespread locally, and while it is habitat for several Priority flora taxa, was not primary habitat for any of these taxa.

Following comparison of VTs described within the Study area with FCTs described in the NSSA by Woodman Environmental (2009b, c), it is apparent that some of the VTs described within the Study area may be equivalent to FCTs described in the NSSA. These are outlined below, however it should be noted that these are preliminary comparisons only, with statistical analysis required to confirm any inferred similarities:

- VTs 1a, 1b, 2 and 3 share some similarities with FCT 16a (Low Woodland of *Eucalyptus accedens* and/or *Eucalyptus* spp. over Shrubland dominated by

- Banksia* spp. and *Petrophile* spp. on sandy gravels on flats), however are not likely to be equivalent to FCT 16a based on understorey composition;
- VT 4 shares some similarities with FCT 10a (Heath to Thicket dominated by *Allocasuarina campestris* and/or *Banksia leptophylla* var. *leptophylla* on grey or brown sandy clay in drainage lines), however as the understorey components are quite different they are not likely to be equivalent;
 - VT 6 shares some similarities with FCT 18 (Thicket dominated by *Melaleuca viminea* subsp. *viminea*, with occasional *Eucalyptus loxophleba* subsp. *loxophleba* or *Eucalyptus camaldulensis* in clay flats), however the understorey composition is different and therefore they are unlikely to be equivalent;
 - VTs 7a and 7b appear to be equivalent to FCT 5e (Heath to Low Heath dominated by *Banksia* spp. and *Melaleuca* spp. over *Ecdeiocolea monostachya* on grey or brown sandy clay or gravel on lower slopes and plains);
 - VT 10 shares some similarities with FCT 2b (Heath to Thicket of mixed shrubs commonly including *Melaleuca leuropoma*, *Hibbertia hypericoides*, *Banksia shuttleworthiana* and *Allocasuarina humilis* over *Ecdeiocolea monostachya* on yellow or brown sand and sandy clay);
 - VTs 13a and 13b share some similarities with FCT 4a (Species rich Woodlands and Heaths on grey sand in the eastern portion of the Eneabba sandplain). Common species include *Conospermum boreale* subsp. *?boreale*, *Ecdeiocolea monostachya*, *Eremaea beaufortioides*, *Hakea polyanthema* and *Banksia candolleana*), however they occur on different landforms, and may not be equivalent; and
 - VT 14 shares some similarities with FCT 16b (Highly disturbed Scrub with *Calothamnus quadrifidus* on grey or brown sand in drainage lines), however is unlikely to be equivalent based on understorey composition.

However, without further statistical analysis, definitive correlations between VTs in the Study area and the NSSA FCTs cannot be made. Therefore these VTs may still be of regional significance.

It is unlikely that VTs 5, 8, 9, 11 and 12 are equivalent to FCTs present in the NSSA, although as previously mentioned, without further statistical analysis definitive correlations cannot be made to the NSSA FCTs. These VTs may be of regional significance.

The vegetation associations of the Tathra vegetation system that occur within the Study area (as defined by Shepherd *et al.* (2002)) are also well below their pre-European extents, with little of their current extent reserved (Table 1), particularly in reference to areas of Tathra-379, which currently has less than 30 % of the pre-European mapped extent remaining. This increases the likelihood of the VTs in the Study area being of regional significance.

Table 14: Local and Regional Conservation Significance of Vegetation Types

VT	Extent in Study area (ha) (% of Study area)	Presence of Significant Flora Taxa	Local Conservation Significance Comments	Local Conservation Significance Ranking of VT	Regional Conservation Significance
1a	25.42 (0.27)	<i>Micromyrtus rogeri</i> (P1) <i>Stylidium drummondianum</i> (P3) <i>Stylidium torticarpum</i> (P3)	VT comprises <1 % of Study area; Landforms on which VT occurs (sandy soils on slopes supporting <i>Eucalyptus accedens</i>) locally uncommon and restricted CS flora taxa present not predominantly restricted to VT	4	Likely to be regionally uncommon and possibly restricted, based on species composition and landform/soil type, and level of clearing of Tathra vegetation system
1b	41.62 (0.44)	<i>Eucalyptus abdita</i> (P2) <i>Micromyrtus rogeri</i> (P1) <i>Stylidium drummondianum</i> (P3) <i>Stylidium torticarpum</i> (P3) <i>Synaphea oulopha</i> (P1)	VT comprises <1 % of Study area; Landforms on which VT occurs (clay soils on mid-upper slopes supporting <i>Eucalyptus accedens</i>) locally uncommon and restricted CS flora taxa present not predominantly restricted to VT	4	Likely to be regionally uncommon and possibly restricted, based on species composition and landform/soil type, and level of clearing of Tathra vegetation system
2	5.66 (0.06)	-	VT comprises <1 % of Study area; Landforms on which VT occurs (sandy loams on flats or slopes supporting <i>Eucalyptus accedens</i> and/or <i>Eucalyptus loxophleba</i> subsp. <i>loxophleba</i>) locally uncommon and restricted CS flora taxa not known in VT	4	Likely to be regionally uncommon and possibly restricted, based on species composition and landform/soil type, and level of clearing of Tathra vegetation system
3	21.52 (0.23)	<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i> (P4) <i>Haemodorum loratum</i> (P3) <i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (P3) <i>Stylidium torticarpum</i> (P3)	VT comprises <1 % of Study area; Landforms on which VT occurs (clay soils on flats near breakaways supporting <i>Eucalyptus accedens</i>) locally uncommon and restricted CS flora taxa present not predominantly restricted to VT	4	Likely to be regionally uncommon and possibly restricted, based on species composition and landform/soil type, and level of clearing of Tathra vegetation system
4	47.89 (0.50)	<i>Malleostemon decipiens</i> (P1) (PH) <i>Stylidium torticarpum</i> (P3) <i>Thryptomene</i> sp. <i>Mingenew</i> (Diels & Pritzel 332) (P3) (PH)	VT comprises <1 % of Study area; Landforms on which VT occurs (sands to loams on flats near seasonal creeks) locally uncommon and restricted CS flora taxon present which is predominantly restricted to VT	4	Likely to be regionally uncommon and possibly restricted, based on species composition and landform/soil type, and level of clearing of Tathra vegetation system

VT	Extent in Study area (ha) (% of Study area)	Presence of Significant Flora Taxa	Local Conservation Significance Comments	Local Conservation Significance Ranking of VT	Regional Conservation Significance
5	39.69 (0.42)	<i>Acacia isoneura</i> subsp. <i>isoneura</i> (P3) (PH) <i>Malleostemon decipiens</i> (P1) (PH) <i>Thryptomene</i> sp. <i>Mingenew</i> (Diels & Pritzel 332) (P3)	VT comprises <1 % of Study area; Landforms on which VT occurs (sands to clay-loams within and on banks of seasonal creeks) locally uncommon and restricted CS flora taxa present which are predominantly restricted to VT	4	Likely to be regionally uncommon and possibly restricted, based on species composition and landform/soil type, and level of clearing of Tathra vegetation system
6	3.20 (0.03)	-	VT comprises <1 % of Study area; Landforms on which VT occurs (clay on slopes above seasonal creeks) locally uncommon and restricted CS flora taxa not known in VT	4	Likely to be regionally uncommon and possibly restricted, based on species composition and landform/soil type, and level of clearing of Tathra vegetation system
7a	799.11 (8.37)	<i>Allocasuarina grevilleoides</i> (P3) (PH) <i>Banksia scabrella</i> (P4) (PH) <i>Calytrix chrysantha</i> (P4) (PH) <i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i> (P4) (PH) <i>Haemodorum loratum</i> (P3) (PH) <i>Hemiandra</i> sp. <i>Eneabba</i> (H. Demarz 3687) (P3) (PH) <i>Lasiopetalum ogilvieanum</i> (P1) <i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (P3) <i>Micromyrtus rogeri</i> (P1) <i>Paracaleana dixonii</i> (T (DRF)) <i>Persoonia filiformis</i> (P2) <i>Persoonia rudis</i> (P3) <i>Schoenus badius</i> (P2) <i>Stylidium drummondianum</i> (P3) <i>Synaphea aephyntsa</i> (P3) (PH) <i>Synaphea oulopha</i> (P1) (PH) <i>Thelymitra stellata</i> (T (DRF)) <i>Thryptomene</i> sp. <i>Mingenew</i> (Diels & Pritzel 332) (P3)	VT comprises 1-10 % of Study area; Landforms on which VT occurs (slopes and crests with laterite) locally common and widespread; Habitat for taxon listed as T (DRF) and numerous Priority flora taxa, some which are potentially restricted to this VT.	4	Possibly regionally common and widespread, however may be of regional significance based on level of clearing of Tathra vegetation system

VT	Extent in Study area (ha) (% of Study area)	Presence of Significant Flora Taxa	Local Conservation Significance Comments	Local Conservation Significance Ranking of VT	Regional Conservation Significance
7b	663.65 (6.95)	<i>Allocasuarina grevilleoides</i> (P3) <i>Banksia fraseri</i> ?var. <i>crebra</i> (P3) (PH) <i>Banksia scabrella</i> (P4) (PH) <i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i> (P4) <i>Eucalyptus macrocarpa</i> x <i>pyriformis</i> (P3) <i>Haemodorum loratum</i> (P3) <i>Lasiopetalum ogilvieanum</i> (P1) <i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (P3) <i>Micromyrtus rogeri</i> (P1) <i>Paracaleana dixonii</i> (T (DRF)) (PH) <i>Persoonia filiformis</i> (P2) <i>Persoonia rudis</i> (P3) <i>Stylidium drummondianum</i> (P3) <i>Stylidium torticarpum</i> (P3) <i>Synaphea aephynsa</i> (P3) <i>Synaphea oulopha</i> (P1) <i>Thelymitra stellata</i> (T (DRF))	VT comprises 1-10 % of Study area; Landforms on which VT occurs (slopes and crests with laterite) locally common and widespread; Habitat for taxon listed as T (DRF) and numerous Priority flora taxa, some which are potentially restricted to this VT.	4	Possibly regionally common and widespread, however may be of regional significance based on level of clearing of Tathra vegetation system

VT	Extent in Study area (ha) (% of Study area)	Presence of Significant Flora Taxa	Local Conservation Significance Comments	Local Conservation Significance Ranking of VT	Regional Conservation Significance
8	443.93 (4.65)	<i>Allocasuarina grevilleoides</i> (P3) (PH) <i>Banksia scabrella</i> (P4) <i>Eucalyptus abdita</i> (P2) (PH) <i>Eucalyptus crispata</i> (T (DRF)) (PH) <i>Eucalyptus leprophloia</i> (T (DRF)) <i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i> (P4) <i>Eucalyptus macrocarpa</i> x <i>pyriformis</i> (P3) <i>Haemodorum loratum</i> (P3) <i>Lasiopetalum ogilvieanum</i> (P1) <i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (P3) (PH) <i>Micromyrtus rogeri</i> (P3) (PH) <i>Paracaleana dixonii</i> (T (DRF)) <i>Persoonia rudis</i> (P3) <i>Stylidium drummondianum</i> (P3) (PH) <i>Stylidium torticarpum</i> (P3) (PH) <i>Synaphea aephynsa</i> (P3) (PH) <i>Synaphea oulopha</i> (P1) (PH) <i>Thelymitra stellata</i> (T (DRF)) (PH)	VT comprises 1-10 % of Study area; Landforms on which VT occurs (crests and breakaways with laterite) relatively locally common and widespread; Habitat for several taxa listed as T (DRF) and numerous Priority flora taxa, some of which are predominantly restricted to this VT	4	Likely to be regionally uncommon and possibly restricted, based on species composition and landform/soil type, level of clearing of Tathra vegetation system
9	50.2 (0.53)	<i>Haemodorum loratum</i> (P3) <i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (P3) <i>Micromyrtus rogeri</i> (P1) <i>Stylidium drummondianum</i> (P3) <i>Stylidium torticarpum</i> (P3) <i>Synaphea aephynsa</i> (P3) <i>Synaphea oulopha</i> (P1)	VT comprises <1 % of Study area; Landforms on which VT occurs (decaying breakaway slopes and associated flats) locally uncommon and restricted; Habitat for several Priority flora taxa, although none are restricted to this VT	4	Likely to be regionally uncommon and possibly restricted, based on species composition and landform/soil type, and level of clearing of Tathra vegetation system

VT	Extent in Study area (ha) (% of Study area)	Presence of Significant Flora Taxa	Local Conservation Significance Comments	Local Conservation Significance Ranking of VT	Regional Conservation Significance
10	1032.53 (10.82)	<i>Banksia scabrella</i> (P4) (PH) <i>Eucalyptus crispata</i> (T (DRF)) <i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i> (P4) (PH) <i>Haemodorum loratum</i> (P4) (PH) <i>Hemiandra</i> sp. Eneabba (H. Demarz 3687) (P3) <i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (P3) <i>Micromyrtus rogeri</i> (P1) <i>Paracaleana dixonii</i> (T (DRF)) (PH); <i>Persoonia filiformis</i> (P3) (PH) <i>Persoonia rudis</i> (P3) <i>Schoenus badius</i> (P2) <i>Schoenus griffinianus</i> (P3) <i>Stylidium drummondianum</i> (P3) ? <i>Stylidium carnosum</i> subsp. <i>Narrow leaves</i> (J.A. Wege 490) (P1) <i>Synaphea aephyrsa</i> (P3)	VT comprises >10 % of Study area; Landforms on which VT occurs (slopes and valley floors with yellow sand) locally common and widespread; Habitat for taxon listed as T (DRF) and numerous Priority flora taxa, some of which are predominantly known from this VT	4	Possibly regionally common and widespread, however may be of regional significance based on level of clearing of Tathra vegetation system

VT	Extent in Study area (ha) (% of Study area)	Presence of Significant Flora Taxa	Local Conservation Significance Comments	Local Conservation Significance Ranking of VT	Regional Conservation Significance
11	538.35 (5.64)	<i>Banksia scabrella</i> (P4) <i>Eucalyptus abdita</i> (P2) (potential location) <i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i> (P4) <i>Eucalyptus macrocarpa</i> x <i>pyriformis</i> (P3) <i>Guichenotia impudica</i> (P3) (PH) <i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (P3) <i>Micromyrtus rogeri</i> (P1) <i>Paracaleana dixonii</i> (T (DRF)) <i>Persoonia rudis</i> (P3) <i>Stylidium drummondianum</i> (P3) <i>Synaphea oulopha</i> (P1) <i>Thelymitra stellata</i> (T (DRF))	VT comprises 1-10 % of Study area; Landforms on which VT occurs (crests and slopes with yellow sand) relatively locally common and widespread; Habitat for taxon listed as T (DRF) and numerous Priority flora taxa, one of which is predominantly known from this VT	4	Likely to be regionally uncommon and possibly restricted, based on species composition and landform/soil type, level of clearing of Tathra vegetation system
12	243.32 (2.55)	<i>Banksia scabrella</i> (P4) <i>Beyeria gardneri</i> (P3) (PH) <i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i> (P4) <i>Haemodorum loratum</i> (P3) <i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (P3) <i>Micromyrtus rogeri</i> (P1) <i>Paracaleana dixonii</i> (T (DRF)) <i>Persoonia rudis</i> (P3) <i>Synaphea aephyrsa</i> (P3)	VT comprises 1-10 % of the Study area Landforms on which VT occurs (sand to sandy loam on mid to upper slopes) relatively locally common and widespread; Habitat for taxon listed as T (DRF) and numerous Priority flora taxa, one of which is predominantly known from this VT	4	Possibly regionally common and widespread, however may be of regional significance based on level of clearing of Tathra vegetation system

VT	Extent in Study area (ha) (% of Study area)	Presence of Significant Flora Taxa	Local Conservation Significance Comments	Local Conservation Significance Ranking of VT	Regional Conservation Significance
13a	1740.14 (18.23)	<i>Allocasuarina grevilleoides</i> (P3) <i>Banksia scabrella</i> (P4) (PH) <i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i> (P4) <i>Haemodorum loratum</i> (P3) <i>Hemiandra</i> sp. Eneabba (H. Demarz 3687) (P3) (PH) <i>Lasiopetalum ogilvieanum</i> (P1) (PH) <i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (P3) <i>Paracaleana dixonii</i> (T (DRF)) (PH) <i>Persoonia filiformis</i> (P2) <i>Persoonia rudis</i> (P3) <i>Schoenus griffinianus</i> (P3) (PH) <i>Stylidium drummondianum</i> (P3) <i>Stylidium pseudocaespitosum</i> (P2) (PH) <i>Synaphea aephyrsa</i> (P3) <i>Synaphea oulopha</i> (P1) <i>Thelymitra stellata</i> (T (DRF)) <i>Verticordia luteola</i> var. <i>luteola</i> (P3) (PH)	VT comprises >10 % of Study area; Landforms on which VT occurs (slopes with grey sand) locally common and widespread; Habitat for taxon listed as T (DRF) and numerous Priority flora taxa, some of which are predominantly known from this VT	4	Possibly regionally common and widespread, however may be of regional significance based on level of clearing of Tathra vegetation system
13b	547.55 (5.74)	<i>Banksia scabrella</i> (P4) (PH) <i>Haemodorum loratum</i> (P3) <i>Hemiandra</i> sp. Eneabba (H. Demarz 3687) (P3) <i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (P3) <i>Micromyrtus rogeri</i> (P1) <i>Schoenus badius</i> (P2) <i>Stylidium drummondianum</i> (P3) <i>Synaphea oulopha</i> (P1)	VT comprises 1-10 % of Study area; Landforms on which VT occurs (slopes and depressions with grey to brown sand) locally common and widespread Habitat for CS flora taxa (Priority flora), however not the preferred habitat for these taxa	2	Possibly regionally common and widespread, however may be of regional significance based on level of clearing of Tathra vegetation system

VT	Extent in Study area (ha) (% of Study area)	Presence of Significant Flora Taxa	Local Conservation Significance Comments	Local Conservation Significance Ranking of VT	Regional Conservation Significance
14	166.89 (1.75)	<i>Banksia scabrella</i> (P4) <i>Schoenus badius</i> (P2)	VT comprises 1-10 % of Study area; Landforms on which VT occurs (drainage lines and depressions) locally uncommon and restricted Habitat for CS flora taxa (Priority flora), however not the preferred habitat for these taxa	3	Likely to be regionally uncommon and possibly restricted, based on species composition and landform/soil type, and level of clearing of Tathra vegetation system

Note: (PH) refers to preferred habitat for that particular taxon based on known location records within the Study area.

5. DISCUSSION

5.1 FLORA OF THE STUDY AREA

A total of 535 discrete vascular flora taxa and one known hybrid were recorded within the Study area in 2011 and 2012. This total, while being less than the totals recorded in the Tiwest Dongara survey area and the Iluka Project Area (543 and 940 taxa respectively) (Woodman Environmental 2009b, c), is very high given the relatively small size and relatively low diversity of habitats in the Study area. Both the Tiwest Dongara survey area and the Iluka Project Area were much larger (more than double the size) of the Study area, and covered a much wider variety of habitats (Woodman Environmental 2009b, c). However, the high total was not unexpected, given the location of the Study area in the Northern Sandplains region of Western Australia, an area internationally recognised as being rich in species diversity and endemism (Desmond & Chant 2001).

Thirty confirmed and two probable listed conservation significant flora taxa are known from the Study area. Of these, three confirmed taxa listed as T (DRF) are known from the Study area (*Eucalyptus crispata*, *Paracaleana dixonii* and *Thelymitra stellata*). A fourth taxon listed as T (DRF), *Eucalyptus leprophloia*, is known from historical records in the Study area (DEC data), but was not recorded in either 2011 or 2012 despite specific searching in historical locations of this taxon. In addition, one location of *Eucalyptus ?crispata* was recorded, where material collected could not be further identified. This location should be treated as if it represents *E. crispata* until further material can be collected to determine its true taxonomic status. These taxa are protected under the *Wildlife Conservation Act 1950* and the EPBC Act, and are subject to ministerial permits if individuals are proposed to be impacted.

The remaining conservation significant flora taxa known from the Study area consist of 25 confirmed, two probable and one hybrid listed Priority flora taxa. Of these, 23 confirmed, one probable and one hybrid Priority flora taxa were recorded in 2011 - 2012, with two confirmed and one probable Priority flora taxa known from records from previous surveys undertaken in the Study area. The populations in the Study area of many of these taxa, particularly those listed as P1 and P2, were ranked as being of 'High' significance to the overall conservation significance of each taxon.

Opportunistic searching was carried out for these conservation significant taxa in 2012, within the Study area located in VCL and also within remnant bushland on private property which were unable to be accessed in 2011. Despite intense survey for *Paracaleana dixonii* (T (DRF)), as individuals do not flower each year, in combination with it occurring across a relatively wide range of habitats at low densities, it is likely that not all individuals of this taxon have been recorded. *Thelymitra stellata* (T (DRF)) is more habitat specific, however not all areas of laterite were intensively searched and therefore some locations of this taxon likewise may not have been recorded.

It is considered that all locations of *Eucalyptus crispata* have been recorded in the Study area. This is due to the relative ease of survey (in comparison to *Paracaleana dixonii* and *Thelymitra stellata*) of this taxon, due to its large size and habit, and targeted searching within its known preferred habitat. It is considered unlikely that

Eucalyptus leprophloia occurs within the Study Area. Both historic records of locations of this taxon were surveyed, as well as appropriate habitat (which is similar to *E. crispata*), and no individuals were recorded.

A number of collections made in the Study area in 2011 and 2012 could not be positively identified, and may represent undescribed taxa. Two such taxa in particular, *Eucalyptus* sp. (unidentified 2) and *Leucopogon* sp., are considered likely to be undescribed, and therefore likely to be of conservation significance. Likewise, both *Cryptandra intermedia* (atypical variant) and *Acacia ?idiomorpha* are possibly also new taxa. Although these taxa were surveyed for during the 2012 season, it is recommended that further survey be conducted to collect additional material of these entities, to allow for an assessment of their taxonomic and conservation status to be made. As a precaution, further searching for these taxa should also be conducted prior to any Project works being conducted, to determine their distributions and population sizes. This will allow for any potential impacts to be avoided where practical, and provide context for potential impacts if they cannot feasibly be avoided.

Twenty two introduced (weed) taxa were recorded in the Study area in 2011 - 2012. Most were recorded from very few locations, and were generally restricted to areas of *Eucalyptus accedens* and moist sites, especially in areas of relatively degraded vegetation on private property. None are considered to be particularly serious environmental weeds, excluding *Echium plantagineum* which is a listed Declared Pest under the BAM Act (Department of Agriculture and Food 2013). The prevalence of weeds in areas of *E. accedens* is likely to be a combination of these areas being refuges for kangaroos and birds, which may disperse weed propagules through their faeces or on their bodies, and the nature of these areas as being naturally sparsely vegetated. Moister areas are likely to collect more weed propagules that travel with surface sheet flow, as well as introduction through cattle and sheep grazing on private property.

No areas of vegetation currently infested, or altered by historical introduction of *Phytophthora cinnamomi* (Dieback) were observed in the Study Area (Glevan 2012). A Hygiene Management Plan should be developed to both prevent the introduction of *P. cinnamomi* and to manage any further introduction of weed propagules into the Study Area. It is also recommended that a weed monitoring programme be considered, to ensure that any new infestations, particularly in disturbance areas such as seismic lines, are identified and can be controlled or eradicated.

5.2 VEGETATION OF THE STUDY AREA

Fourteen VTs were mapped in the Study area, from four super-groups. Three of these VTs were divided further in two sub-types each. The four super-groups were based primarily on soil types, and usually associated topographical location, within the Study area, with distinct differences in species composition. The diversity of VTs in the Study area is considered to be moderate, as there is a moderate variety of habitat types, however the Study area is relatively small compared to similar study areas nearby, limiting the number of habitat types to an extent. The VTs within each super-group are considered to be relatively floristically different, an indication of the diversity of the Study area in terms of species composition.

The condition of the majority of the vegetation was ranked as '1', indicating pristine condition over the vast majority of the Study area. There were minor impacts to some areas of vegetation as a result of weed taxa, which were restricted to moist areas and areas of *Eucalyptus accedens*. These areas were mapped as '2' (Excellent) or '1/2' (Pristine to Excellent). The vegetation on remnant bushland areas on private property was in worse condition, ranging from '2' (Excellent) to '5' (Poor), with much cleared land also mapped.

All of the VTs mapped in the Study area, excluding VT 13b, are considered to be of high local conservation significance, primarily because of their limited extent in the Study area (less than 1 % of the total Study area) and their occurrence on landforms that were uncommon and restricted in the Study area. However, several VTs, despite being widespread and relatively common in the Study area, are habitat for taxa listed as T (DRF), or restricted Priority flora or undescribed taxa, and hence were also considered to be of high local conservation significance.

No VTs mapped in the Study area are equivalent to any state-listed TECs or PECs, or any nationally-listed threatened ecological communities (DEC 2012c, d; DSEWPaC 2012b).

A number of VTs, namely VTs 5, 8, 9, 11 and 12 may also be of regional conservation significance, as they do not appear to be equivalent to any FCTs mapped in the nearby NSSA by Woodman Environmental (2009b, c). It is therefore important that the locations of these VTs be considered when planning the location of any future disturbance, to avoid impacts to these VTs, or minimise impacts to these VTs as much as is practical.

The remaining VTs mapped in the Study area (1a, 1b, 2, 3, 4, 6, 7a, 7b, 10, 13a, 13b, 14) may be equivalent to FCTs in the NSSA, however statistical analysis of floristic data would need to be undertaken of to determine this. However, they may also be of regional significance as they are part of vegetation associations in the Tathra vegetation system, much of which has been cleared for agriculture. It is therefore also important that any future disturbance to these VTs in the Study area also be minimised as much as is practical.

Notwithstanding the regional significance of individual VTs, the Study area represents an excellent example of a large, intact block of remnant vegetation in virtually pristine condition within an area that has largely been cleared for agriculture. It also contains a number of different habitat types, and a rich variety of vascular plant taxa, including many of conservation significance. On this basis alone, it is important that the integrity of the Study area be considered when planning any proposed disturbance, and that rehabilitation of any disturbance is undertaken promptly using appropriate techniques.

6. RECOMMENDATIONS

The following recommendations have been made with regard to potential disturbance associated with the West Erregulla Project:

- Known locations of all Threatened (DRF) flora taxa within the Study area should be avoided by works planned to be undertaken in the area if possible;
- Prior to works being undertaken within the Study area, a Permit to Take should be applied for with regard to incidental taking of *Paracaleana dixonii* (T (DRF)) and *Thelymitra stellata* (T (DRF)), to enable accidental clearing of individuals which have so far not been recorded within the Study area;
- Further material of *Eucalyptus ?crispata* (T (DRF)), *Eucalyptus ?abditata* (P2), *Banksia fraseri ?var. crebra*, *Guichenotia impudica* (both P3), *Cryptandra intermedia* (atypical variant), *Eucalyptus* sp. (unidentified 2), *Leucopogon* sp. and *Acacia ?idiomorpha* (all potentially undescribed) should be collected to determine both taxonomic and conservation status, prior to any ground disturbing activities taking place;
- A *Phytophthora cinnamomi* and weed hygiene management plan should be developed prior to any works being undertaken, to prevent the introduction and/or spread of disease or weeds in the Study area. A weed monitoring programme should also be considered, to ensure that any new infestations, particularly in disturbance areas such as seismic lines, are identified and can be controlled or eradicated;
- The locations of the locally significant VTs (1a – 13a, 14) and potentially regionally significant VTs (5, 8, 9, 11, 12) be considered when planning the location of any future disturbance, to minimise impacts to these VTs as much as is practical;
- An assessment of impacts to flora and vegetation should be conducted when final disturbance footprints are available.

7. REFERENCES

- Australian Weeds Committee (2012)
Weeds of National Significance. Available: <http://www.weeds.org.au/WoNS/>.
Accessed 29/6/2012.
- Beard, J. S. (1976)
Vegetation Survey of Western Australia: Murchison 1:1 000 000. Map and Explanatory Notes to Sheet 6. Published by University of Western Australia Press, Perth.
- Beard, J. S. (1990)
Plant Life of Western Australia. Published by Kangaroo Press, NSW.
- Belbin, L. (1989)
PATN Technical Reference. CSIRO Division of Wildlife and Ecology, P.O. Box 84, Lyneham, ACT, 2602.
- Bureau of Meteorology (2012a)
Climate Statistics for Australian Locations – Eneabba. Available: http://www.bom.gov.au/climate/averages/tables/cw_008225.shtml. Sourced 28th December, 2012.
- Bureau of Meteorology (2012b)
Daily Weather Observations for Australian Locations – Eneabba. Available: <http://www.bom.gov.au/climate/dwo/>. Sourced 16th March, 2012.
- Commonwealth of Australia (2012)
Interim Biogeographic Regionalisation for Australia, Version 7. Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC). Available: <http://www.environment.gov.au/parks/nrs/science/bioregion-framework/ibra/index.html#ibra>
- Department of Agriculture and Food (2013)
List of Declared Pests. Available: <http://www.biosecurity.wa.gov.au/western-australian-organism-list-waol>. Accessed September, 2013.
- CALM (1999)
Environmental Weed Strategy for Western Australia. Department of Conservation and Land Management, Perth.
- DEC (2010a)
Definitions, Categories and Criteria for Threatened and Priority Ecological Communities. December 2010. Available: www.dec.wa.gov.au
- DEC (2010b)

Threatened and Priority Flora Report Form – Field Manual. Department of Environment and Conservation Species and Communities Branch, Kensington, January 2010.

DEC (2011a)

Interrogation of the Department of Environment and Conservation's Threatened and Priority Ecological Communities Databases, performed 16th March 2011. DEC Ref: 26-0311EC

DEC (2011b)

Interrogation of the Department of Environment and Conservation's W.A Herbarium specimen database, Threatened and Priority Flora database and Threatened and Priority flora list, performed 17th March 2011. DEC Ref: 34-0311FL.

DEC (2012a)

FloraBase. Available: <http://florabase.dec.wa.gov.au>. Sourced December 2012.

DEC (2012b)

NatureMap. Available: <http://naturemap.dec.wa.gov.au>. Sourced December 2012.

DEC (2012c)

List of Threatened Ecological Communities Endorsed by the Western Australian Minister for the Environment. Species & Communities Branch, Department of Environment and Conservation (Correct to April 2012). Available: www.dec.wa.gov.au

DEC (2012d)

Priority Ecological Communities For Western Australia Version 17. Species and Communities Branch, Department of Environment and Conservation, 13 April 2012. Available: www.dec.wa.gov.au

DEC (2012e)

Department of Environment and Conservation Threatened and Priority Flora List. Current 24th April 2012.

DSEWPaC (2012a)

Protected Matters Search Tool, queried 14/03/2012, report reference 9IV7KX. Available: <http://www.environment.gov.au/epbc/pmst/index.html>

DSEWPaC (2012b)

EPBC Act List of Threatened Ecological Communities. Available: <http://www.environment.gov.au/cgi-bin/sprat/public/publiclookupcommunities.pl>. Sourced: 18th April 2012.

Desmond, A. and Chant, A. (2001)

Geraldton Sandplain 3 (GS3 – Lesueur Sandplain Subregion). A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002.

Dufrene, M. and Legendre, P. (1997)

Species Assemblages and Indicator Species: The need for a flexible asymmetrical approach. In: *Ecological Monographs* **67**: 345-366.

EPA (2004)

Guidance for the Assessment of Environmental Factors – Terrestrial Flora and Vegetation surveys for Environmental Impact Assessment in Western Australia, No. 51, June 2004. Unpublished report produced by the Environmental Protection Authority, Western Australia.

Executive Steering Committee for Australian Vegetation Information (ESCAVI) (2003)

Australian Vegetation Attribute Manual: National Vegetation Information System, Version 6.0. Department of the Environment and Heritage, Canberra.

Gleван Consulting (2012)

Phytophthora Dieback Occurrence Assessment. Unpublished report (Rev A) prepared for Warrego Energy Ltd and Woodman Environmental Consulting Pty Ltd.

Gibson, N., Keighery, B.J., Keighery, G.J., Burbidge, A.H. & Lyons, M.N. (1994). *A Floristic Survey of the southern Swan Coastal Plain.* Unpublished Report for the Australian Heritage commission prepared by Department of Conservation and Land Management and the Conservation Council of Western Australia (Inc.).

Government of Western Australia (2011)

2011 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Accessed February 2012. WA Department of Environment and Conservation, Perth.

Government of Western Australia (2013a)

Biosecurity and Agriculture Management Regulations 2013. Version 00-b0-00, 1st May 2013.

Government of Western Australia (2013b)

Biosecurity and Agriculture Management Act 2007. Version 00-o0-00, 1st May 2013.

Hoffman, N. and Brown, A. (2011)

Orchids of South-West Australia (3rd Edition). University of Western Australia Press, Nedlands Western Australia.

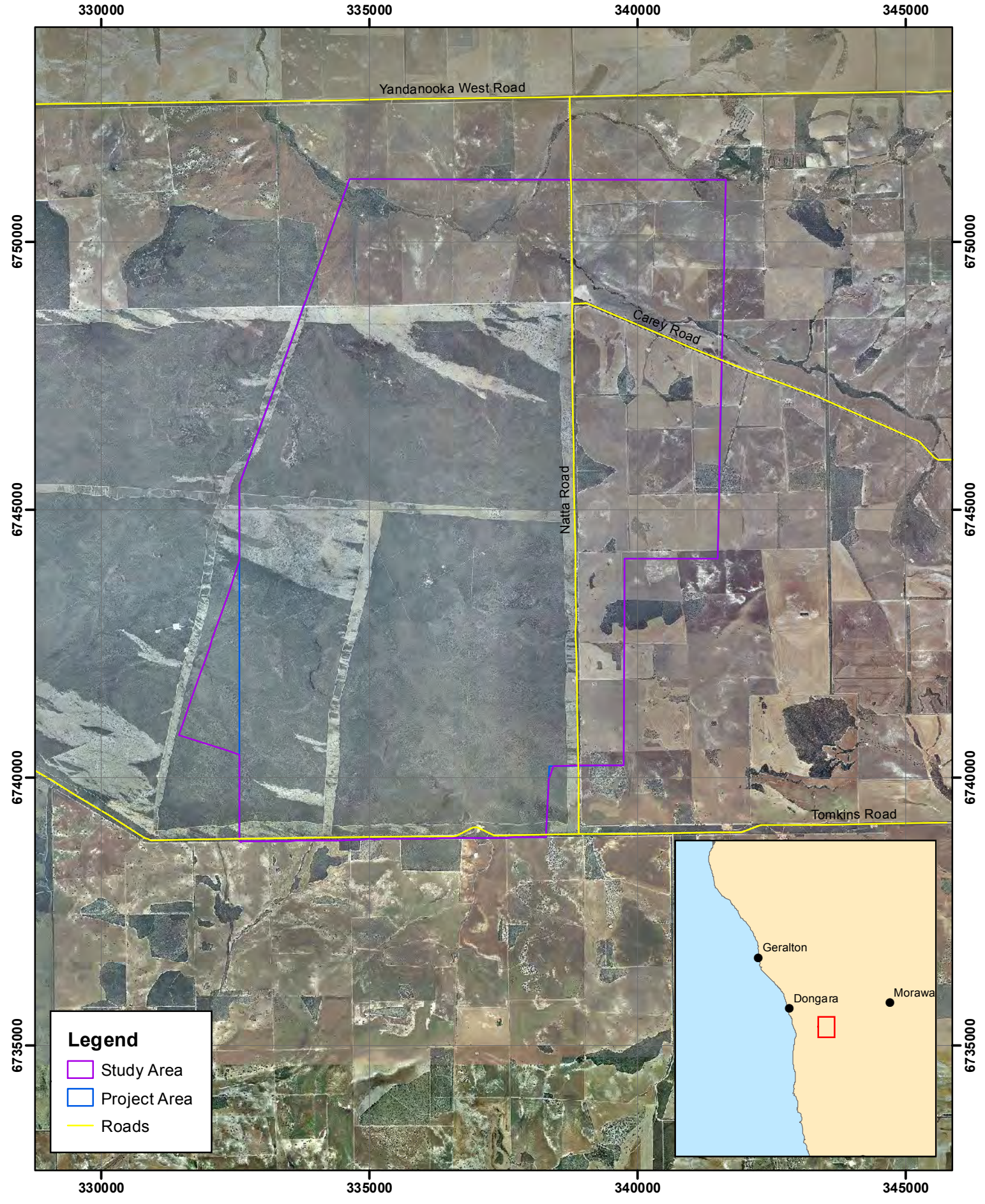
Hussey, B.M.J, Keighery, G.J., Dodd, J. Lloyd, S.G. and Cousens, R.D. (2007)

Western Weeds – A Guide to the Weeds of Western Australia (2nd Ed.). The Weeds Society of Western Australia (Inc.), Victoria Park, Western Australia.

Keighery, B.J. (1994)

Bushland Plant Survey: a Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc.), Nedlands, Western Australia.


- Markey, A. S. & Dillon, S. J. (2008)
Flora and Vegetation of the Banded Ironstone Formations of the Yilgarn Craton: The Central Tallering Land System. In: *Conservation Science W. Aust.* **7** (1): 121–149 (2008).
- McCune, B. and Mefford, M.J (1999)
PC-Ord. Multivariate Analysis of Ecological Data, Version 4. MjM Software Design, Glenden Beach, Oregon USA.
- Shepherd, D., Beeston, G and Hopkins, A. (2002)
Native Vegetation in Western Australia. Extent, Type and Status. *Resource Management Technical Report 249.* Department of Agriculture, South Perth.
- Sneath, P.H.A, and Sokal, R.R. (1973)
Numerical Taxonomy: The Principles and Practice of Numerical Classification. Published by Freeman, San Fransisco.
- Woodman Environmental Consulting Pty Ltd (2004)
Denison 3D Seismic Survey, Flora and Vegetation Study. Unpublished report (Denison 3D Veg Mapping) prepared for ARC Energy Ltd and Origin Energy, December 2004.
- Woodman Environmental Consulting Pty Ltd (2009a)
West Erregulla-2 Well Site Flora and Vegetation Assessment. Unpublished report (Warrego 08-46-01) prepared for Warrego Energy, April 2009.
- Woodman Environmental Consulting Pty Ltd (2009b)
Dongara Tenements Flora and Vegetation Studies, Regional FCT Analysis. Unpublished report (Tiwest 07-36) prepared for Tiwest Pty Ltd, October 2009.
- Woodman Environmental Consulting Pty Ltd (2009c)
Flora and Vegetation of the Proposed Eneabba – Moonyoonooka 330kv Transmission Line, Supplementary Field Survey 2008. Unpublished report (WPC 08-21) prepared for Western Power, February 2009.
- Woodman Environmental Consulting Pty Ltd (2009d)
Environmental Review and Management Programme – Flora and Vegetation Studies. Unpublished report (Iluka07-19-01) prepared for Iluka Resources Ltd, April 2009.
- Woodman Environmental Consulting Pty Ltd (2010)
Flora and Vegetation of the Proposed Eneabba – Moonyoonooka 330kv Transmission Line, Supplementary Field Survey 2008, 2009 Survey Addendum Report. Unpublished report (WP09-46) prepared for Western Power, February 2010.
- Woodman Environmental Consulting Pty Ltd (2012)
West Erragulla Project Flora and Vegetation Assessment. Unpublished report (Warrego11-48-01 Rev 0) prepared for Warrego Energy, June 2012.

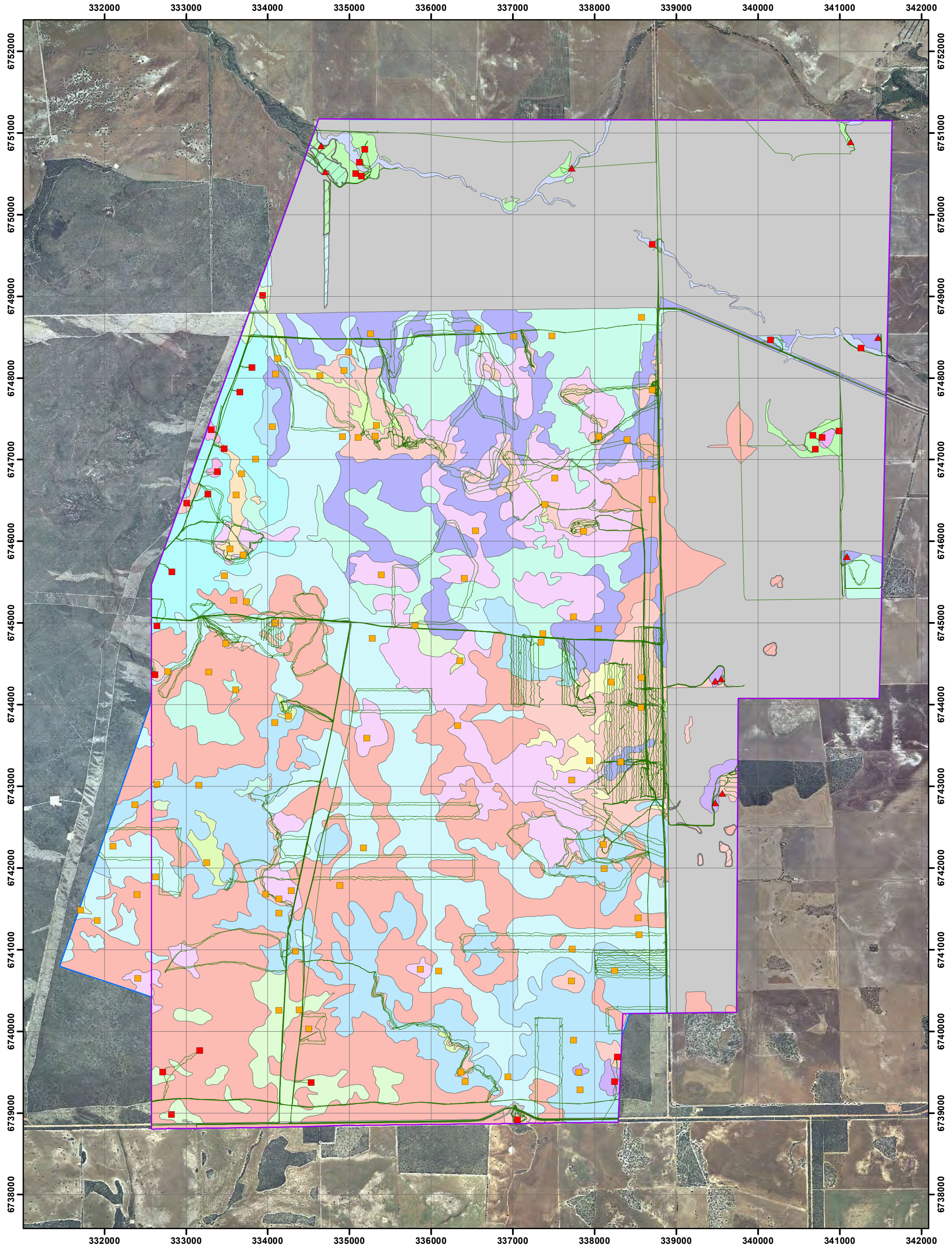


Legend

- Study Area
- Project Area
- Roads



 woodmanenvironmentalconsulting	Warrego Energy Limited West Erregulla Project Project area and Study area Location		Figure 1
	This map should only be used in conjunction with WEC report Warrego12-33-01.	Revision: A - December 2012	Grid: MGA Zone 50
Author: David Coultas	WEC Ref: Warrego12-33-01	Filename: Warrego12-33-01-f01.mxd	Scale: 1:90,000 (A4)



This map should only be used in conjunction with WEC report Warrego12-33-01.



**Warrego Energy Limited
West Erregulla Project
Quadrat and Site Locations
and Track Logs**

Revision: A - December 2012

Author: David Coultas
WEC Ref: Warrego12-33-01
Filename: Warrego12-33-01-f03.mxd

Scale: 1:40,000 (A3) Grid: MGA Zone 50

**Figure
3**

Legend



- Quadrats (2011)
- Quadrats (2012)
- ▲ Detailed Recording Sites (2012)
- Track Logs
- Project Area Boundary
- Study Area

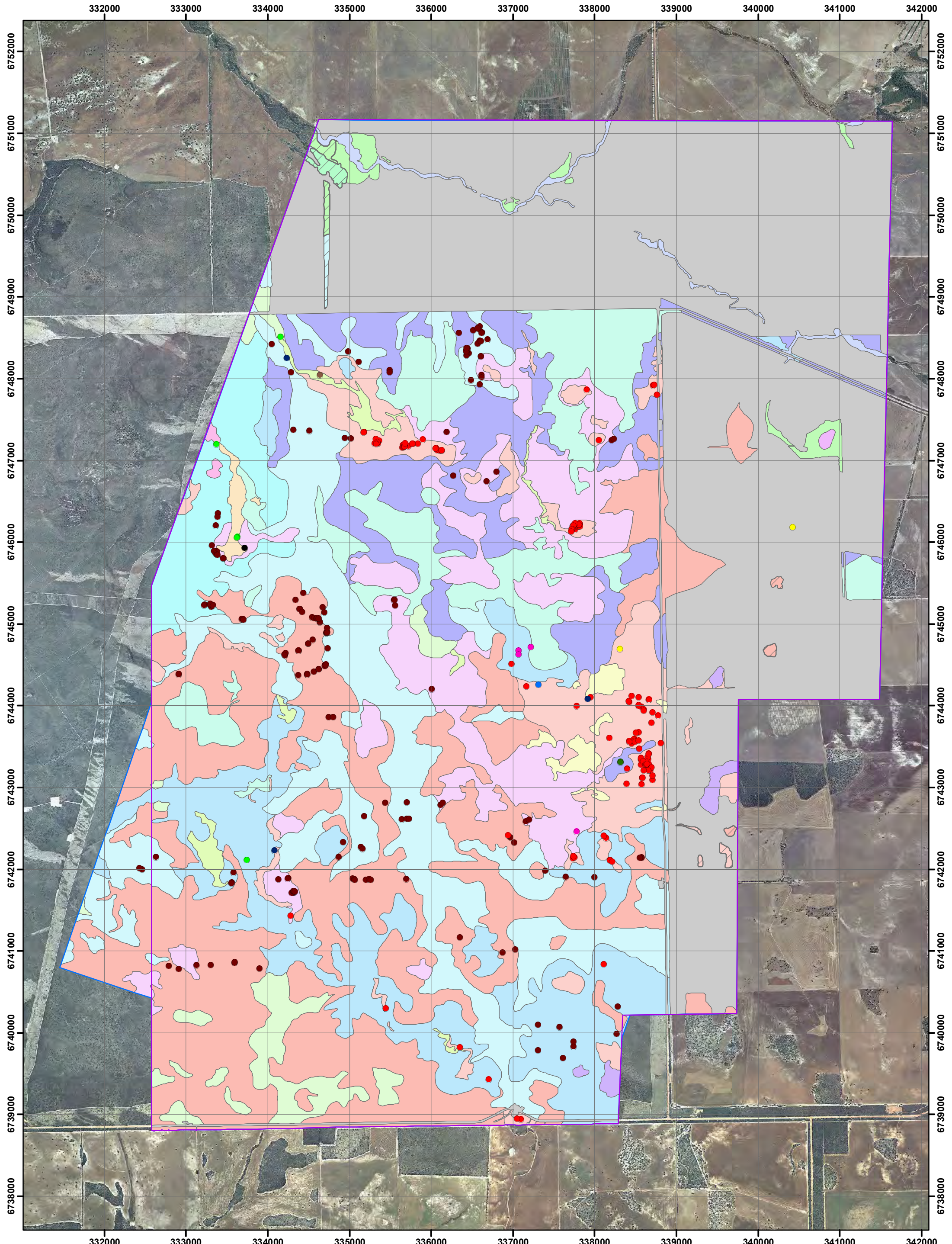
Vegetation Types

- 1a Mid open forest of *Eucalyptus accedens* over mid open shrubland dominated by *Gastrolobium spinosum*, *Olearia rudis* and *Anthocercis genistoides* over low open forbland and rushland dominated by *Calandrinia calyptata*, *Calandrinia corrigioloides*, *Millotia myosotidifolia*, *Trachymene pilosa* and *Conostylis aculeata* subsp. *breviflora* on grey sand on mid slopes
- 1b Mid open forest of *Eucalyptus accedens* over low open shrubland dominated by *Gastrolobium plicatum* and *Dodonaea divaricata* over low open forbland of mixed species including *Goodenia berardiana*, *Rhodanthe manglesii*, *Podolepis lessonii* and *Acanthocarpus canaliculatus* on grey-brown sandy or clay loams on mid-upper slopes
- 2 Mid open forest of *Eucalyptus accedens* or low open forest *E. loxophleba* subsp. *loxophleba* over mid open shrubland dominated by *Rhagodia preissii* subsp. *preissii* and *Melaleuca acutifolia* on grey-brown sandy loams on flats and slopes
- 3 Occasional mid woodland of *Eucalyptus accedens* over mid shrubland dominated by *Melaleuca concreta*, *M. marginata* and *M. acutifolia* over low isolated mixed shrubs and sedges including *Acacia ericksoniae* and *Lepidosperma* sp. A2 Inland Flat (G.J. Keighery 7000) on pink-brown or white clay loams on flats
- 4 Tall closed to open shrubland dominated by *Allocasuarina campestris* or occasionally *Acacia neurophylla* subsp. *neurophylla* over mid open shrubland and sedgeland of mixed species including *Grevillea biternata*, *Melaleuca radula*, *Melaleuca concreta*, *Thryptomene* sp. Mingenew (Diels & Pritzel 332) (P3), *Ecdeiocolea monostachya* and *Thryptomene racemulosa* on grey-brown sand, sandy loam or clay loam, occasionally with granitic pebbles, on slopes and flats adjacent to seasonal creeks
- 5 Tall closed shrubland to shrubland dominated by *Allocasuarina campestris* with occasional *Acacia aciphylla*, *Acacia neurophylla* subsp. *neurophylla* and *Melaleuca viminea* subsp. *viminea* over sparse low shrubland and sedgeland of mixed species including *Ecdeiocolea monostachya* and *Thryptomene racemulosa* over open forbland and grassland of mixed introduced species including *Ehrharta longiflora* and *Ursinia anthemoides* on grey or brown sandy or clay loams within and on the banks of seasonal creeks
- 6 Open woodland of *Eucalyptus loxophleba* subsp. *loxophleba* over mid closed shrubland dominated by *Melaleuca marginata* over sparse forbland of mixed species including *Rhodanthe polycephala* on grey-brown clay on slopes above seasonal creeks
- 7a Mid mallee woodland to isolated mallees of *Eucalyptus conveniens* or mid open shrubland of *Allocasuarina campestris* over low shrubland and sedgeland of mixed species frequently dominated by *Ecdeiocolea monostachya* and *Melaleuca aspalathoides*, or occasionally *M. tinkerii*, *Hakea auriculata* or *Hakea lissocarpha*, on gravelly grey or brown clay loams or sands, usually with laterite on or near the surface, on slopes and crests
- 7b Mid mallee woodland to isolated mallees of *Eucalyptus conveniens* or mid open shrubland of *Allocasuarina campestris* over low shrubland and sedgeland of mixed species dominated by *Banksia carlinoides*, *Ecdeiocolea monostachya*, *Hakea incrassata*, *Hibbertia hypericoides* and *Melaleuca aspalathoides* on gravelly grey or brown clay loams or sands, usually with laterite on or near the surface, on slopes and crests
- 8 Mid mallee woodland to isolated mallees of *Eucalyptus conveniens* over mid shrubland to open shrubland dominated by *Allocasuarina campestris* over low shrubland and sedgeland of mixed species dominated by *Ecdeiocolea monostachya*, *Hakea auriculata*, *Melaleuca radula*, *M. aspalathoides* and *Banksia fraseri* var. *fraseri* on gravelly grey or brown clay loams usually over massive laterite on breakaway tops, ridges and lateritic rises
- 9 Mid to low open shrubland of *Allocasuarina campestris*, *Melaleuca concreta* and *Melaleuca marginata* over low shrubland dominated by *Melaleuca tinkerii* and occasionally *Gastrolobium plicatum* over low shrubland and forbland dominated by *Stylidium torticarpum* (P3), *Leucopogon* sp. Yandanooka (M. Hislop 2507) and *Micromyrtus rogeri* (P1) on gravelly pink-brown or white-grey clay or clay loam over decaying laterite on breakaway tops and slopes
- 10 Mid sparse to open shrubland of mixed species including *Calothamnus quadrifidus* subsp. *angustifolius*, *Grevillea biformis* subsp. *biformis* and *Banksia attenuata* over low shrubland and sedgeland of mixed species dominated by *Ecdeiocolea monostachya*, *Melaleuca leuropoma*, *Daviesia divaricata* subsp. *divaricata* ms, *Mesomelaena pseudostygia* and *Banksia shuttleworthiana* on yellow-brown or occasionally grey sand on slopes and valley floors
- 11 Mid sparse to open shrubland of *Allocasuarina campestris* and *Grevillea biformis* subsp. *biformis* over low shrubland and sedgeland dominated by *Hakea circumalata*, *Lepidobolus preissianus* subsp. *preissianus*, *Mesomelaena pseudostygia* and *M. stygia* subsp. *deflexa* (P3) on yellow or yellow-brown sand or sandy loam on mid to upper slopes
- 12 Occasional mid sparse to open shrubland of *Allocasuarina campestris* and *Grevillea biformis* subsp. *biformis* over low shrubland and sedgeland dominated by *Beaufortia elegans*, *Hibbertia hypericoides* and *Ecdeiocolea monostachya* on grey or brown sand or sandy loam on mid to upper slopes
- 13a Low open woodland of *Eucalyptus todtiana* over mid to low shrubland of mixed species dominated by *Allocasuarina humilis*, *Banksia scabrella* (P4), *Calothamnus sanguineus*, *Eremaea beaufortoides* var. *microphylla*, *Melaleuca* aff. *leuropoma* and *Hibbertia hypericoides* over low shrubland and sedgeland of mixed species including *Banksia dallanneyi* subsp. *media*, *Conostylis canteriata*, *Mesomelaena pseudostygia* and *Caustis dioica* on grey or brown sand on lower and mid slopes
- 13b Low open woodland of *Eucalyptus todtiana* over mid to low shrubland of mixed species dominated by *Allocasuarina humilis*, *Calothamnus sanguineus*, *Hakea trifurcata*, *Hibbertia hypericoides* and *Melaleuca leuropoma* over low shrubland and rushland of mixed species including *Banksia dallanneyi* subsp. *media*, *Conostylis aculeata* subsp. *breviflora* and *Conostylis canteriata* on grey, brown or yellow sand on flats, in depressions and on slopes
- 14 Low open shrubland dominated by *Calothamnus quadrifidus* subsp. *angustifolius*, *Banksia carlinoides*, *Hakea lissocarpha* and *Verticordia densiflora* over low open shrubland, sedgeland and forbland dominated by *Dampiera teres* (broad-leaf variant), *Jacksonia angulata*, *Harperia lateriflora*, *Opercularia vaginata* and *Melaleuca trichophylla* on grey-brown sands, sandy loams and clay loams in minor drainage lines and on flats

Other Mapped Areas

- 4D Degraded area of VT 4
- 8D Degraded area of VT 8
- 10D Degraded area of VT 10
- 13aD Degraded area of VT 13a
- PC1D Low woodland of *Acacia acuminata* over introduced pasture grasses and isolated native forbs including *Ptilotus manglesii* and *Arthropodium dyeri* on grey-brown clay loams on flats adjacent to seasonal creeks
- C Cleared Land

		Warrego Energy Limited West Erregulla Project Quadrat and Site Locations and Track Log Legend	Author: David Coultas	Figure 3
			WEC Ref: Warrego12-33-01	
			Filename: Warrego12-33-01-f03.mxd	
			Scale: 1:40,000 (A3) Grid: MGA Zone 50	
This map should only be used in conjunction with WEC report Warrego12-33-01.		Revision: A - December 2012		



This map should only be used in conjunction with WEC report Warrego12-33-01.



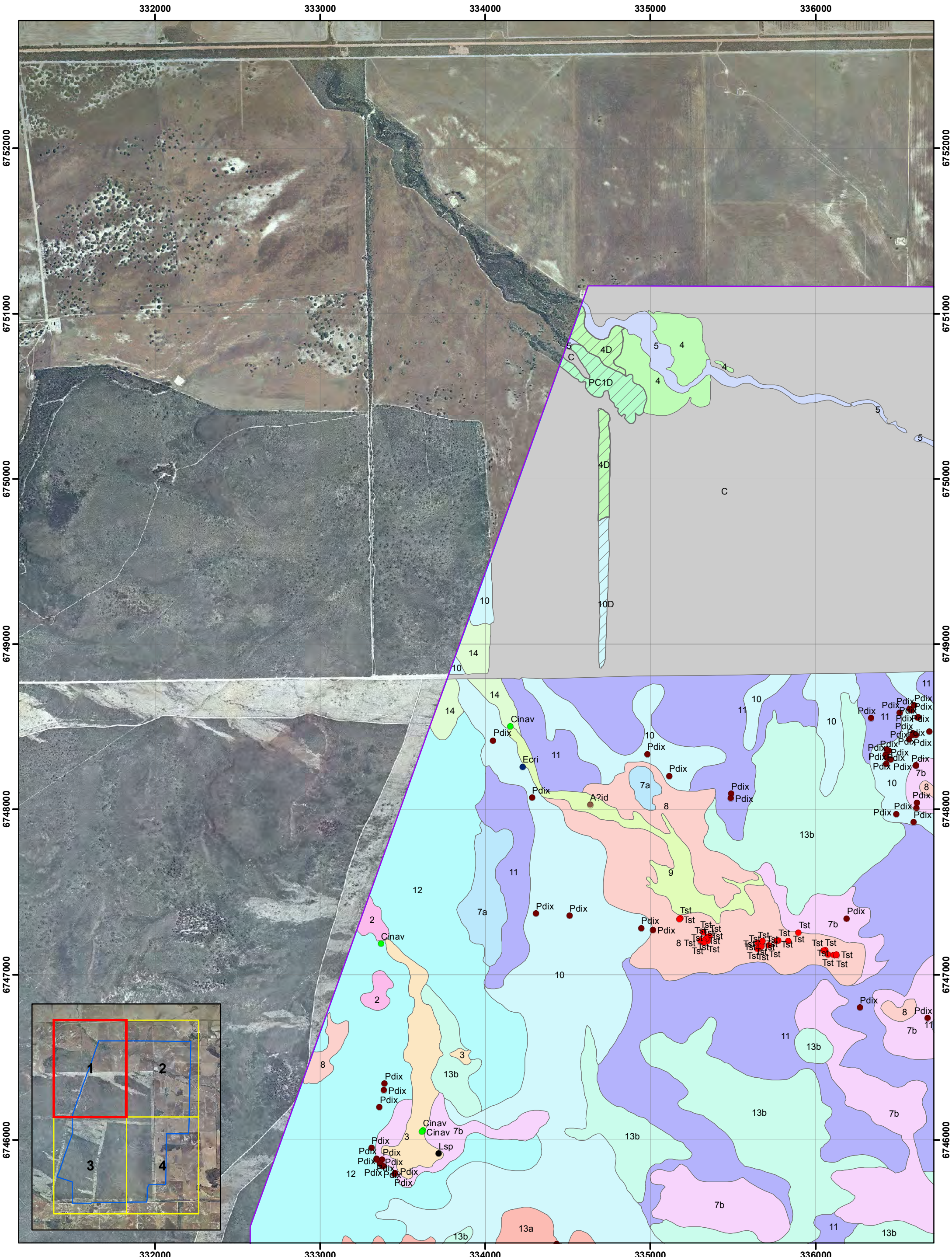
**Warrego Energy Limited
West Erregulla Project
Threatened and Potentially
Undescribed Flora Overview**

Revision: A - December 2012

Author: David Coultas
WEC Ref: Warrego12-33-01
Filename: Warrego12-33-01-f04-0.mxd

Scale: 1:40,000 (A3) Grid: MGA Zone 50

**Figure
4.0**




This map should only be used in conjunction with WEC report Warrego12-33-01.

Warrego Energy Limited
West Erregulla Project
Threatened and Potentially Undescribed Flora
Sheet 1 of 4

Revision: A - December 2012

Author: David Coultas

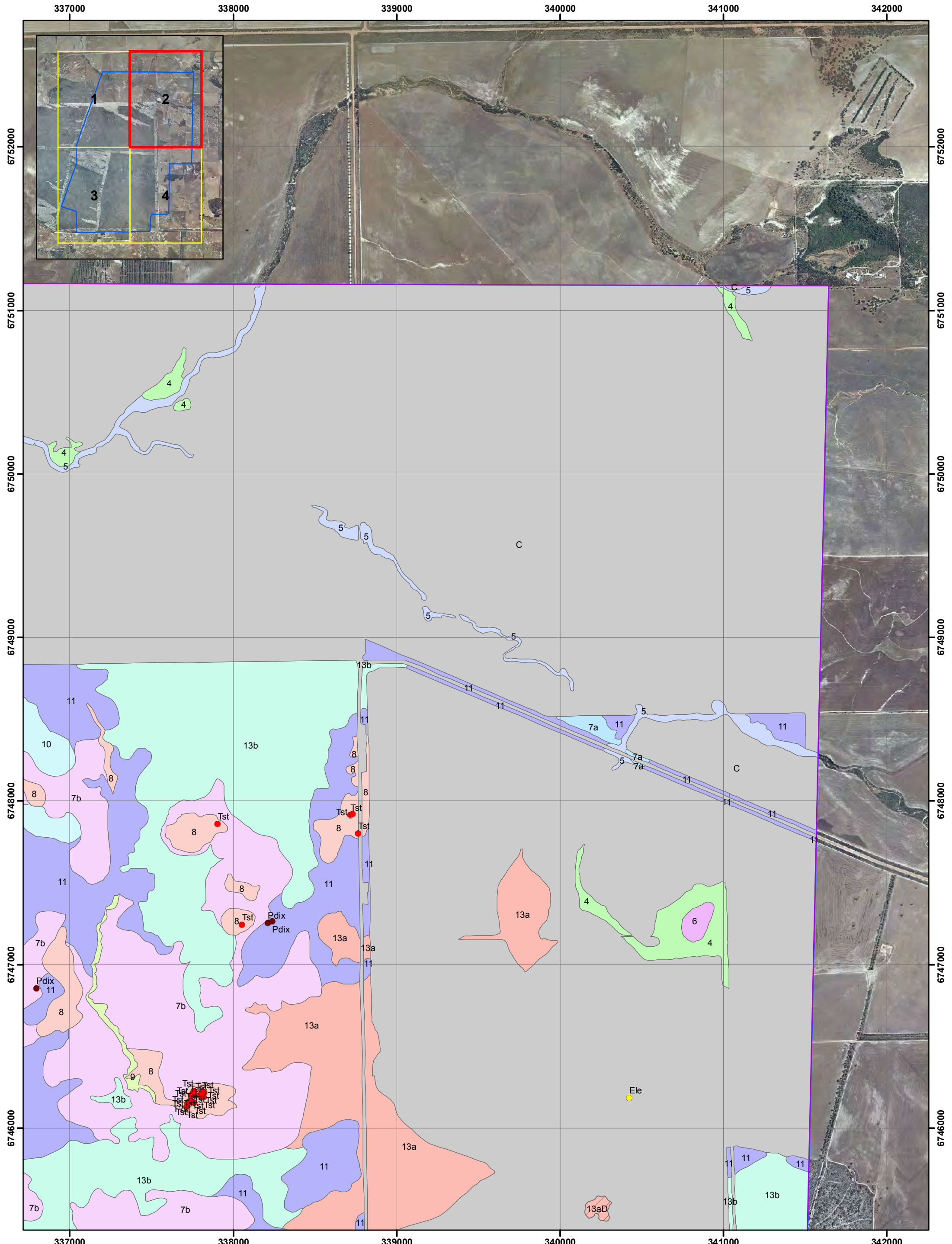
WEC Ref: Warrego12-33-01

Filename: Warrego12-33-01-f04.mxd

Scale: 1:20,000 (A3) Grid: MGA Zone 50

Figure

4.1



This map should only be used in conjunction with WEC report Warrego12-33-01.

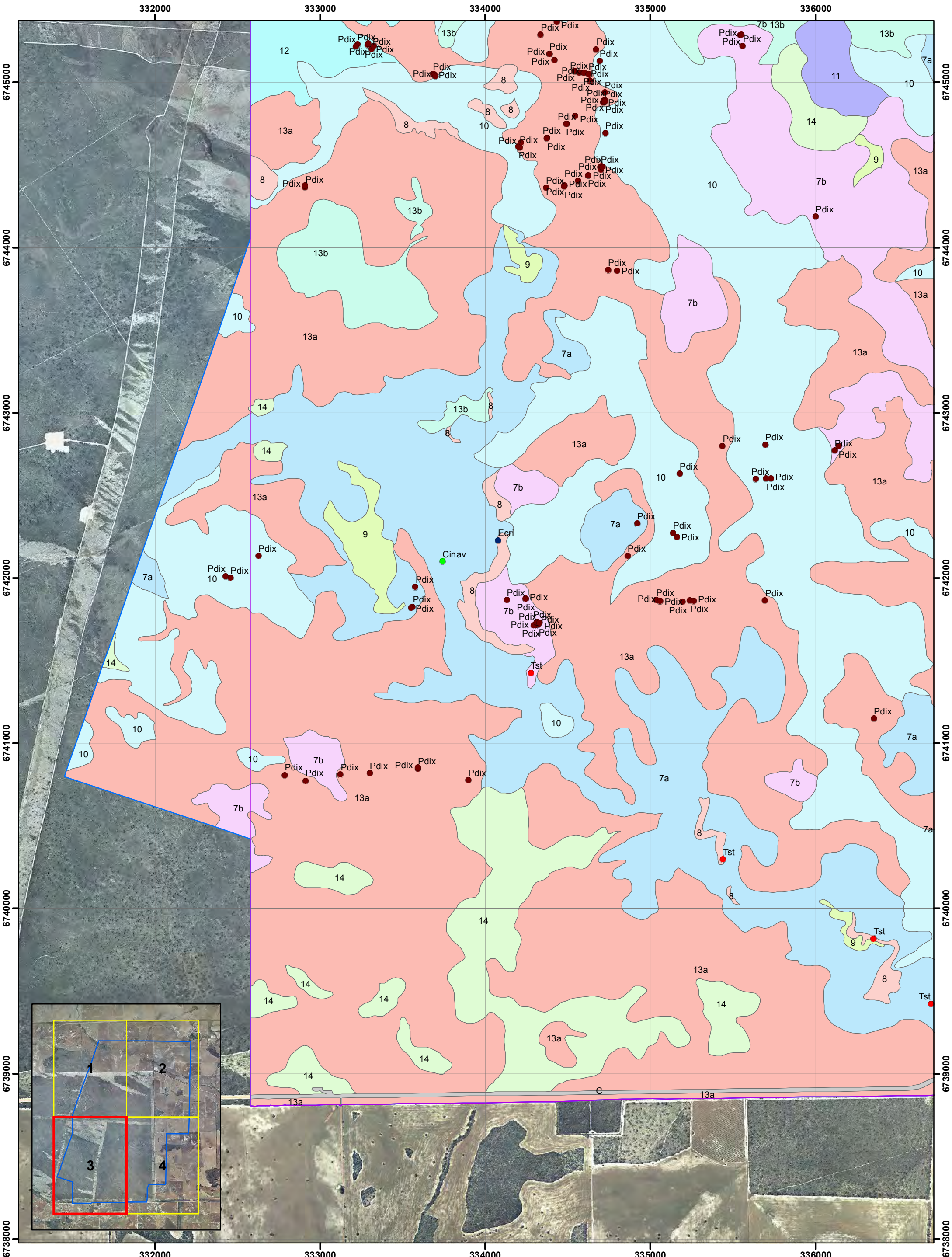
Warrego Energy Limited
West Erregulla Project
Threatened and Potentially Undescribed Flora
Sheet 2 of 4

Revision: A - December 2012

Author: David Coultas
 WEC Ref: Warrego12-33-01
 Filename: Warrego12-33-01-f04.mxd

Scale: 1:20,000 (A3) Grid: MGA Zone 50

Figure
4.2



This map should only be used in conjunction with WEC report Warrego12-33-01.



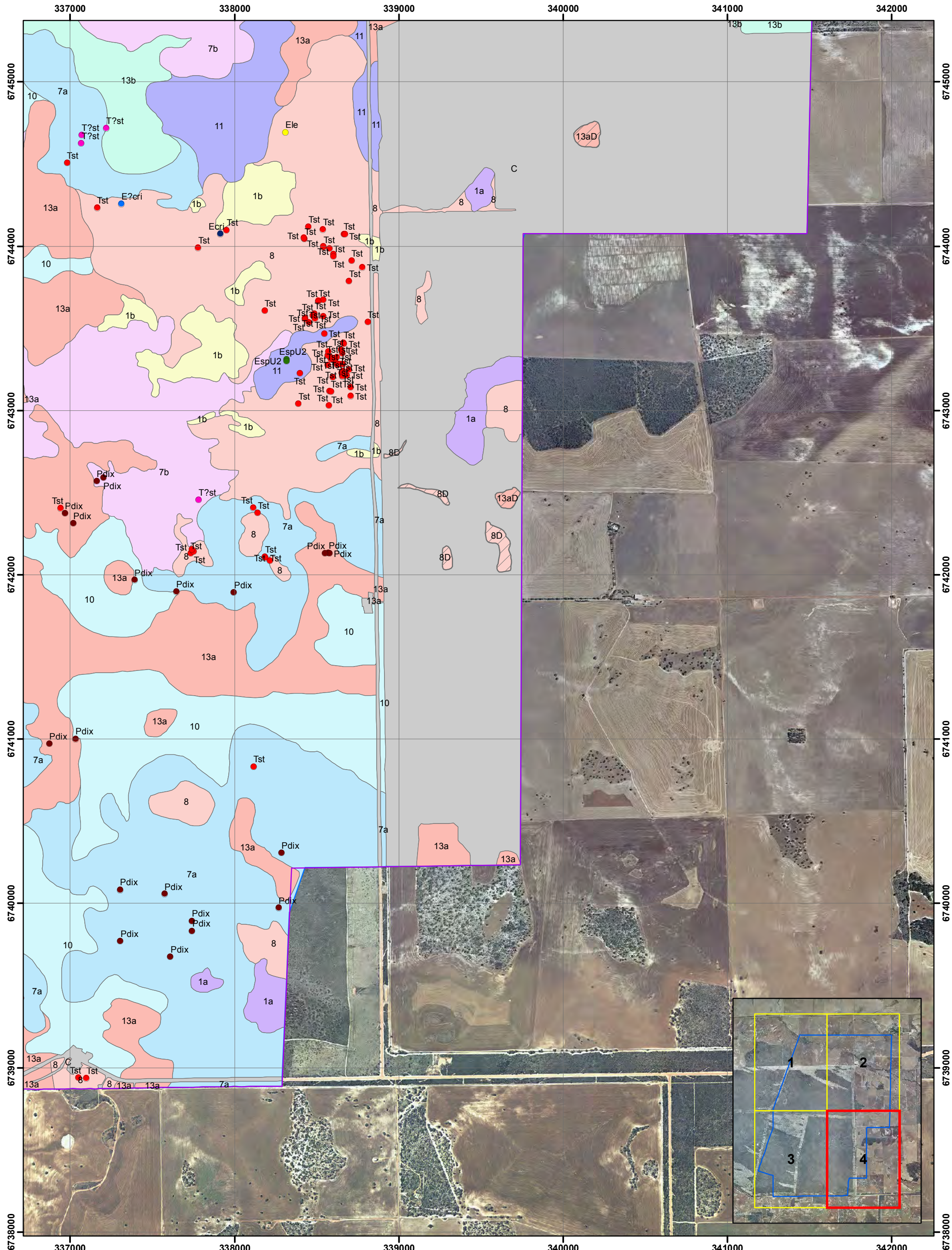
**Warrego Energy Limited
West Erregulla Project
Threated and Potentially Undescribed Flora
Sheet 3 of 4**

Revision: A - December 2012



Author: David Coultas
WEC Ref: Warrego12-33-01
Filename: Warrego12-33-01-f04.mxd

Scale: 1:20,000 (A3) Grid: MGA Zone 50


















**Figure
4.3**









Legend

-  Project Area Boundary
-  Study Area











Vegetation Types



-  1a Mid open forest of *Eucalyptus accedens* over mid open shrubland dominated by *Gastrolobium spinosum*, *Olearia rudis* and *Anthocercis genistoides* over low open forbland and rushland dominated by *Calandrinia calyprata*, *Calandrinia corrigioloides*, *Milotia myosotidifolia*, *Trachymene pilosa* and *Conostylis aculeata* subsp. *breviflora* on grey sand on mid slopes
-  1b Mid open forest of *Eucalyptus accedens* over low open shrubland dominated by *Gastrolobium plicatum* and *Dodonaea divaricata* over low open forbland of mixed species including *Goodenia berardiana*, *Rhodanthe manglesii*, *Podolepis lessonii* and *Acanthocarpus canaliculatus* on grey-brown sandy or clay loams on mid-upper slopes
-  2 Mid open forest of *Eucalyptus accedens* or low open forest *E. loxophleba* subsp. *loxophleba* over mid open shrubland dominated by *Rhagodia preissii* subsp. *preissii* and *Melaleuca acutifolia* on grey-brown sandy loams on flats and slopes
-  3 Occasional mid woodland of *Eucalyptus accedens* over mid shrubland dominated by *Melaleuca concreta*, *M. marginata* and *M. acutifolia* over low isolated mixed shrubs and sedges including *Acacia ericksoniae* and *Lepidosperma* sp. A2 Inland Flat (G.J. Keighery 7000) on pink-brown or white clay loams on flats
-  4 Tall closed to open shrubland dominated by *Allocasuarina campestris* or occasionally *Acacia neurophylla* subsp. *neurophylla* over mid open shrubland and sedgeland of mixed species including *Grevillea biternata*, *Melaleuca radula*, *Melaleuca concreta*, *Thryptomene* sp. Mingenew (Diels & Pritzel 332) (P3), *Ecdeiocolea monostachya* and *Thryptomene racemulosa* on grey-brown sand, sandy loam or clay loam, occasionally with granitic pebbles, on slopes and flats adjacent to seasonal creeks
-  5 Tall closed shrubland to shrubland dominated by *Allocasuarina campestris* with occasional *Acacia aciphylla*, *Acacia neurophylla* subsp. *neurophylla* and *Melaleuca viminea* subsp. *viminea* over sparse low shrubland and sedgeland of mixed species including *Ecdeiocolea monostachya* and *Thryptomene racemulosa* over open forbland and grassland of mixed introduced species including **Ehrharta longiflora* and *Ursinia anthemoides* on grey or brown sandy or clay loams within and on the banks of seasonal creeks
-  6 Open woodland of *Eucalyptus loxophleba* subsp. *loxophleba* over mid closed shrubland dominated by *Melaleuca marginata* over sparse forbland of mixed species including *Rhodanthe polycephala* on grey-brown clay on slopes above seasonal creeks
-  7a Mid mallee woodland to isolated mallees of *Eucalyptus conveniens* or mid open shrubland of *Allocasuarina campestris* over low shrubland and sedgeland of mixed species frequently dominated by *Ecdeiocolea monostachya* and *Melaleuca aspalathoides*, or occasionally *M. tinkeri*, *Hakea auriculata* or *Hakea lissocarpha*, on gravelly grey or brown clay loams or sands, usually with laterite on or near the surface, on slopes and crests
-  7b Mid mallee woodland to isolated mallees of *Eucalyptus conveniens* or mid open shrubland of *Allocasuarina campestris* over low shrubland and sedgeland of mixed species dominated by *Banksia carlinoides*, *Ecdeiocolea monostachya*, *Hakea incrassata*, *Hibbertia hypericoides* and *Melaleuca aspalathoides* on gravelly grey or brown clay loams or sands, usually with laterite on or near the surface, on slopes and crests
-  8 Mid mallee woodland to isolated mallees of *Eucalyptus conveniens* over mid shrubland to open shrubland dominated by *Allocasuarina campestris* over low shrubland and sedgeland of mixed species dominated by *Ecdeiocolea monostachya*, *Hakea auriculata*, *Melaleuca radula*, *M. aspalathoides* and *Banksia fraseri* var. *fraseri* on gravelly grey or brown clay loams usually over massive laterite on breakaway tops, ridges and lateritic rises
-  9 Mid to low open shrubland of *Allocasuarina campestris*, *Melaleuca concreta* and *Melaleuca marginata* over low shrubland dominated by *Melaleuca tinkeri* and occasionally *Gastrolobium plicatum* over low shrubland and forbland dominated by *Stylidium torticarpum* (P3), *Leucopogon* sp. Yandanooka (M. Hislop 2507) and *Micromyrtus rogeri* (P1) on gravelly pink-brown or white-grey clay or clay loam over decaying laterite on breakaway tops and slopes
-  10 Mid sparse to open shrubland of mixed species including *Calothamnus quadrifidus* subsp. *angustifolius*, *Grevillea biformis* subsp. *biformis* and *Banksia attenuata* over low shrubland and sedgeland of mixed species dominated by *Ecdeiocolea monostachya*, *Melaleuca leuropoma*, *Daviesia divaricata* subsp. *divaricata* ms, *Mesomelaena pseudostygia* and *Banksia shuttleworthiana* on yellow-brown or occasionally grey sand on slopes and valley floors
-  11 Mid sparse to open shrubland of *Allocasuarina campestris* and *Grevillea biformis* subsp. *biformis* over low shrubland and sedgeland dominated by *Hakea circumalata*, *Lepidobolus preissianus* subsp. *preissianus*, *Mesomelaena pseudostygia* and *M. stygia* subsp. *deflexa* (P3) on yellow or yellow-brown sand or sandy loam on mid to upper slopes
-  12 Occasional mid sparse to open shrubland of *Allocasuarina campestris* and *Grevillea biformis* subsp. *biformis* over low shrubland and sedgeland dominated by *Beaufortia elegans*, *Hibbertia hypericoides* and *Ecdeiocolea monostachya* on grey or brown sand or sandy loam on mid to upper slopes
-  13a Low open woodland of *Eucalyptus tottiana* over mid to low shrubland of mixed species dominated by *Allocasuarina humilis*, *Banksia scabrella* (P4), *Calothamnus sanguineus*, *Eremaea beaufortoides* var. *microphylla*, *Melaleuca* aff. *leuropoma* and *Hibbertia hypericoides* over low shrubland and sedgeland of mixed species including *Banksia dallanneyi* subsp. *media*, *Conostylis canteriata*, *Mesomelaena pseudostygia* and *Caustis dioica* on grey or brown sand on lower and mid slopes
-  13b Low open woodland of *Eucalyptus tottiana* over mid to low shrubland of mixed species dominated by *Allocasuarina humilis*, *Calothamnus sanguineus*, *Hakea trifurcata*, *Hibbertia hypericoides* and *Melaleuca leuropoma* over low shrubland and rushland of mixed species including *Banksia dallanneyi* subsp. *media*, *Conostylis aculeata* subsp. *breviflora* and *Conostylis canteriata* on grey, brown or yellow sand on flats, in depressions and on slopes
-  14 Low open shrubland dominated by *Calothamnus quadrifidus* subsp. *angustifolius*, *Banksia carlinoides*, *Hakea lissocarpha* and *Verticordia densiflora* over low open shrubland, sedgeland and forbland dominated by *Dampiera teres* (broad-leaf variant), *Jacksonia angulata*, *Harperia lateriflora*, *Opercularia vaginata* and *Melaleuca trichophylla* on grey-brown sands, sandy loams and clay loams in minor drainage lines and on flats

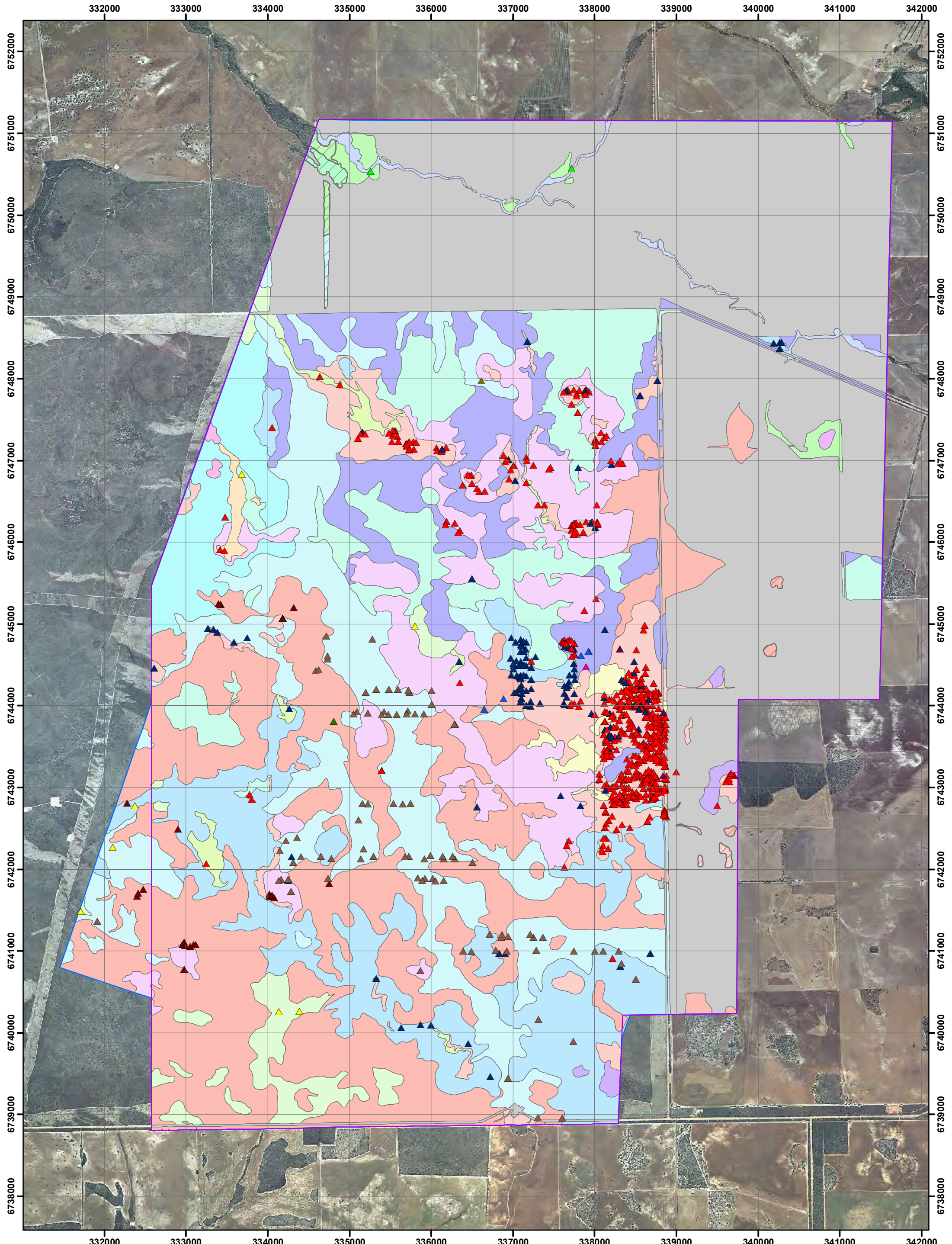
Other Mapped Areas

-  4D Degraded area of VT 4
-  8D Degraded area of VT 8
-  10D Degraded area of VT 10
-  13aD Degraded area of VT 13a
-  PC1D Low woodland of *Acacia acuminata* over introduced pasture grasses and isolated native forbs including *Ptilotus manglesii* and *Arthropodium dyeri* on grey-brown clay loams on flats adjacent to seasonal creeks
-  C Cleared Land

Threatened and Potential Undescribed Flora

-  A?id *Acacia ?idiomorpha*
-  Cinav *Cryptandra intermedia* (atypical variant)
-  Ecri *Eucalyptus crispata* (T)
-  E?cri *Eucalyptus ?crispata* (T)
-  Ele *Eucalyptus leprophloia* (T)
-  EspU2 *Eucalyptus* sp. (unidentified 2)
-  Lsp *Leucopogon* sp.
-  Pdix *Paracaleana dixonii* (T)
-  Tst *Thelymitra stellata* (T)
-  T?st *Thelymitra ?stellata* (T)

		Warrego Energy Limited West Erregulla Project Vegetation Types and Threatened and Potentially Undescribed Flora Legend	Author: David Coultas	Figure 4
		WEC Ref: Warrego12-33-01		
		Revision: A - December 2012	Filename: Warrego12-33-01-f04.mxd	
		Scale: 1:20,000 (A3) Grid: MGA Zone 50		



This map should only be used in conjunction with WEC report Warrego12-33-01.

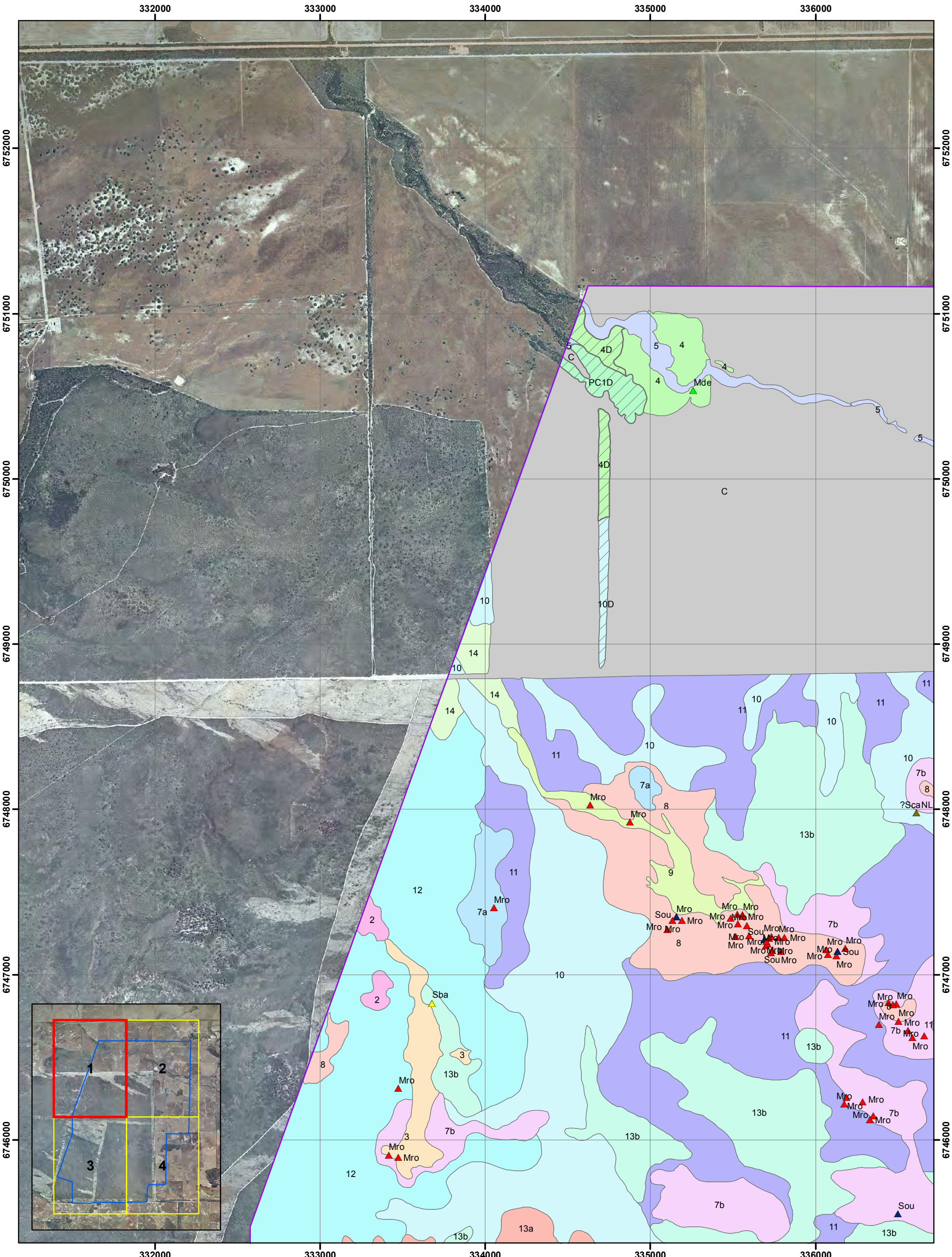


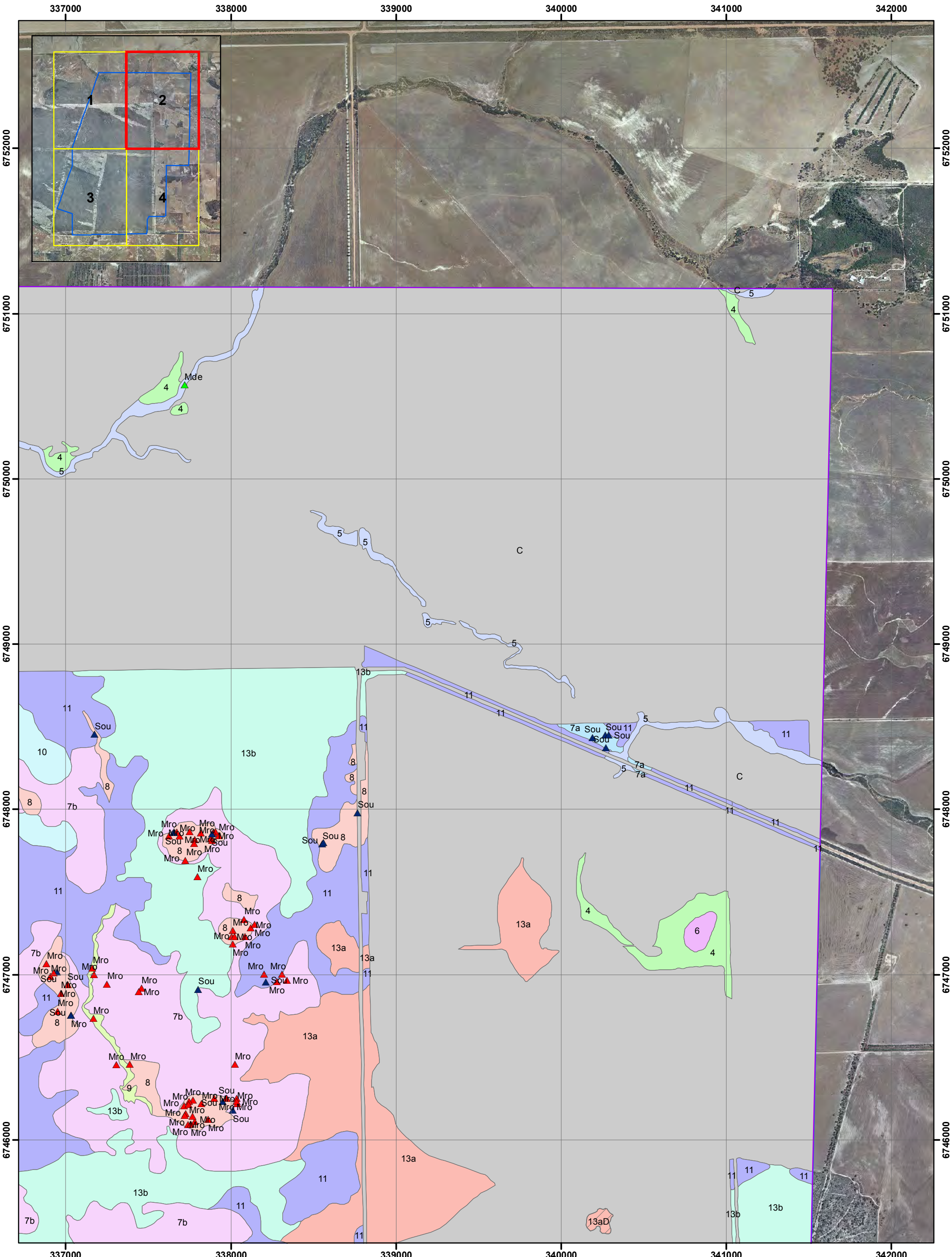
**Warrego Energy Limited
West Erregulla Project
Priority 1 and 2 Flora Overview**

Revision: A - December 2012

Author: David Coultas
 WEC Ref: Warrego12-33-01
 Filename: Warrego12-33-01-f05-0.mxd
 Scale: 1:40,000 (A3) Grid: MGA Zone 50

**Figure
5.0**





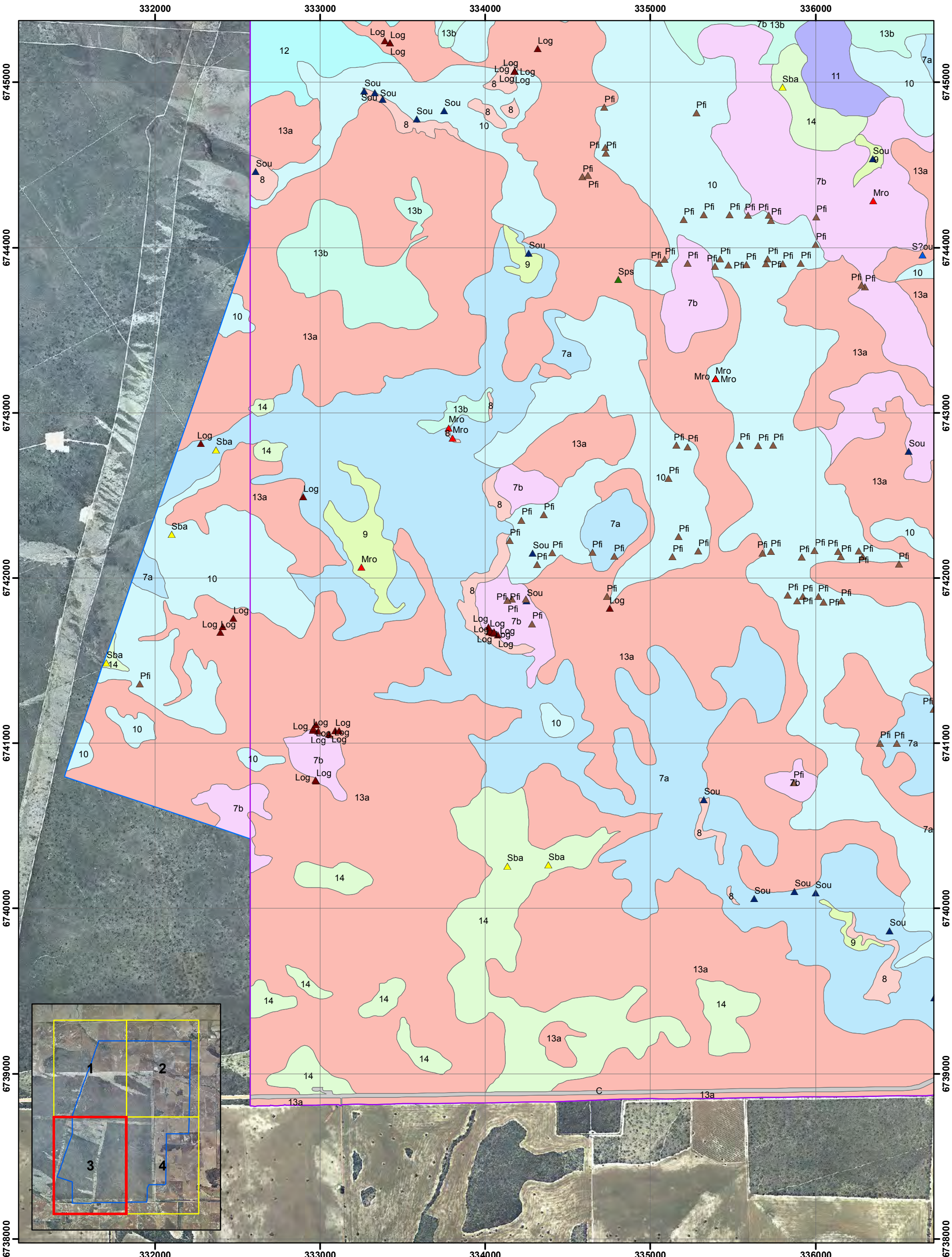
Warrego Energy Limited
West Erregulla Project
Priority 1 and 2 Flora
Sheet 2 of 4

Author: David Coultas
WEC Ref: Warrego12-33-01
Filename: Warrego12-33-01-f05.mxd
Scale: 1:20,000 (A3) Grid: MGA Zone 50

Figure
5.2

This map should only be used in conjunction with WEC report Warrego12-33-01.

Revision: A - December 2012



This map should only be used in conjunction with WEC report Warrego12-33-01.

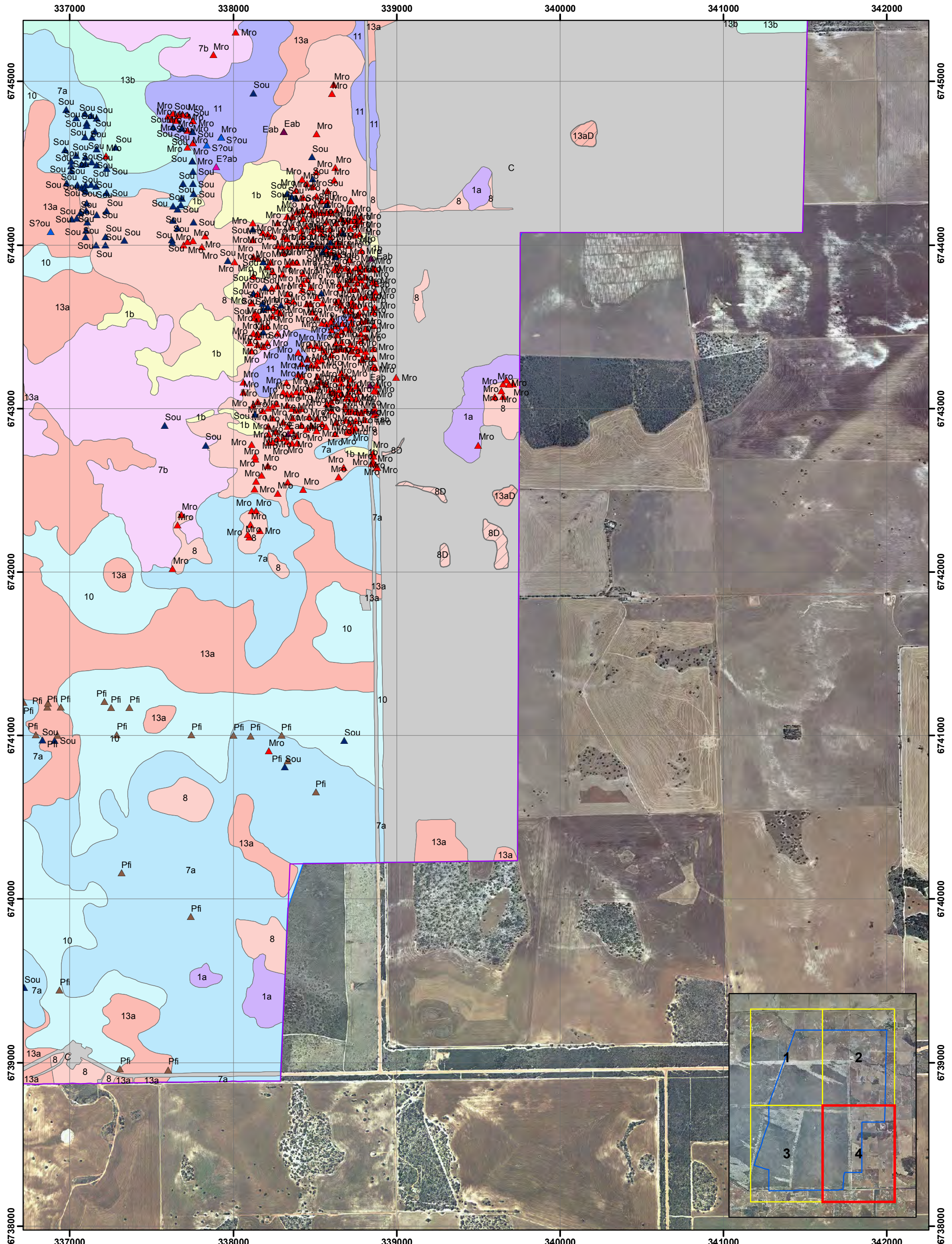


**Warrego Energy Limited
West Erregulla Project
Priority 1 and 2 Flora
Sheet 3 of 4**

Revision: A - December 2012

Author: David Coultas
WEC Ref: Warrego12-33-01
Filename: Warrego12-33-01-f05.mxd
Scale: 1:20,000 (A3) Grid: MGA Zone 50

**Figure
5.3**



This map should only be used in conjunction with WEC report Warrego12-33-01.

Warrego Energy Limited
West Erregulla Project
Priority 1 and 2 Flora
Sheet 4 of 4


Revision: A - December 2012

Author: David Coultas
 WEC Ref: Warrego12-33-01
 Filename: Warrego12-33-01-f05.mxd

Scale: 1:20,000 (A3) Grid: MGA Zone 50






Figure
5.4

Legend







 Project Area Boundary

 Study Area












Vegetation Types

-  1a Mid open forest of *Eucalyptus accedens* over mid open shrubland dominated by *Gastrolobium spinosum*, *Olearia rudis* and *Anthocercis genistoides* over low open forbland and rushland dominated by *Calandrinia calytrata*, *Calandrinia corrigioloides*, *Millotia myosotidifolia*, *Trachymene pilosa* and *Conostylis aculeata* subsp. *breviflora* on grey sand on mid slopes
-  1b Mid open forest of *Eucalyptus accedens* over low open shrubland dominated by *Gastrolobium plicatum* and *Dodonaea divaricata* over low open forbland of mixed species including *Goodenia berardiana*, *Rhodanthe manglesii*, *Podolepis lessonii* and *Acanthocarpus canaliculatus* on grey-brown sandy or clay loams on mid-upper slopes
-  2 Mid open forest of *Eucalyptus accedens* or low open forest *E. loxophleba* subsp. *loxophleba* over mid open shrubland dominated by *Rhagodia preissii* subsp. *preissii* and *Melaleuca acutifolia* on grey-brown sandy loams on flats and slopes
-  3 Occasional mid woodland of *Eucalyptus accedens* over mid shrubland dominated by *Melaleuca concreta*, *M. marginata* and *M. acutifolia* over low isolated mixed shrubs and sedges including *Acacia ericksoniae* and *Lepidosperma* sp. A2 Inland Flat (G.J. Keighery 7000) on pink-brown or white clay loams on flats
-  4 Tall closed to open shrubland dominated by *Allocasuarina campestris* or occasionally *Acacia neurophylla* subsp. *neurophylla* over mid open shrubland and sedgeland of mixed species including *Grevillea biternata*, *Melaleuca radula*, *Melaleuca concreta*, *Thryptomene* sp. Mingenew (Diels & Pritzel 332) (P3), *Ecdeiocolea monostachya* and *Thryptomene racemulosa* on grey-brown sand, sandy loam or clay loam, occasionally with granitic pebbles, on slopes and flats adjacent to seasonal creeks
-  5 Tall closed shrubland to shrubland dominated by *Allocasuarina campestris* with occasional *Acacia aciphylla*, *Acacia neurophylla* subsp. *neurophylla* and *Melaleuca viminea* subsp. *viminea* over sparse low shrubland and sedgeland of mixed species including *Ecdeiocolea monostachya* and *Thryptomene racemulosa* over open forbland and grassland of mixed introduced species including *Ehrharta longiflora* and *Ursinia anthemoides* on grey or brown sandy or clay loams within and on the banks of seasonal creeks
-  6 Open woodland of *Eucalyptus loxophleba* subsp. *loxophleba* over mid closed shrubland dominated by *Melaleuca marginata* over sparse forbland of mixed species including *Rhodanthe polycephala* on grey-brown clay on slopes above seasonal creeks
-  7a Mid mallee woodland to isolated mallees of *Eucalyptus conveniens* or mid open shrubland of *Allocasuarina campestris* over low shrubland and sedgeland of mixed species frequently dominated by *Ecdeiocolea monostachya* and *Melaleuca aspalathoides*, or occasionally *M. tinkerii*, *Hakea auriculata* or *Hakea lissocarpha*, on gravelly grey or brown clay loams or sands, usually with laterite on or near the surface, on slopes and crests
-  7b Mid mallee woodland to isolated mallees of *Eucalyptus conveniens* or mid open shrubland of *Allocasuarina campestris* over low shrubland and sedgeland of mixed species dominated by *Banksia carlinoides*, *Ecdeiocolea monostachya*, *Hakea incrassata*, *Hibbertia hypericoides* and *Melaleuca aspalathoides* on gravelly grey or brown clay loams or sands, usually with laterite on or near the surface, on slopes and crests
-  8 Mid mallee woodland to isolated mallees of *Eucalyptus conveniens* over mid shrubland to open shrubland dominated by *Allocasuarina campestris* over low shrubland and sedgeland of mixed species dominated by *Ecdeiocolea monostachya*, *Hakea auriculata*, *Melaleuca radula*, *M. aspalathoides* and *Banksia fraseri* var. *fraseri* on gravelly grey or brown clay loams usually over massive laterite on breakaway tops, ridges and lateritic rises
-  9 Mid to low open shrubland of *Allocasuarina campestris*, *Melaleuca concreta* and *Melaleuca marginata* over low shrubland dominated by *Melaleuca tinkerii* and occasionally *Gastrolobium plicatum* over low shrubland and forbland dominated by *Stylidium torticarpum* (P3), *Leucopogon* sp. Yandanooka (M. Hislop 2507) and *Micromyrtus rogeri* (P1) on gravelly pink-brown or white-grey clay or clay loam over decaying laterite on breakaway tops and slopes
-  10 Mid sparse to open shrubland of mixed species including *Calothamnus quadrifidus* subsp. *angustifolius*, *Grevillea biformis* subsp. *biformis* and *Banksia attenuata* over low shrubland and sedgeland of mixed species dominated by *Ecdeiocolea monostachya*, *Melaleuca leuropoma*, *Daviesia divaricata* subsp. *divaricata* ms, *Mesomelaena pseudostygia* and *Banksia shuttleworthiana* on yellow-brown or occasionally grey sand on slopes and valley floors
-  11 Mid sparse to open shrubland of *Allocasuarina campestris* and *Grevillea biformis* subsp. *biformis* over low shrubland and sedgeland dominated by *Hakea circumalata*, *Lepidobolus preissianus* subsp. *preissianus*, *Mesomelaena pseudostygia* and *M. stygia* subsp. *deflexa* (P3) on yellow or yellow-brown sand or sandy loam on mid to upper slopes
-  12 Occasional mid sparse to open shrubland of *Allocasuarina campestris* and *Grevillea biformis* subsp. *biformis* over low shrubland and sedgeland dominated by *Beaufortia elegans*, *Hibbertia hypericoides* and *Ecdeiocolea monostachya* on grey or brown sand or sandy loam on mid to upper slopes
-  13a Low open woodland of *Eucalyptus tottiana* over mid to low shrubland of mixed species dominated by *Allocasuarina humilis*, *Banksia scabrella* (P4), *Calothamnus sanguineus*, *Eremaea beaufortoides* var. *microphylla*, *Melaleuca* aff. *leuropoma* and *Hibbertia hypericoides* over low shrubland and sedgeland of mixed species including *Banksia dallanneyi* subsp. *media*, *Conostylis canteriata*, *Mesomelaena pseudostygia* and *Caustis dioica* on grey or brown sand on lower and mid slopes
-  13b Low open woodland of *Eucalyptus tottiana* over mid to low shrubland of mixed species dominated by *Allocasuarina humilis*, *Calothamnus sanguineus*, *Hakea trifurcata*, *Hibbertia hypericoides* and *Melaleuca leuropoma* over low shrubland and rushland of mixed species including *Banksia dallanneyi* subsp. *media*, *Conostylis aculeata* subsp. *breviflora* and *Conostylis canteriata* on grey, brown or yellow sand on flats, in depressions and on slopes
-  14 Low open shrubland dominated by *Calothamnus quadrifidus* subsp. *angustifolius*, *Banksia carlinoides*, *Hakea lissocarpha* and *Verticordia densiflora* over low open shrubland, sedgeland and forbland dominated by *Dampiera teres* (broad-leaf variant), *Jacksonia angulata*, *Harperia lateriflora*, *Opercularia vaginata* and *Melaleuca trichophylla* on grey-brown sands, sandy loams and clay loams in minor drainage lines and on flats

Other Mapped Areas

-  4D Degraded area of VT 4
-  8D Degraded area of VT 8
-  10D Degraded area of VT 10
-  13aD Degraded area of VT 13a
-  PC1D Low woodland of *Acacia acuminata* over introduced pasture grasses and isolated native forbs including *Ptilotus manglesii* and *Arthropodium dyeri* on grey-brown clay loams on flats adjacent to seasonal creeks
-  C Cleared Land

Conservation Significant Flora

-  Eab *Eucalyptus abdita* (P2)
-  E?ab *Eucalyptus ?abdita* (P2)
-  Log *Lasiopetalum ogilvieanum* (P1)
-  Mde *Malleostemon decipiens* (P1)
-  Mro *Micromyrtus rogeri* (P1)
-  Pfi *Persoonia filiformis* (P2)
-  ?ScaNL ?*Stylidium carnosum* subsp. Narrow leaves (J.A. Wege 490)
-  Sba *Schoenus badius* (P2)
-  Sou *Synaphea oulopha* (P1)
-  S?ou *Synaphea ?oulopha* (P1)
-  Sps *Stylidium pseudocaespitosum* (P2)



This map should only be used in conjunction with WEC report Warrego12-33-01.



Warrego Energy Limited
West Erregulla Project
Vegetation Types and Priority 1 and 2
Conservation Significant Flora Legend

Revision: A - December 2012

Author: David Coultas

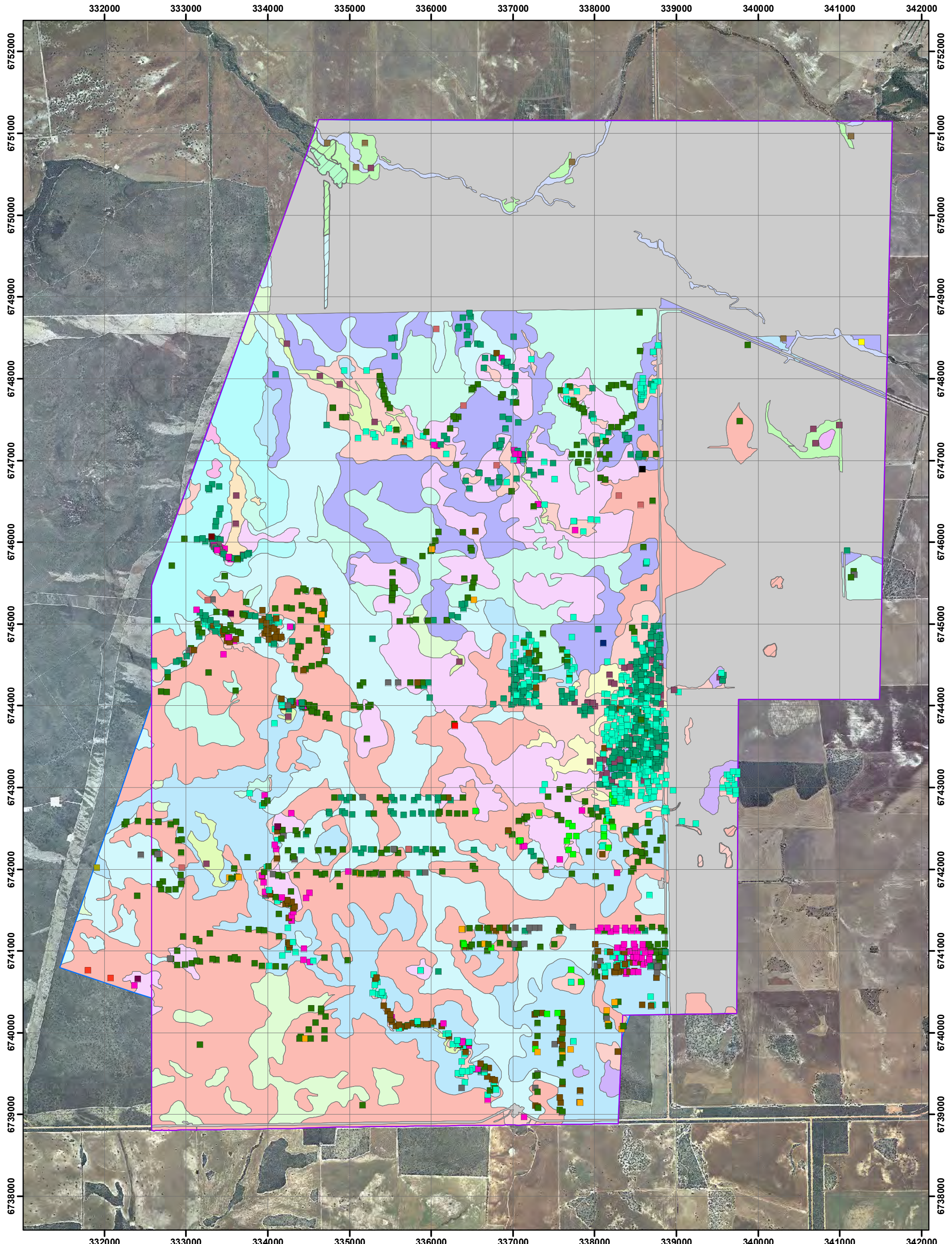
WEC Ref: Warrego12-33-01

Filename: Warrego12-33-01-f05.mxd

Scale: 1:20,000 (A3) Grid: MGA Zone 50

Figure

5



This map should only be used in conjunction with WEC report Warrego12-33-01.

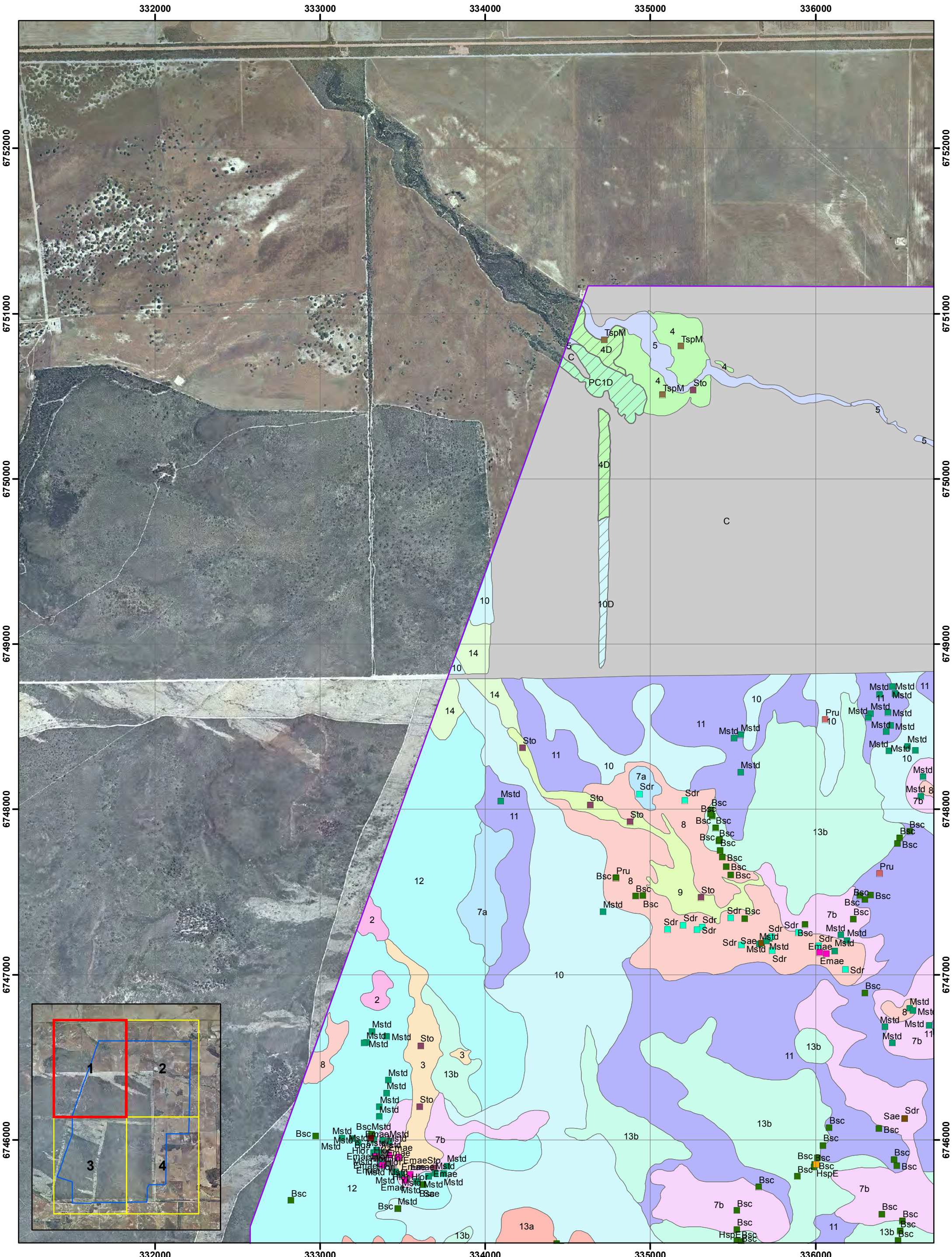
Warrego Energy Limited
West Erregulla Project
Priority 3 and 4 Flora Overview

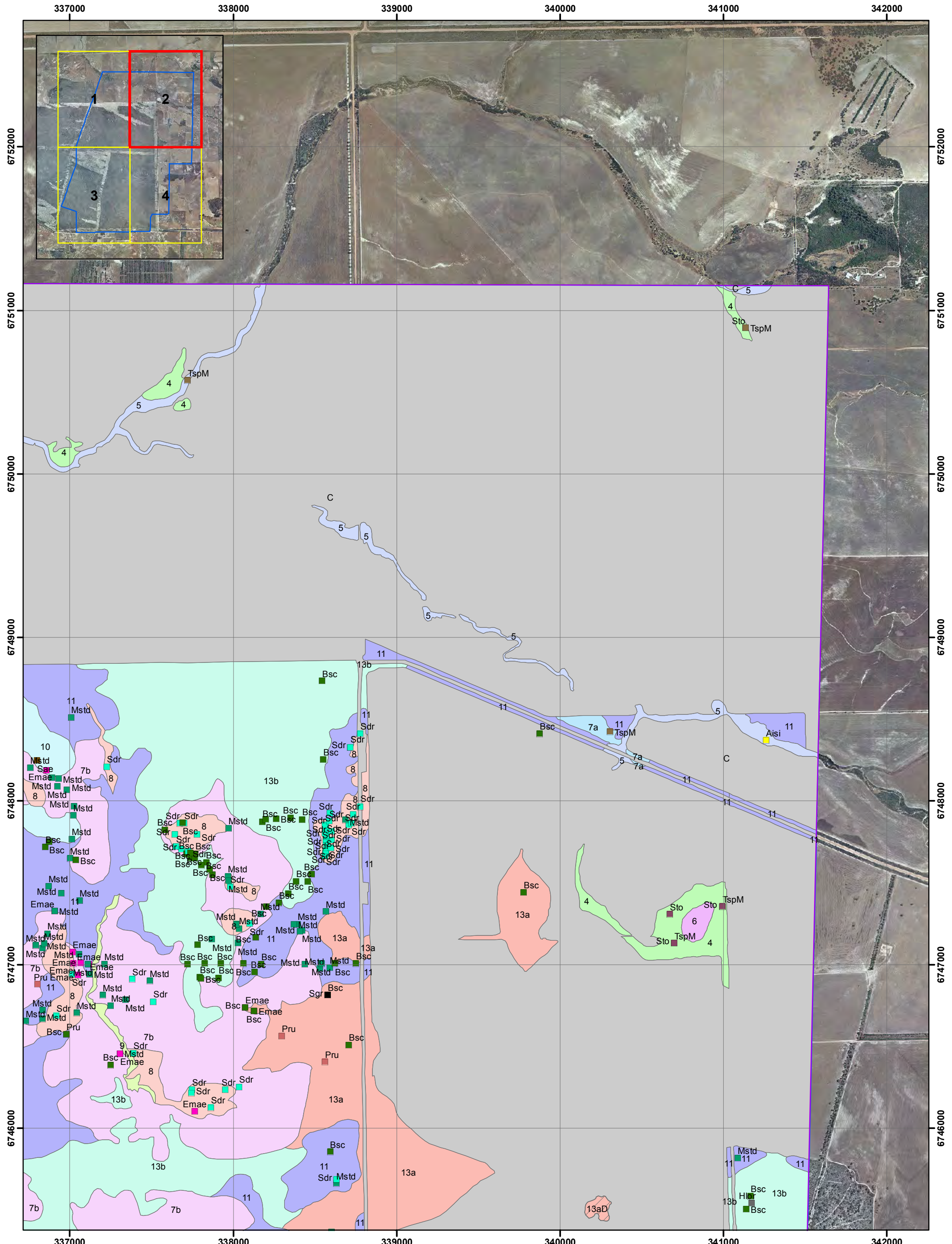
Revision: A - December 2012

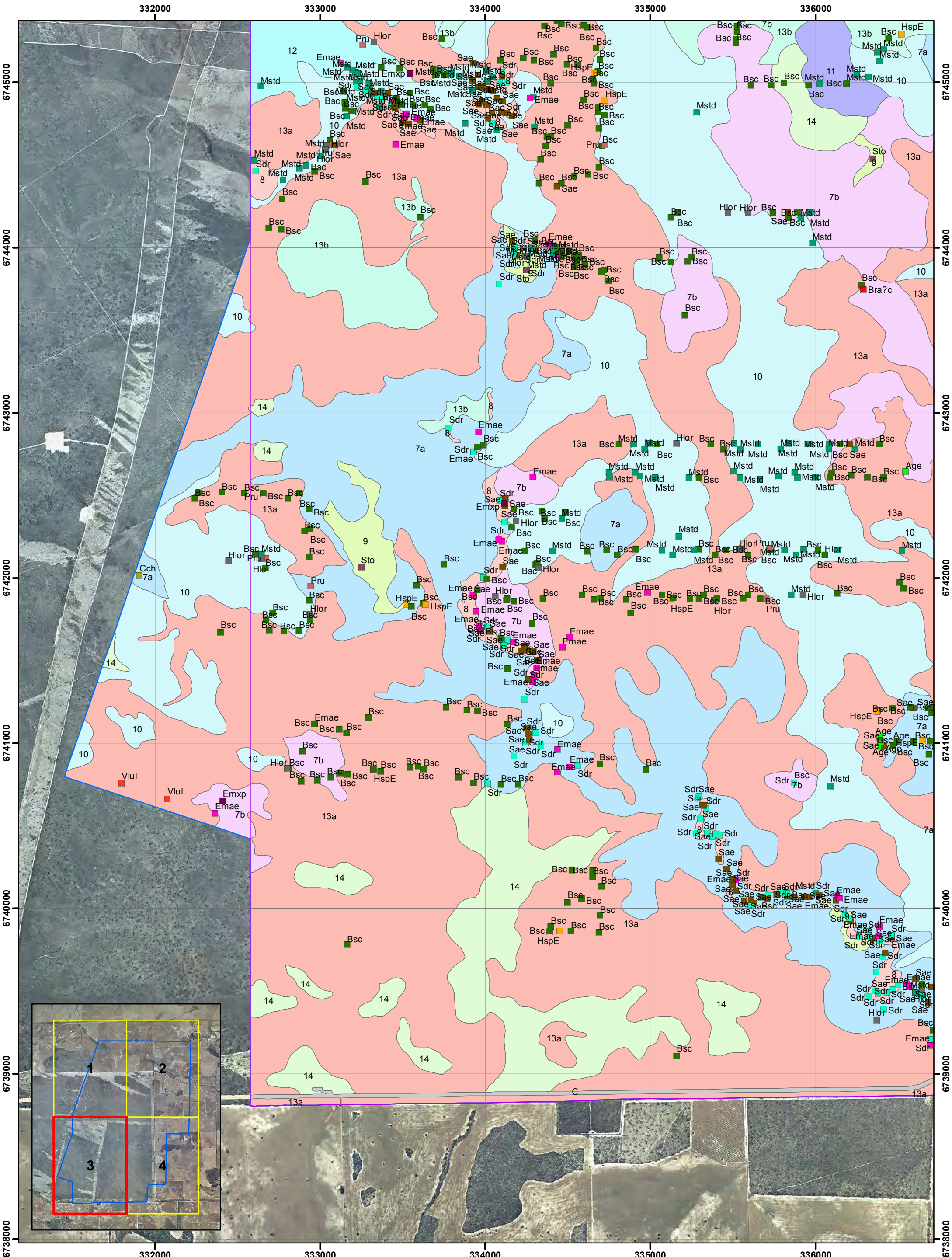
Author: David Coultas
 WEC Ref: Warrego12-33-01
 Filename: Warrego12-33-01-f06-0.mxd

Scale: 1:40,000 (A3) Grid: MGA Zone 50

Figure
6.0







This map should only be used in conjunction with WEC report Warrego12-33-01.

Warrego Energy Limited
West Erregulla Project
Priority 3 and 4 Flora
Sheet 3 of 4

Revision: A - December 2012

Author: David Coultas

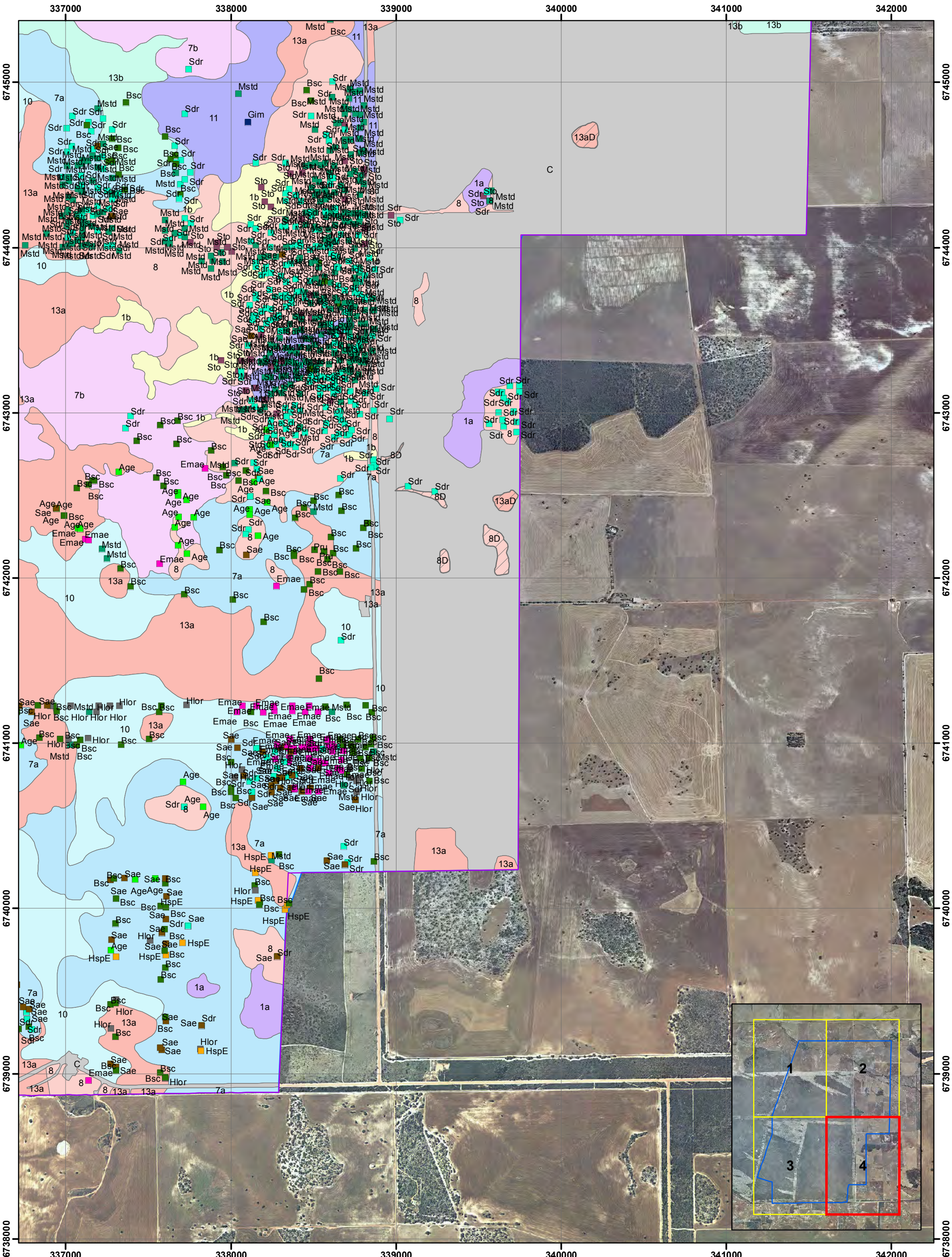
WEC Ref: Warrego12-33-01

Filename: Warrego12-33-01-f06.mxd

Scale: 1:20,000 (A3) Grid: MGA Zone 50

Figure

6.3



This map should only be used in conjunction with WEC report Warrego12-33-01.

**Warrego Energy Limited
West Erregulla Project
Priority 3 and 4 Flora
Sheet 4 of 4**

Revision: A - December 2012

Author: David Coultas

WEC Ref: Warrego12-33-01


Filename: Warrego12-33-01-f06.mxd

Scale: 1:20,000 (A3) Grid: MGA Zone 50


















**Figure
6.4**

Legend







 Project Area Boundary

 Study Area

Vegetation Types

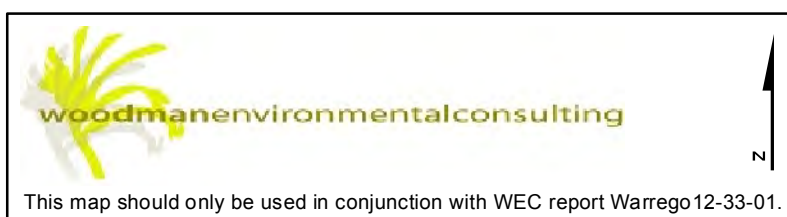
-  1a Mid open forest of *Eucalyptus accedens* over mid open shrubland dominated by *Gastrolobium spinosum*, *Olearia rudis* and *Anthocercis genistoides* over low open forbland and rushland dominated by *Calandrinia calyptata*, *Calandrinia corrigioloides*, *Millotia myosotidifolia*, *Trachymene pilosa* and *Conostylis aculeata* subsp. *breviflora* on grey sand on mid slopes
-  1b Mid open forest of *Eucalyptus accedens* over low open shrubland dominated by *Gastrolobium plicatum* and *Dodonaea divaricata* over low open forbland of mixed species including *Goodenia berardiana*, *Rhodanthe manglesii*, *Podolepis lessonii* and *Acanthocarpus canaliculatus* on grey-brown sandy or clay loams on mid-upper slopes
-  2 Mid open forest of *Eucalyptus accedens* or low open forest *E. loxophleba* subsp. *loxophleba* over mid open shrubland dominated by *Rhagodia preissii* subsp. *preissii* and *Melaleuca acutifolia* on grey-brown sandy loams on flats and slopes
-  3 Occasional mid woodland of *Eucalyptus accedens* over mid shrubland dominated by *Melaleuca concreta*, *M. marginata* and *M. acutifolia* over low isolated mixed shrubs and sedges including *Acacia ericksoniae* and *Lepidosperma* sp. A2 Inland Flat (G.J. Keighery 7000) on pink-brown or white clay loams on flats
-  4 Tall closed to open shrubland dominated by *Allocasuarina campestris* or occasionally *Acacia neurophylla* subsp. *neurophylla* over mid open shrubland and sedgeland of mixed species including *Grevillea biternata*, *Melaleuca radula*, *Melaleuca concreta*, *Thryptomene* sp. Mingenew (Diels & Pritzel 332) (P3), *Ecdeiocolea monostachya* and *Thryptomene racemulosa* on grey-brown sand, sandy loam or clay loam, occasionally with granitic pebbles, on slopes and flats adjacent to seasonal creeks
-  5 Tall closed shrubland to shrubland dominated by *Allocasuarina campestris* with occasional *Acacia aciphylla*, *Acacia neurophylla* subsp. *neurophylla* and *Melaleuca viminea* subsp. *viminea* over sparse low shrubland and sedgeland of mixed species including *Ecdeiocolea monostachya* and *Thryptomene racemulosa* over open forbland and grassland of mixed introduced species including **Ehrharta longiflora* and *Ursinia anthemoides* on grey or brown sandy or clay loams within and on the banks of seasonal creeks
-  6 Open woodland of *Eucalyptus loxophleba* subsp. *loxophleba* over mid closed shrubland dominated by *Melaleuca marginata* over sparse forbland of mixed species including *Rhodanthe polycephala* on grey-brown clay on slopes above seasonal creeks
-  7a Mid mallee woodland to isolated mallees of *Eucalyptus conveniens* or mid open shrubland of *Allocasuarina campestris* over low shrubland and sedgeland of mixed species frequently dominated by *Ecdeiocolea monostachya* and *Melaleuca aspalathoides*, or occasionally *M. tinkerii*, *Hakea auriculata* or *Hakea lissocarpa*, on gravelly grey or brown clay loams or sands, usually with laterite on or near the surface, on slopes and crests
-  7b Mid mallee woodland to isolated mallees of *Eucalyptus conveniens* or mid open shrubland of *Allocasuarina campestris* over low shrubland and sedgeland of mixed species dominated by *Banksia carlinoides*, *Ecdeiocolea monostachya*, *Hakea incrassata*, *Hibbertia hypericoides* and *Melaleuca aspalathoides* on gravelly grey or brown clay loams or sands, usually with laterite on or near the surface, on slopes and crests
-  8 Mid mallee woodland to isolated mallees of *Eucalyptus conveniens* over mid shrubland to open shrubland dominated by *Allocasuarina campestris* over low shrubland and sedgeland of mixed species dominated by *Ecdeiocolea monostachya*, *Hakea auriculata*, *Melaleuca radula*, *M. aspalathoides* and *Banksia fraseri* var. *fraseri* on gravelly grey or brown clay loams usually over massive laterite on breakaway tops, ridges and lateritic rises
-  9 Mid to low open shrubland of *Allocasuarina campestris*, *Melaleuca concreta* and *Melaleuca marginata* over low shrubland dominated by *Melaleuca tinkerii* and occasionally *Gastrolobium plicatum* over low shrubland and forbland dominated by *Stylidium torticarpum* (P3), *Leucopogon* sp. Yandanooka (M. Hislop 2507) and *Micromyrtus rogeri* (P1) on gravelly pink-brown or white-grey clay or clay loam over decaying laterite on breakaway tops and slopes
-  10 Mid sparse to open shrubland of mixed species including *Calothamnus quadrifidus* subsp. *angustifolius*, *Grevillea biformis* subsp. *biformis* and *Banksia attenuata* over low shrubland and sedgeland of mixed species dominated by *Ecdeiocolea monostachya*, *Melaleuca leuropoma*, *Daviesia divaricata* subsp. *divaricata* ms, *Mesomelaena pseudostygia* and *Banksia shuttleworthiana* on yellow-brown or occasionally grey sand on slopes and valley floors
-  11 Mid sparse to open shrubland of *Allocasuarina campestris* and *Grevillea biformis* subsp. *biformis* over low shrubland and sedgeland dominated by *Hakea circumalata*, *Lepidobolus preissianus* subsp. *preissianus*, *Mesomelaena pseudostygia* and *M. stygia* subsp. *deflexa* (P3) on yellow or yellow-brown sand or sandy loam on mid to upper slopes
-  12 Occasional mid sparse to open shrubland of *Allocasuarina campestris* and *Grevillea biformis* subsp. *biformis* over low shrubland and sedgeland dominated by *Beaufortia elegans*, *Hibbertia hypericoides* and *Ecdeiocolea monostachya* on grey or brown sand or sandy loam on mid to upper slopes
-  13a Low open woodland of *Eucalyptus tottiana* over mid to low shrubland of mixed species dominated by *Allocasuarina humilis*, *Banksia scabrella* (P4), *Calothamnus sanguineus*, *Eremaea beaufortioides* var. *microphylla*, *Melaleuca* aff. *leuropoma* and *Hibbertia hypericoides* over low shrubland and sedgeland of mixed species including *Banksia dallanneyi* subsp. *media*, *Conostylis canteriata*, *Mesomelaena pseudostygia* and *Caustis dioica* on grey or brown sand on lower and mid slopes
-  13b Low open woodland of *Eucalyptus tottiana* over mid to low shrubland of mixed species dominated by *Allocasuarina humilis*, *Calothamnus sanguineus*, *Hakea trifurcata*, *Hibbertia hypericoides* and *Melaleuca leuropoma* over low shrubland and rushland of mixed species including *Banksia dallanneyi* subsp. *media*, *Conostylis aculeata* subsp. *breviflora* and *Conostylis canteriata* on grey, brown or yellow sand on flats, in depressions and on slopes
-  14 Low open shrubland dominated by *Calothamnus quadrifidus* subsp. *angustifolius*, *Banksia carlinoides*, *Hakea lissocarpa* and *Verticordia densiflora* over low open shrubland, sedgeland and forbland dominated by *Dampiera teres* (broad-leaf variant), *Jacksonia angulata*, *Harperia lateriflora*, *Opercularia vaginata* and *Melaleuca trichophylla* on grey-brown sands, sandy loams and clay loams in minor drainage lines and on flats

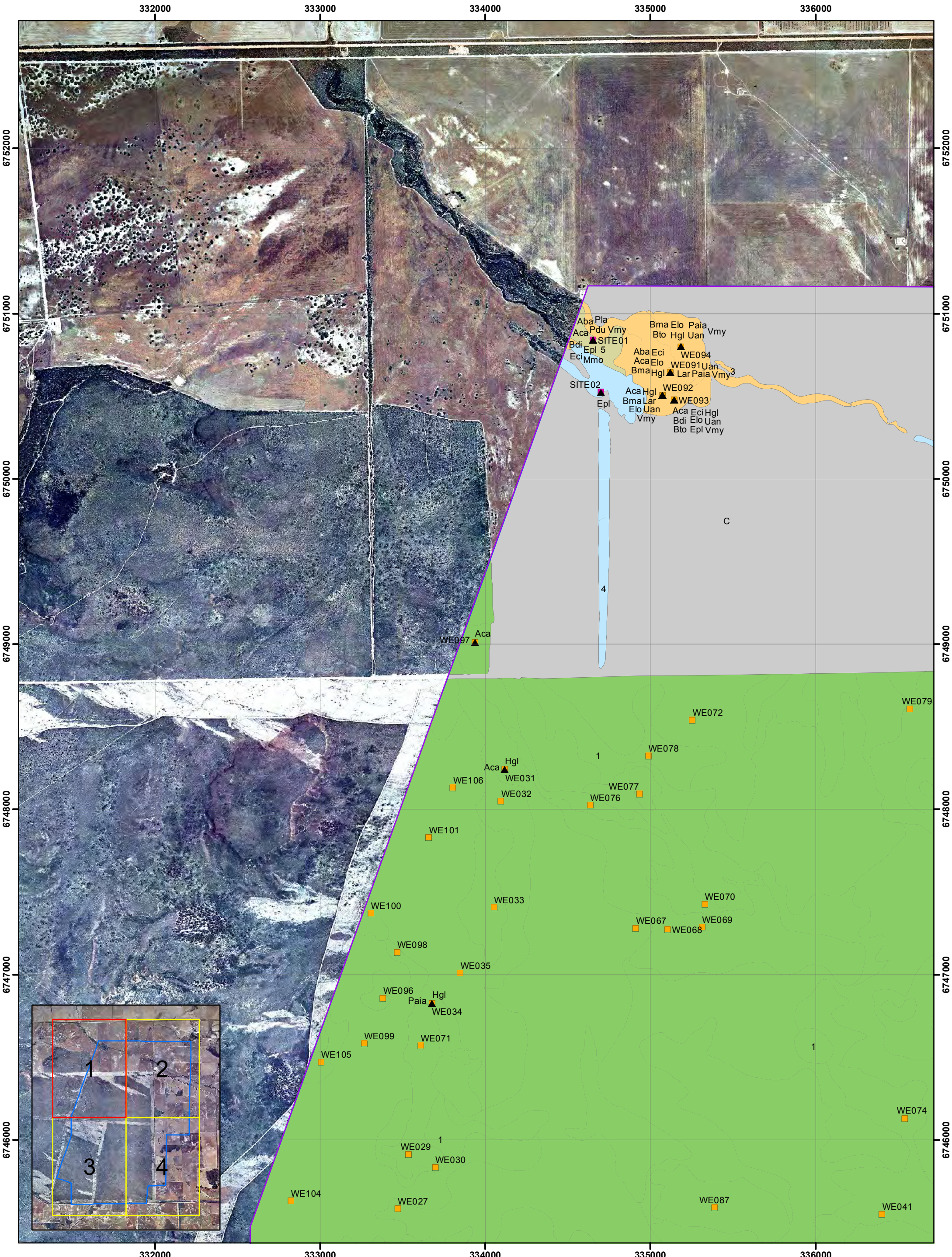
Other Mapped Areas

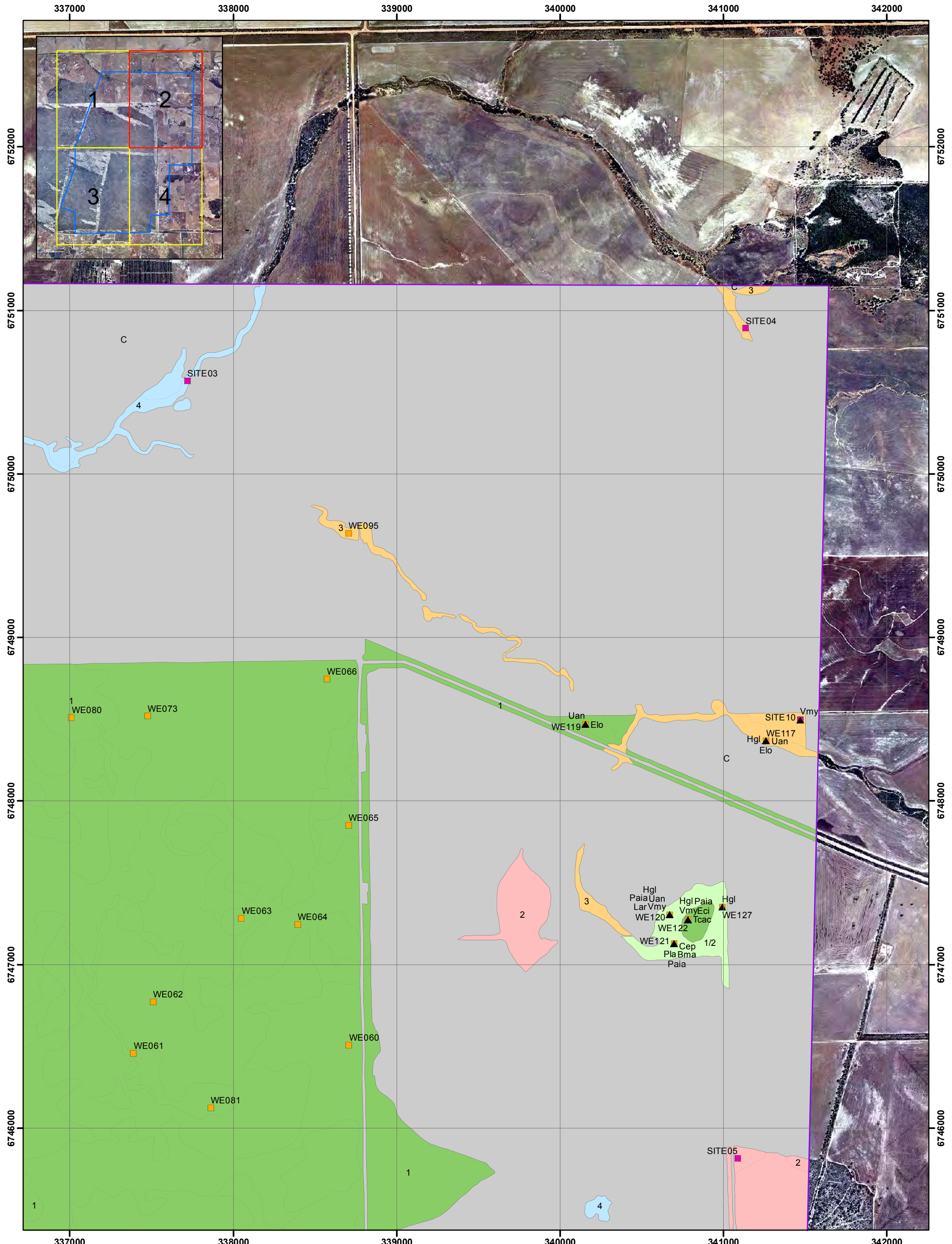
-  4D Degraded area of VT 4
-  8D Degraded area of VT 8
-  10D Degraded area of VT 10
-  13aD Degraded area of VT 13a
-  PC1D Low woodland of *Acacia acuminata* over introduced pasture grasses and isolated native forbs including *Ptilotus manglesii* and *Arthropodium dyeri* on grey-brown clay loams on flats adjacent to seasonal creeks
-  C Cleared Land

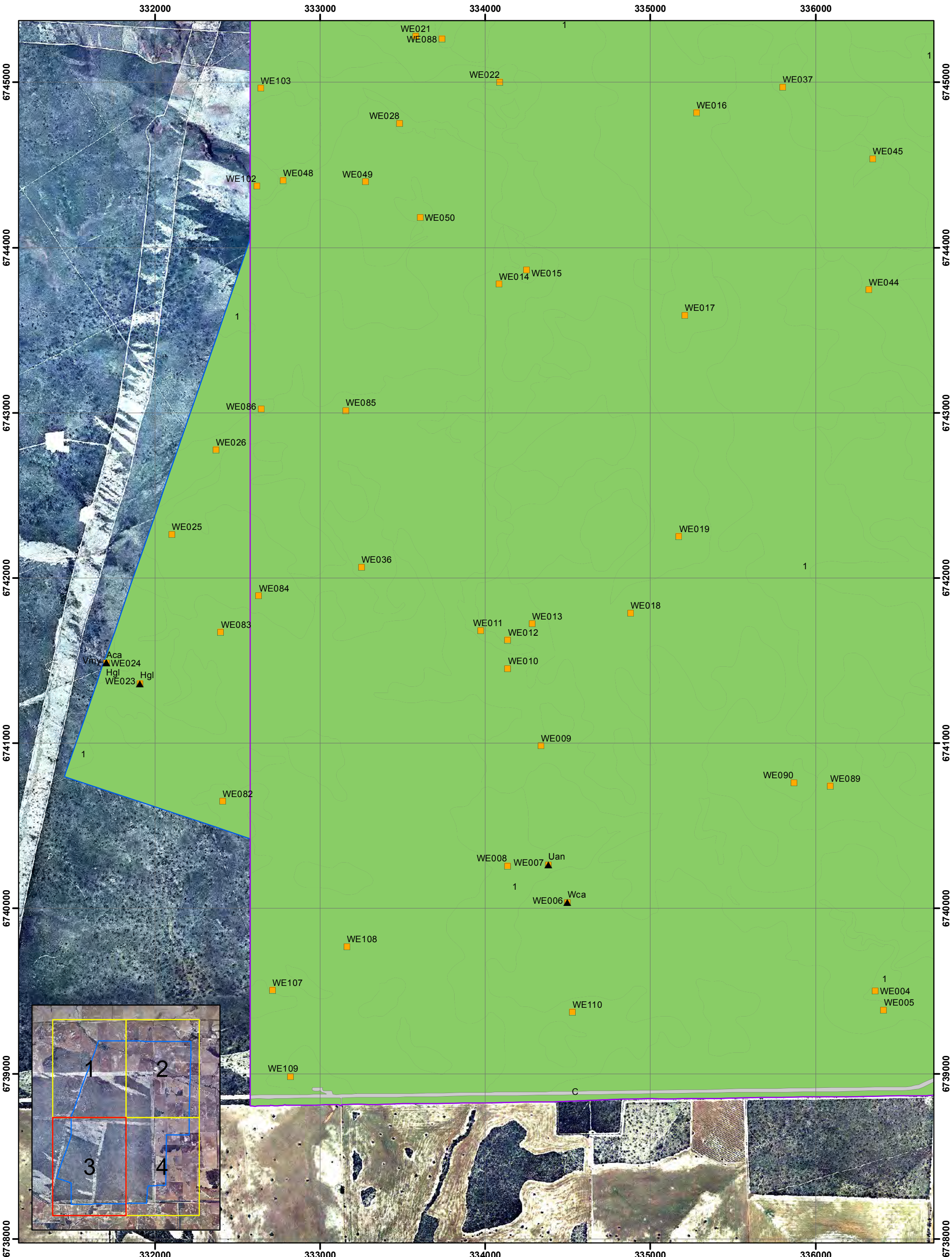
Conservation Significant Flora

-  Age *Allocasuarina grevilleoides* (P3)
-  Aisi *Acacia isoneura* subsp. *isoneura* (P3)
-  Bga *Beyeria gardneri* (P3)
-  Bra?c *Banksia fraseri* var. *?crebra* (3)
-  Bsc *Banksia scabrella* (P4)
-  Cch *Calytrix chrysantha* (P4)
-  Emae *Eucalyptus macrocarpa* subsp. *elachantha* (P4)
-  Emxp *Eucalyptus macrocarpa* x *pyriformis* (P3)
-  Gim *Guichenotia impudica* (P3)
-  Hlor *Haemodorum loratum* (P3)
-  HspE *Hemiandra* sp. Eneabba (H. Demarz 3687) (P3)
-  Mstd *Mesomelaena stygia* subsp. *deflexa* (P3)
-  Pru *Persoonia rudis* (P3)
-  Sae *Synaphea aephynsa* (P3)
-  Sdr *Stylidium drummondianum* (P3)
-  Sgr *Schoenus griffinianus* (3)
-  Sto *Stylidium torticarpum* (P3)
-  TspM *Thryptomene* sp. Mingenew (Diels & Pritzel 332) (P3)
-  Vlul *Verticordia luteola* var. *luteola* (P3)

	Warrego Energy Limited West Erregulla Project Vegetation Types and Priority 3 and 4 Conservation Significant Flora Legend		Author: David Coultas	Figure 6
			WEC Ref: Warrego12-33-01	
			Filename: Warrego12-33-01-f06.mxd	
			Scale: 1:20,000 (A3) Grid: MGA Zone 50	
This map should only be used in conjunction with WEC report Warrego12-33-01.		Revision: A - December 2012		







This map should only be used in conjunction with WEC report Warrego12-33-01.



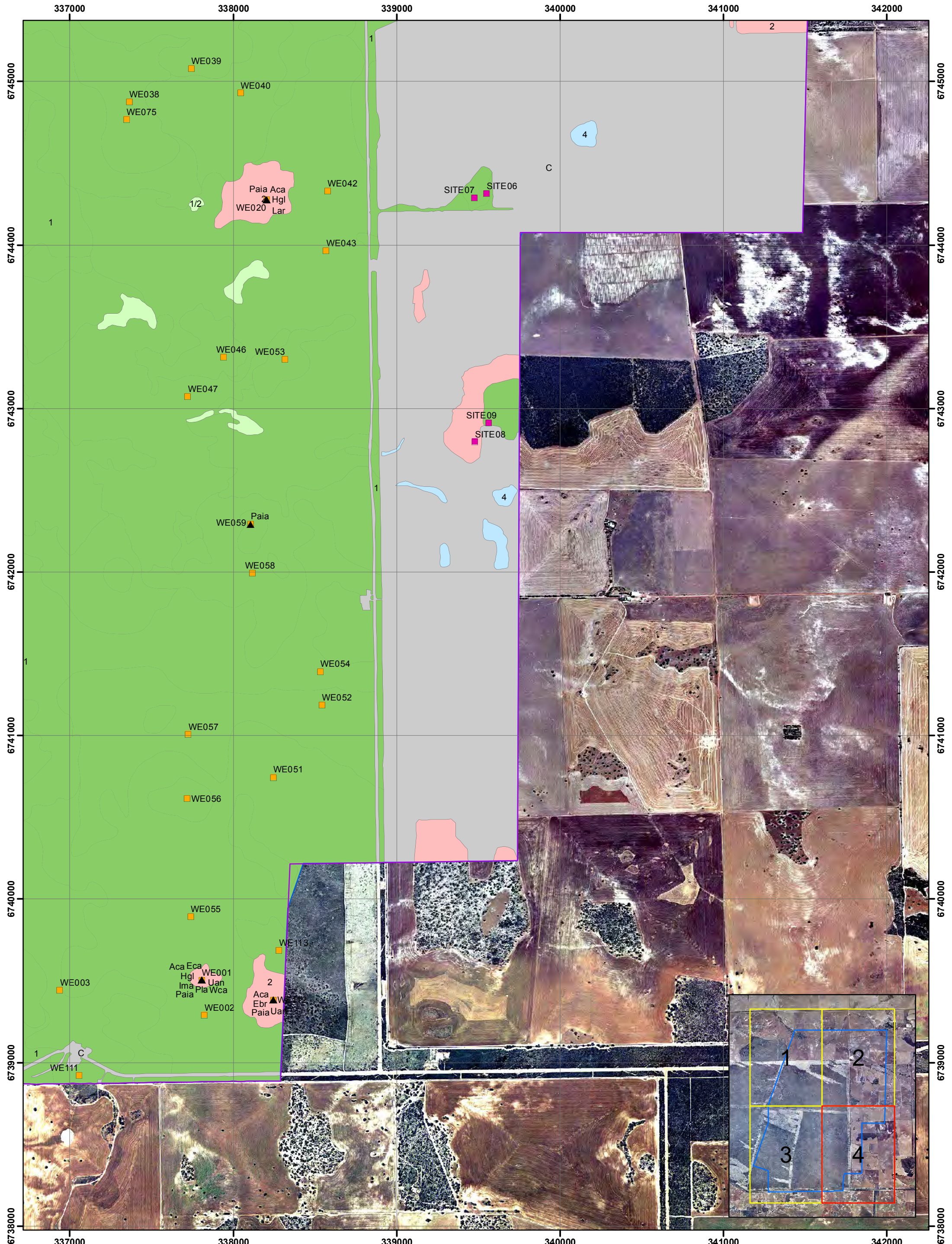
**Warrego Energy Limited
West Erregulla Project
Introduced Flora and Vegetation Condition
Sheet 3 of 4**

Revision: A - December 2012

Author: David Coultas
WEC Ref: Warrego12-33-01
Filename: Warrego12-33-01-f07.mxd

Scale: 1:20,000 (A3) Grid: MGA Zone 50

**Figure
7.3**



Legend

- Quadrat
- Detailed Recording Site
- Project Area Boundary
- Study Area

Condition Code

- 1 Pristine: Pristine or nearly so; no obvious signs of disturbance.
- 1/2 Mosaic of condition rankings 1 and 2
- 2 Excellent: Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
Very Good: 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
- 3 Good: More obvious signs of damage caused by human activities since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds
- 4 Poor: Still retains basic vegetation structure or ability to regenerate to it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds
- 5 Cleared land

▲ Introduced Flora

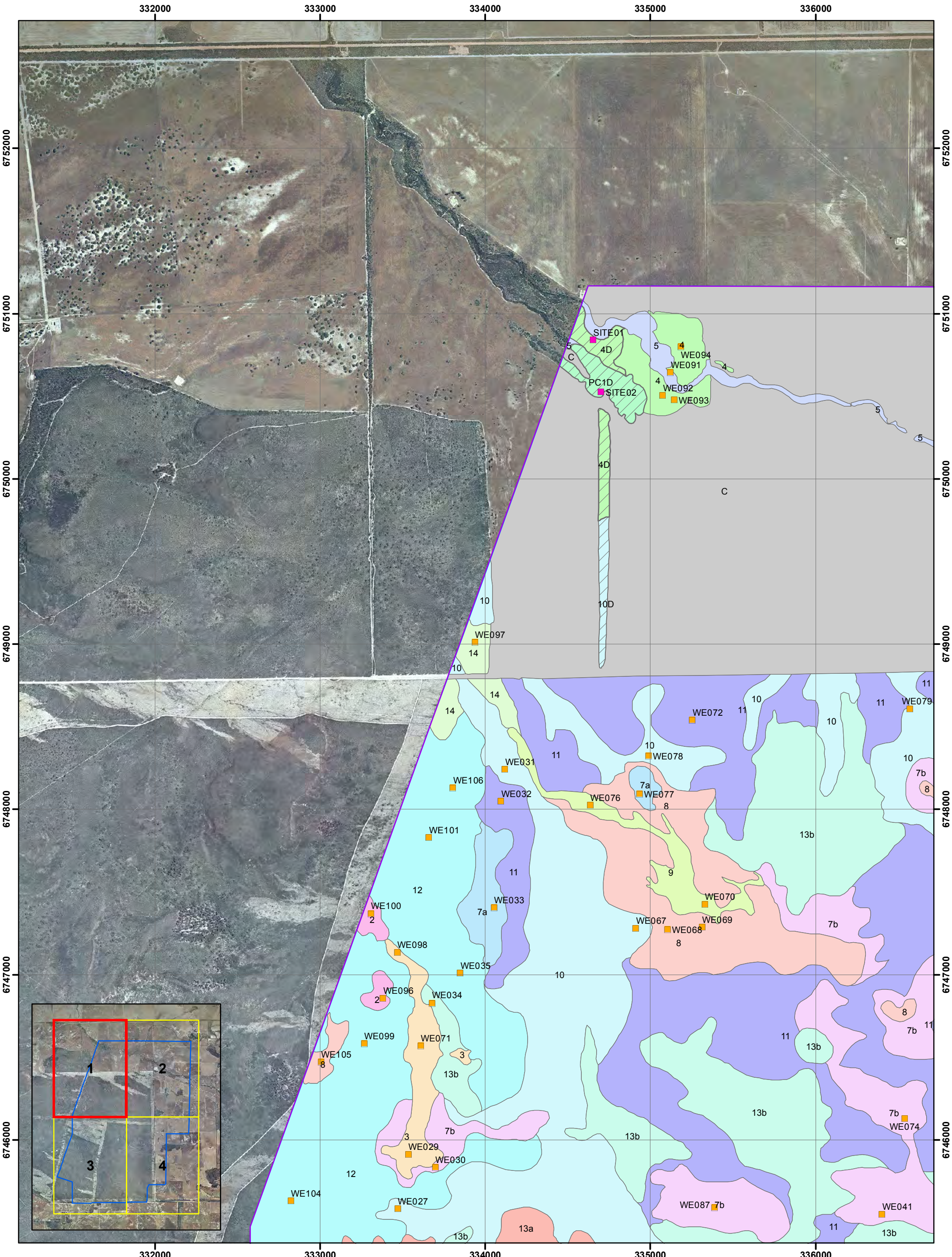
Introduced Flora Taxa

- ▲ Aba **Avena barbata*
- ▲ Aca **Arctotheca calendula*
- ▲ Bdi **Bromus diandrus*
- ▲ Bma **Briza maxima*
- ▲ Bto **Brassica tournefortii*
- ▲ Cep **Cuscuta epithymum*
- ▲ Ebr **Ehrharta brevifolia*
- ▲ Eca **Ehrharta calycina*
- ▲ Eci **Erodium cicutarium*
- ▲ Elo **Ehrharta longiflora*
- ▲ Epl **Echium plantagineum*
- ▲ Hgl **Hypochaeris glabra*
- ▲ Ima **Isolepis marginata*
- ▲ Lar **Lysimachia arvensis*
- ▲ Mmo **Monoculus monstrosus*
- ▲ Paia **Pentameris airoides* subsp. *airoides*
- ▲ Pdu **Petrorhagia dubia*
- ▲ Pla **Parentucellia latifolia*
- ▲ Tcac **Trifolium campestre* var. *campestre*
- ▲ Uan **Ursinia anthemoides*
- ▲ Vmy **Vulpia myuros*
- ▲ Wca **Wahlenbergia capensis*



This map should only be used in conjunction with WEC report Warrego12-33-01.

**Warrego Energy Limited
West Erregulla Project
Introduced Flora and
Vegetation Condition Legend**



This map should only be used in conjunction with WEC report Warrego12-33-01.



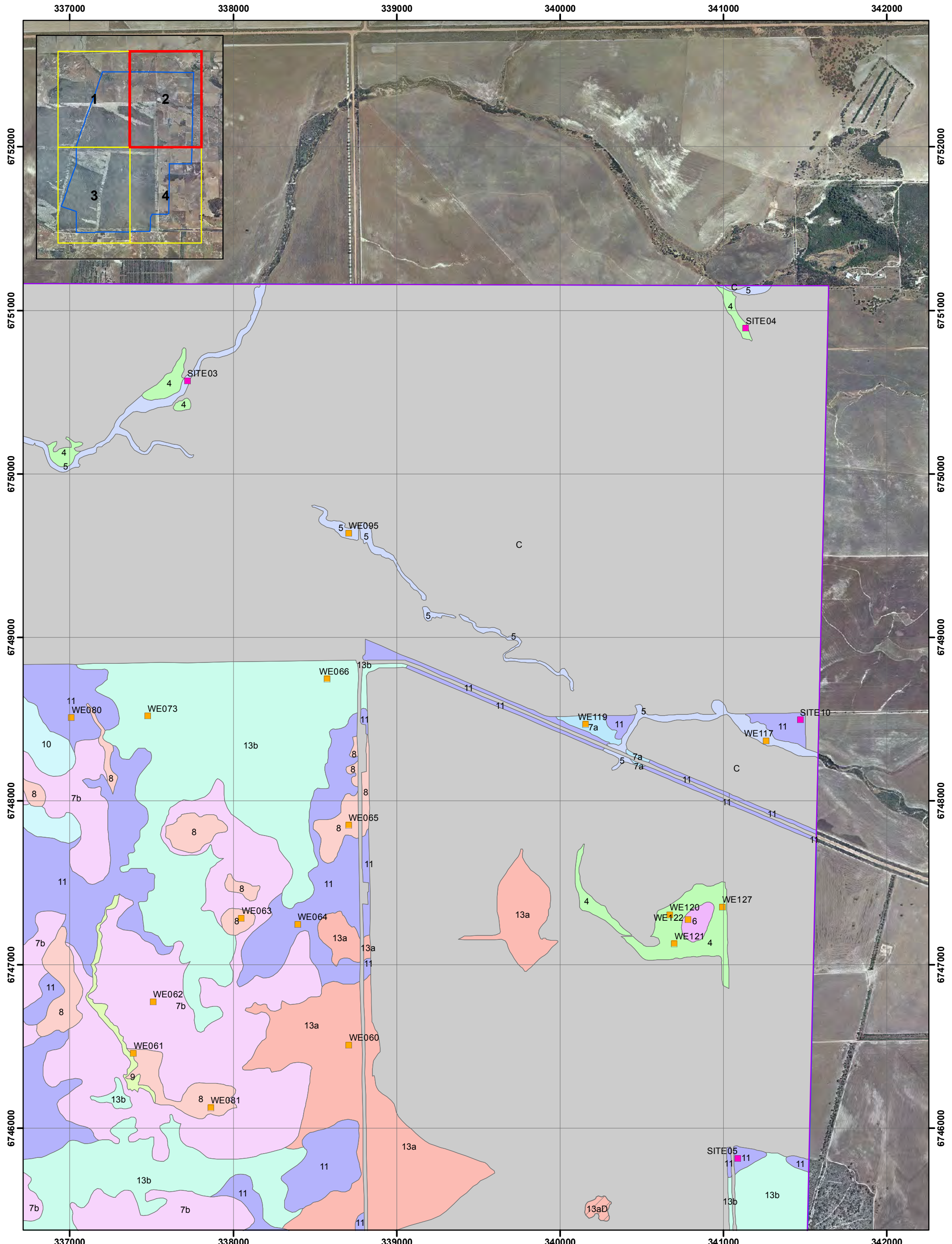
**Warrego Energy Limited
West Erregulla Project
Vegetation Types
Sheet 1 of 4**

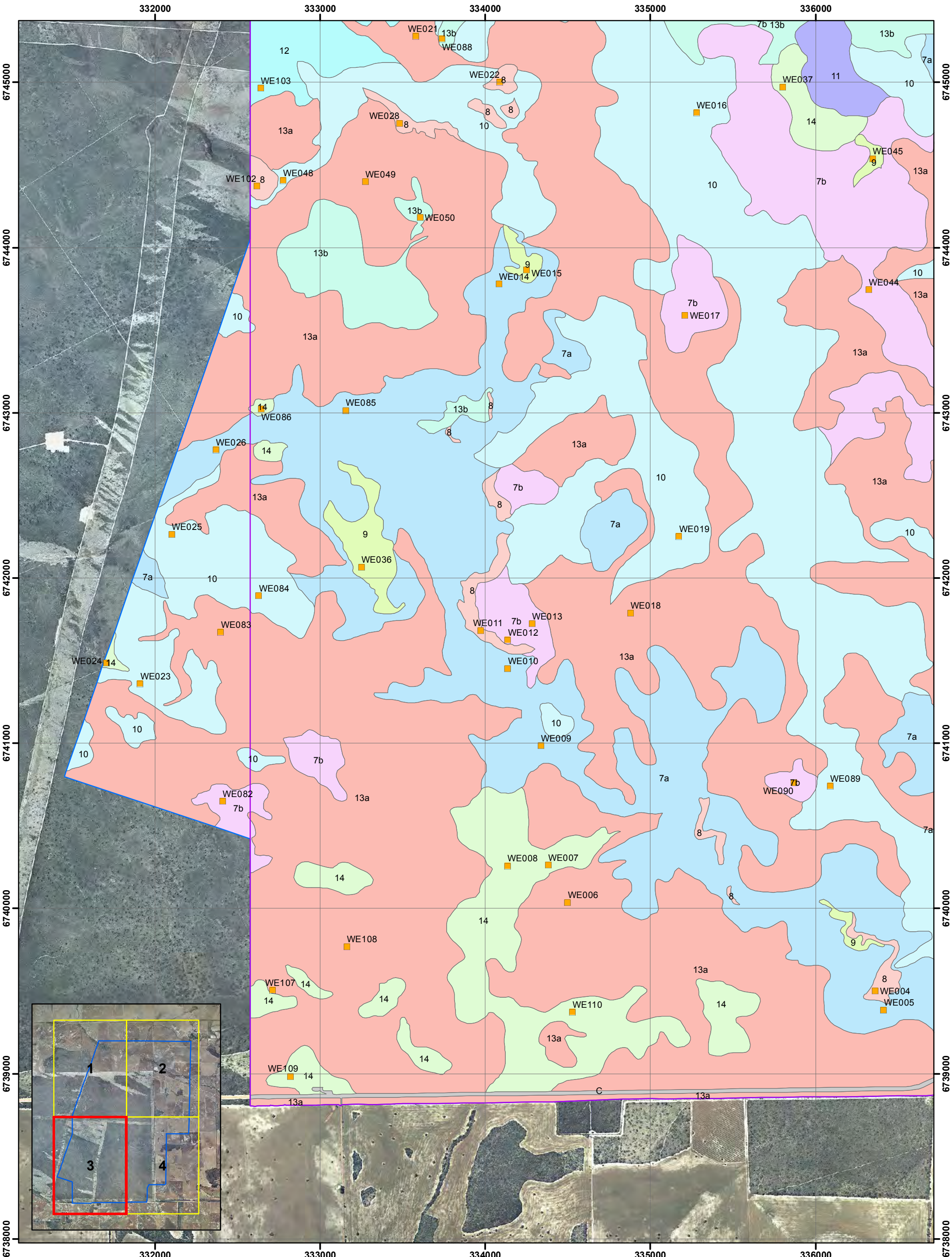
Revision: A - December 2012

Author: David Coultas
WEC Ref: Warrego12-33-01
Filename: Warrego12-33-01-f08.mxd

Scale: 1:20,000 (A3) Grid: MGA Zone 50

**Figure
8.1**





This map should only be used in conjunction with WEC report Warrego12-33-01.



**Warrego Energy Limited
West Erregulla Project
Vegetation Types
Sheet 3 of 4**

Revision: A - December 2012

Author: David Coultas

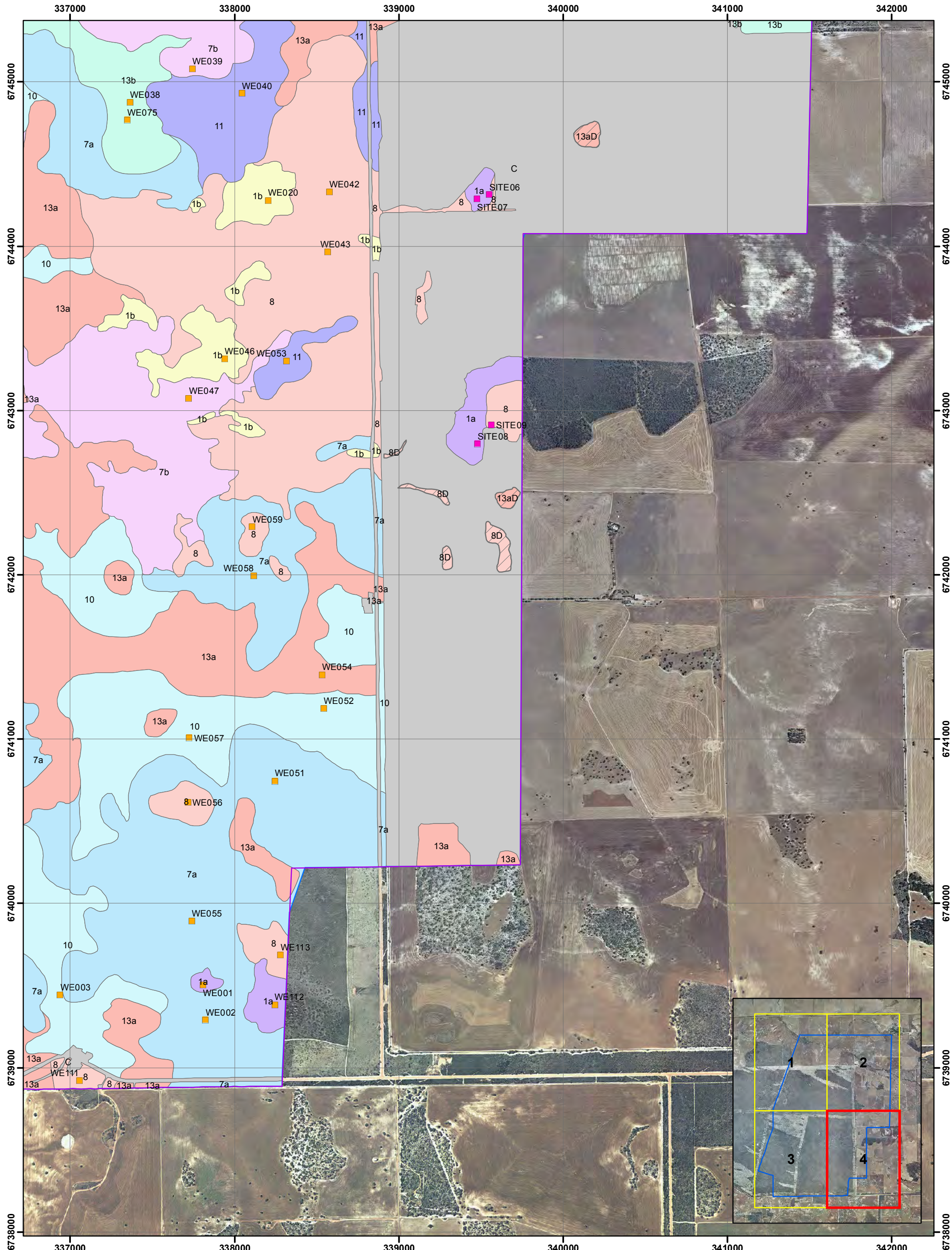
WEC Ref: Warrego12-33-01

Filename: Warrego12-33-01-f08.mxd

Scale: 1:20,000 (A3) Grid: MGA Zone 50

Figure

8.3



Legend



- Quadrat
- Detailed Recording Site
- Project Area Boundary
- Study Area

Vegetation Types

- 1a Mid open forest of *Eucalyptus accedens* over mid open shrubland dominated by *Gastrolobium spinosum*, *Olearia rudis* and *Anthocercis genistoides* over low open forbland and rushland dominated by *Calandrinia calyptata*, *Calandrinia corrigioloides*, *Millotia myosotidifolia*, *Trachymene pilosa* and *Conostylis aculeata* subsp. *breviflora* on grey sand on mid slopes
- 1b Mid open forest of *Eucalyptus accedens* over low open shrubland dominated by *Gastrolobium plicatum* and *Dodonaea divaricata* over low open forbland of mixed species including *Goodenia berardiana*, *Rhodanthe manglesii*, *Podolepis lessonii* and *Acanthocarpus canaliculatus* on grey-brown sandy or clay loams on mid-upper slopes
- 2 Mid open forest of *Eucalyptus accedens* or low open forest *E. loxophleba* subsp. *loxophleba* over mid open shrubland dominated by *Rhagodia preissii* subsp. *preissii* and *Melaleuca acutifolia* on grey-brown sandy loams on flats and slopes
- 3 Occasional mid woodland of *Eucalyptus accedens* over mid shrubland dominated by *Melaleuca concreta*, *M. marginata* and *M. acutifolia* over low isolated mixed shrubs and sedges including *Acacia ericksoniae* and *Lepidosperma* sp. A2 Inland Flat (G.J. Keighery 7000) on pink-brown or white clay loams on flats
- 4 Tall closed to open shrubland dominated by *Allocasuarina campestris* or occasionally *Acacia neurophylla* subsp. *neurophylla* over mid open shrubland and sedgeland of mixed species including *Grevillea biternata*, *Melaleuca radula*, *Melaleuca concreta*, *Thryptomene* sp. Mingenew (Diels & Pritzel 332) (P3), *Ecdeiocolea monostachya* and *Thryptomene racemulosa* on grey-brown sand, sandy loam or clay loam, occasionally with granitic pebbles, on slopes and flats adjacent to seasonal creeks
- 5 Tall closed shrubland to shrubland dominated by *Allocasuarina campestris* with occasional *Acacia aciphylla*, *Acacia neurophylla* subsp. *neurophylla* and *Melaleuca viminea* subsp. *viminea* over sparse low shrubland and sedgeland of mixed species including *Ecdeiocolea monostachya* and *Thryptomene racemulosa* over open forbland and grassland of mixed introduced species including **Ehrharta longiflora* and *Ursinia anthemoides* on grey or brown sandy or clay loams within and on the banks of seasonal creeks
- 6 Open woodland of *Eucalyptus loxophleba* subsp. *loxophleba* over mid closed shrubland dominated by *Melaleuca marginata* over sparse forbland of mixed species including *Rhodanthe polycephala* on grey-brown clay on slopes above seasonal creeks
- 7a Mid mallee woodland to isolated mallees of *Eucalyptus conveniens* or mid open shrubland of *Allocasuarina campestris* over low shrubland and sedgeland of mixed species frequently dominated by *Ecdeiocolea monostachya* and *Melaleuca aspalathoides*, or occasionally *M. tinkeri*, *Hakea auriculata* or *Hakea lissocarpha*, on gravelly grey or brown clay loams or sands, usually with laterite on or near the surface, on slopes and crests
- 7b Mid mallee woodland to isolated mallees of *Eucalyptus conveniens* or mid open shrubland of *Allocasuarina campestris* over low shrubland and sedgeland of mixed species dominated by *Banksia carlinoides*, *Ecdeiocolea monostachya*, *Hakea incrassata*, *Hibbertia hypericoides* and *Melaleuca aspalathoides* on gravelly grey or brown clay loams or sands, usually with laterite on or near the surface, on slopes and crests
- 8 Mid mallee woodland to isolated mallees of *Eucalyptus conveniens* over mid shrubland to open shrubland dominated by *Allocasuarina campestris* over low shrubland and sedgeland of mixed species dominated by *Ecdeiocolea monostachya*, *Hakea auriculata*, *Melaleuca radula*, *M. aspalathoides* and *Banksia fraseri* var. *fraseri* on gravelly grey or brown clay loams usually over massive laterite on breakaway tops, ridges and lateritic rises
- 9 Mid to low open shrubland of *Allocasuarina campestris*, *Melaleuca concreta* and *Melaleuca marginata* over low shrubland dominated by *Melaleuca tinkeri* and occasionally *Gastrolobium plicatum* over low shrubland and forbland dominated by *Stylidium torticarum* (P3), *Leucopogon* sp. Yandanooka (M. Hislop 2507) and *Micromyrtus rogeri* (P1) on gravelly pink-brown or white-grey clay or clay loam over decaying laterite on breakaway tops and slopes
- 10 Mid sparse to open shrubland of mixed species including *Calothamnus quadrifidus* subsp. *angustifolius*, *Grevillea biformis* subsp. *biformis* and *Banksia attenuata* over low shrubland and sedgeland of mixed species dominated by *Ecdeiocolea monostachya*, *Melaleuca leuropoma*, *Daviesia divaricata* subsp. *divaricata* ms, *Mesomelaena pseudostygia* and *Banksia shuttleworthiana* on yellow-brown or occasionally grey sand on slopes and valley floors
- 11 Mid sparse to open shrubland of *Allocasuarina campestris* and *Grevillea biformis* subsp. *biformis* over low shrubland and sedgeland dominated by *Hakea circumalata*, *Lepidobolus preissianus* subsp. *preissianus*, *Mesomelaena pseudostygia* and *M. stygia* subsp. *deflexa* (P3) on yellow or yellow-brown sand or sandy loam on mid to upper slopes
- 12 Occasional mid sparse to open shrubland of *Allocasuarina campestris* and *Grevillea biformis* subsp. *biformis* over low shrubland and sedgeland dominated by *Beaufortia elegans*, *Hibbertia hypericoides* and *Ecdeiocolea monostachya* on grey or brown sand or sandy loam on mid to upper slopes
- 13a Low open woodland of *Eucalyptus todtiana* over mid to low shrubland of mixed species dominated by *Allocasuarina humilis*, *Banksia scabrella* (P4), *Calothamnus sanguineus*, *Eremaea beaufortoides* var. *microphylla*, *Melaleuca* aff. *leuropoma* and *Hibbertia hypericoides* over low shrubland and sedgeland of mixed species including *Banksia dallanneyi* subsp. *media*, *Conostylis canteriata*, *Mesomelaena pseudostygia* and *Caustis dioica* on grey or brown sand on lower and mid slopes
- 13b Low open woodland of *Eucalyptus todtiana* over mid to low shrubland of mixed species dominated by *Allocasuarina humilis*, *Calothamnus sanguineus*, *Hakea trifurcata*, *Hibbertia hypericoides* and *Melaleuca leuropoma* over low shrubland and rushland of mixed species including *Banksia dallanneyi* subsp. *media*, *Conostylis aculeata* subsp. *breviflora* and *Conostylis canteriata* on grey, brown or yellow sand on flats, in depressions and on slopes
- 14 Low open shrubland dominated by *Calothamnus quadrifidus* subsp. *angustifolius*, *Banksia carlinoides*, *Hakea lissocarpha* and *Verticordia densiflora* over low open shrubland, sedgeland and forbland dominated by *Dampiera teres* (broad-leaf variant), *Jacksonia angulata*, *Harperia lateriflora*, *Opercularia vaginata* and *Melaleuca trichophylla* on grey-brown sands, sandy loams and clay loams in minor drainage lines and on flats

Other Mapped Areas

- 4D Degraded area of VT 4
- 8D Degraded area of VT 8
- 10D Degraded area of VT 10
- 13aD Degraded area of VT 13a
- PC1D Low woodland of *Acacia acuminata* over introduced pasture grasses and isolated native forbs including *Ptilotus manglesii* and *Arthropodium dyeri* on grey-brown clay loams on flats adjacent to seasonal creeks
- C Cleared Land

		Warrego Energy Limited West Erregulla Project Vegetation Types Legend	Author: David Coultas WEC Ref: Warrego12-33-01 Filename: Warrego12-33-01-f08.mxd	Figure 8
		Revision: A - December 2012	Scale: 1:20,000 (A3) Grid: MGA Zone 50	
This map should only be used in conjunction with WEC report Warrego12-33-01.				

Appendix A: Definitions, Categories and Criteria for Threatened and Priority Ecological Communities (DEC 2010a)

DEFINITIONS, CATEGORIES AND CRITERIA FOR THREATENED AND PRIORITY ECOLOGICAL COMMUNITIES

1. GENERAL DEFINITIONS

Ecological Community

A naturally occurring biological assemblage that occurs in a particular type of habitat.

Note: The scale at which ecological communities are defined will often depend on the level of detail in the information source, therefore no particular scale is specified.

A **threatened ecological community** (TEC) is one which is found to fit into one of the following categories; “presumed totally destroyed”, “critically endangered”, “endangered” or “vulnerable”.

Possible threatened ecological communities that do not meet survey criteria are added to DEC’s Priority Ecological Community Lists under Priorities 1, 2 and 3. Ecological Communities that are adequately known, are rare but not threatened, or meet criteria for Near Threatened, or that have been recently removed from the threatened list, are placed in Priority 4. These ecological communities require regular monitoring. Conservation Dependent ecological communities are placed in Priority 5.

An **assemblage** is a defined group of biological entities.

Habitat is defined as the areas in which an organism and/or assemblage of organisms lives. It includes the abiotic factors (eg. substrate and topography), and the biotic factors.

Occurrence: a discrete example of an ecological community, separated from other examples of the same community by more than 20 metres of a different ecological community, an artificial surface or a totally destroyed community.

By ensuring that every discrete occurrence is recognised and recorded future changes in status can be readily monitored.

Adequately Surveyed is defined as follows:

“An ecological community that has been searched for thoroughly in most likely habitats, by relevant experts.”

Community structure is defined as follows:

“The spatial organisation, construction and arrangement of the biological elements comprising a biological assemblage” (eg. *Eucalyptus salmonophloia* woodland over scattered small shrubs over dense herbs; structure in a faunal assemblage could refer to trophic structure, eg. dominance by feeders on detritus as distinct from feeders on live plants).

Definitions of Modification and Destruction of an ecological community:

Modification: “changes to some or all of ecological processes (including abiotic processes such as hydrology), species composition and community structure as a direct or indirect result of human activities. The level of damage involved could be ameliorated naturally or by human intervention.”

Destruction: “modification such that reestablishment of ecological processes, species composition and community structure within the range of variability exhibited by the original community is unlikely within the foreseeable future even with positive human intervention.”

Note: Modification and destruction are difficult concepts to quantify, and their application will be determined by scientific judgement. Examples of modification and total destruction are cited below:

Modification of ecological processes: The hydrology of Toolibin Lake has been altered by clearing of the catchment such that death of some of the original flora has occurred due to dependence on fresh water. The system may be brought back to a semblance of the original state by redirecting saline runoff and pumping waters of the rising underground watertable away to restore the hydrological balance. Total destruction of downstream lakes has occurred due to hydrology being altered to the point that few of the original flora or fauna species are able to tolerate the level of salinity and/or water logging.

Modification of structure: The understorey of a plant community may be altered by weed invasion due to nutrient enrichment by addition of fertiliser. Should the additional nutrients be removed from the system the balance may be restored, and the original plant species better able to compete. Total destruction may occur if additional nutrients continue to be added to the system causing the understorey to be completely replaced by weed species, and death of overstorey species due to inability to tolerate high nutrient levels.

Modification of species composition: Pollution may cause alteration of the invertebrate species present in a freshwater lake. Removal of pollutants may allow the return of the original inhabitant species. Addition of residual highly toxic substances may cause permanent changes to water quality, and total destruction of the community.

Threatening processes are defined as follows:

“Any process or activity that threatens to destroy or significantly modify the ecological community and/or affect the continuing evolutionary processes within any ecological community.”

Examples of some of the continuing threatening processes in Western Australia include: general pollution; competition, predation and change induced in ecological communities as a result of introduced animals; competition and displacement of native plants by introduced species; hydrological changes; inappropriate fire regimes; diseases resulting from introduced microorganisms; direct human exploitation and disturbance of ecological communities.

Restoration is defined as returning an ecological community to its pre-disturbance or natural state in terms of abiotic conditions, community structure and species composition.

Rehabilitation is defined as the re-establishment of ecological attributes in a damaged ecological community although the community will remain modified.

2. DEFINITIONS AND CRITERIA FOR PRESUMED TOTALLY DESTROYED, CRITICALLY ENDANGERED, ENDANGERED AND VULNERABLE ECOLOGICAL COMMUNITIES

Presumed Totally Destroyed (PD)

An ecological community that has been adequately searched for but for which no representative occurrences have been located. The community has been found to be totally destroyed or so extensively modified throughout its range that no occurrence of it is likely to recover its species composition and/or structure in the foreseeable future.

An ecological community will be listed as presumed totally destroyed if there are no recent records of the community being extant and either of the following applies (A or B):

- A) Records within the last 50 years have not been confirmed despite thorough searches of known or likely habitats or
- B) All occurrences recorded within the last 50 years have since been destroyed

Critically Endangered (CR)

An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future, or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated.

An ecological community will be listed as **Critically Endangered** when it has been adequately surveyed and is found to be facing an extremely high risk of total destruction in the immediate future. This will be determined on the basis of the best available information, by it meeting **any one or more** of the following criteria (A, B or C):

- A) The estimated geographic range, and/or total area occupied, and/or number of discrete occurrences since European settlement have been reduced by at least 90% **and either or both** of the following apply (i or ii):
 - i) geographic range, and/or total area occupied and/or number of discrete occurrences are continuing to decline such that total destruction of the community is imminent (within approximately 10 years);
 - ii) modification throughout its range is continuing such that in the immediate future (within approximately 10 years) the community is unlikely to be capable of being substantially rehabilitated.
- B) Current distribution is limited, **and one or more** of the following apply (i, ii or iii):
 - i) geographic range and/or number of discrete occurrences, and/or area occupied is highly restricted and the community is currently subject to known threatening processes which are likely to result in total destruction throughout its range in the immediate future (within approximately 10 years);
 - ii) there are very few occurrences, each of which is small and/or isolated and extremely vulnerable to known threatening processes;

iii) there may be many occurrences but total area is very small and each occurrence is small and/or isolated and extremely vulnerable to known threatening processes.

C) The ecological community exists only as highly modified occurrences that may be capable of being rehabilitated if such work begins in the immediate future (within approximately 10 years).

Endangered (EN)

An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future.

An ecological community will be listed as **Endangered** when it has been adequately surveyed and is not Critically Endangered but is facing a very high risk of total destruction in the near future. This will be determined on the basis of the best available information by it meeting **any one or more** of the following criteria (A, B, or C):

A) The geographic range, and/or total area occupied, and/or number of discrete occurrences have been reduced by at least 70% since European settlement **and either or both** of the following apply (i or ii):

i) the estimated geographic range, and/or total area occupied and/or number of discrete occurrences are continuing to decline such that total destruction of the community is likely in the short term future (within approximately 20 years);

ii) modification throughout its range is continuing such that in the short term future (within approximately 20 years) the community is unlikely to be capable of being substantially restored or rehabilitated.

B) Current distribution is limited, **and one or more** of the following apply (i, ii or iii):

i) geographic range and/or number of discrete occurrences, and/or area occupied is highly restricted and the community is currently subject to known threatening processes which are likely to result in total destruction throughout its range in the short term future (within approximately 20 years);

ii) there are few occurrences, each of which is small and/or isolated and all or most occurrences are very vulnerable to known threatening processes;

iii) there may be many occurrences but total area is small and all or most occurrences are small and/or isolated and very vulnerable to known threatening processes.

C) The ecological community exists only as very modified occurrences that may be capable of being substantially restored or rehabilitated if such work begins in the short-term future (within approximately 20 years).

Vulnerable (VU)

An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range.

An ecological community will be listed as **Vulnerable** when it has been adequately surveyed and is not Critically Endangered or Endangered but is facing a high risk of total destruction or significant modification in the medium to long-term future. This will be determined on the basis of the best available information by it meeting **any one or more** of the following criteria (A, B or C):

A) The ecological community exists largely as modified occurrences that are likely to be capable of being substantially restored or rehabilitated.

B) The ecological community may already be modified and would be vulnerable to threatening processes, is restricted in area and/or range and/or is only found at a few locations.

C) The ecological community may be still widespread but is believed likely to move into a category of higher threat in the medium to long term future because of existing or impending threatening processes.

3. DEFINITIONS AND CRITERIA FOR PRIORITY ECOLOGICAL COMMUNITIES**PRIORITY ECOLOGICAL COMMUNITY LIST**

Possible threatened ecological communities that do not meet survey criteria or that are not adequately defined are added to the Priority Ecological Community Lists under Priorities 1, 2 and 3. These three categories are ranked in order of priority for survey and/or definition of the community, and evaluation of conservation status, so that consideration can be given to their declaration as threatened ecological communities. Ecological Communities that are adequately known, and are rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list, are placed in Priority 4. These ecological communities require regular monitoring. Conservation Dependent ecological communities are placed in Priority 5.

Priority One: Poorly-known ecological communities

Ecological communities with apparently few, small occurrences, all or most not actively managed for conservation (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) and for which current threats exist. Communities may be included if they are comparatively well-known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under immediate threat from known threatening processes across their range.

Priority Two: Poorly-known ecological communities

Communities that are known from few small occurrences, all or most of which are actively managed for conservation (e.g. within national parks, conservation parks, nature reserves, State forest, unallocated Crown land, water reserves, etc.) and not under imminent threat of destruction or degradation. Communities may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under threat from known threatening processes.

Priority Three: Poorly known ecological communities

- (i) Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or:
- (ii) communities known from a few widespread occurrences, which are either large or within significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat, or;
- (iii) communities made up of large, and/or widespread occurrences, that may or not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, and inappropriate fire regimes.

Communities may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and/or are not well defined, and known threatening processes exist that could affect them.

Priority Four: Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring.

- (a) Rare. Ecological communities known from few occurrences that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These communities are usually represented on conservation lands.
- (b) Near Threatened. Ecological communities that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable.
- (c) Ecological communities that have been removed from the list of threatened communities during the past five years.

Priority Five: Conservation Dependent ecological communities

Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years..

Appendix B: Results of Search of the Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) Database with Regard to Environmental Matters of National Significance



Australian Government
Department of Sustainability, Environment,
Water, Population and Communities

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.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information about the EPBC Act including significance guidelines, forms and application process details can be found at <http://www.environment.gov.au/epbc/assessmentsapprovals/index.html>

Report created: 14/03/12 16:42:11

[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 - see <http://www.environment.gov.au/epbc/assessmentsapprovals/guidelines/index.html>

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Areas:	None
Threatened Ecological Communities:	None
Threatened Species:	15
Migratory Species:	8

Other Matters Protected by the EPBC Act

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

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place and the heritage values of a place on the Register of the National Estate. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage/index.html>

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.

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. Information on EPBC Act permit requirements and application forms can be found at <http://www.environment.gov>.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	5
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves:	None

Extra Information

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

Place on the RNE:	None
State and Territory Reserves:	1
Regional Forest Agreements:	None
Invasive Species:	9
Nationally Important Wetlands:	None

Details

Matters of National Environmental Significance

Threatened Species		[Resource Information]
Name	Status	Type of Presence
BIRDS		
Calyptorhynchus latirostris		
Gambay's Black-Cockatoo, Short-billed Black-Cockatoo (59523)	Endangered	Breeding likely to occur within area

Name	Status	Type of Presence
<u>Leipia ocellata</u> Malleefowl [934]	Vulnerable	Species or species habitat may occur within area
PLANTS		
<u>Bankia serratuloides subsp. perissa</u> Northern Gerrate Dryandra [82767]	Vulnerable	Species or species habitat likely to occur within area
<u>Centrolepis caespitosa</u> [6393]	Endangered	Species or species habitat may occur within area
<u>Chortzema humile</u> Prostrate Flame Pea [32573]	Endangered	Species or species habitat may occur within area
<u>Conostylis cleistii subsp. ferax</u> Irwin Conostylis [3614]	Endangered	Species or species habitat likely to occur within area
<u>Conostylis micrantha</u> Small-flowered Conostylis [17635]	Endangered	Species or species habitat may occur within area
<u>Daviesia speciosa</u> Beautiful Daviesia [56698]	Endangered	Species or species habitat likely to occur within area
<u>Eucalyptus balanites</u> Cadda Road Mallee, Cadda Mallee [24264]	Endangered	Species or species habitat may occur within area
<u>Eucalyptus cristata</u> Yandanooka Mallee [24268]	Vulnerable	Species or species habitat likely to occur within area
<u>Eucalyptus impenza</u> Eneabba Mallee [56711]	Endangered	Species or species habitat may occur within area
<u>Eucalyptus leprochloa</u> Scaly Butt Mallee, Scaly-butt Mallee [56712]	Endangered	Species or species habitat known to occur within area
<u>Eucalyptus rhodantha var. rhodantha</u> Rose Mallee, Rose Gum [24627]	Vulnerable	Species or species habitat likely to occur within area
<u>Hemiantra oarineri</u> Red Snakebush [7945]	Endangered	Species or species habitat may occur within area
<u>Leucopogon oblectus</u> Hidden Beard-heath [19614]	Endangered	Species or species habitat likely to occur within area
<u>Pityrodia axillaris</u> Native Foxglove, Woolly Foxglove [17376]	Critically Endangered	Species or species habitat may occur within area
<u>Schoenia filifolia subsp. subulifolia</u> [63904]	Endangered	Species or species habitat may occur within area
<u>Stawella dimorphantha</u> Arrowsmith Gilt-hilly [3433]	Vulnerable	Species or species habitat likely to occur within area
<u>Wurmbea tubulosa</u> Long-flowered Nancy [12739]	Endangered	Species or species habitat may occur within area

Migratory Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species List.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
Anous pacificus		
Fork-tailed Swift (678)		Species or species habitat may occur within area
Ardea alba		
Great Egret, White Egret (59541)		Species or species habitat may occur within area
Ardea ibis		
Cattle Egret (59542)		Species or species habitat may occur within area
Migratory Terrestrial Species		
Halieetus leucorostrius		
White-bellied Sea-Eagle (943)		Species or species habitat likely to occur within area
Lalooa ocellata		
Malleefowl (934)	Vulnerable	Species or species habitat may occur within area
Merops ornatus		
Rainbow Bee-eater (670)		Species or species habitat may occur within area
Migratory Wetlands Species		
Ardea alba		
Great Egret, White Egret (59541)		Species or species habitat may occur within area
Ardea ibis		
Cattle Egret (59542)		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species List.		
Name	Threatened	Type of Presence
Birds		
Anous pacificus		
Fork-tailed Swift (678)		Species or species habitat may occur within area
Ardea alba		
Great Egret, White Egret (59541)		Species or species habitat may occur within area
Ardea ibis		
Cattle Egret (59542)		Species or species habitat may occur within area
Halieetus leucorostrius		
White-bellied Sea-Eagle (943)		Species or species habitat likely to occur within area
Merops ornatus		
Rainbow Bee-eater (670)		Species or species habitat may occur within area

Extra Information

State and Territory Reserves [\[Resource Information \]](#)

Name	State
Wilson	WA

Invasive Species [\[Resource Information \]](#)

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit,

Name	Status	Type of Presence
------	--------	------------------

Mammals[Capra hircus](#)

Goat [2] Species or species habitat likely to occur within area

[Felis catus](#)

Cat, House Cat, Domestic Cat [19] Species or species habitat likely to occur within area

[Oryctolagus cuniculus](#)

Rabbit, European Rabbit [128] Species or species habitat likely to occur within area

[Sus scrofa](#)

Pig [5] Species or species habitat likely to occur within area

[Vulpes vulpes](#)

Red Fox, Fox [18] Species or species habitat likely to occur within area

Plants[Asparagus asparagoides](#)

Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473] Species or species habitat likely to occur within area

[Cenchrus ciliaris](#)

Buffel-grass, Black Buffel-grass [20213] Species or species habitat may occur within area

[Lycium ferocissimum](#)

African Boxthorn, Boxthorn [19235] Species or species habitat may occur within area

[Tamarix aphylla](#)

Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018] Species or species habitat likely to occur within area

Coordinates

-29.33218 115.23526,-29.33278 115.40658,-29.48685 115.40658,-29.48804 115.23585,
-29.33218 115.23526

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World Heritage and Register of National Estate properties, Wetlands of International Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other

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

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

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

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

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

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:

- [Department of Environment, Climate Change and Water, New South Wales](#)
- [Department of Sustainability and Environment, Victoria](#)
- [Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [Department of Environment and Natural Resources, South Australia](#)
- [Parks and Wildlife Service NT, NT Dept of Natural Resources, Environment and the Arts](#)
- [Environmental and Resource Management, Queensland](#)
- [Department of Environment and Conservation, Western Australia](#)
- [Department of the Environment, Climate Change, Energy and Water](#)
- [Birds Australia](#)
- [Australian Bird and Bat Banding Scheme](#)
- [Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [Museum Victoria](#)
- [Australian Museum](#)
- [SA 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, Atherton and Canberra](#)
- [University of New England](#)
- [Ocean Biogeographic Information System](#)
- [Australian Government, Department of Defence](#)
- [State Forests of NSW](#)
- 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](#).

[B-Sciences of Australia](#)

Department of Sustainability, Environment, Water, Population and Communities

SPC/Env/REP

Canberra ACT 2601 Australia

+61 2 6234 1111

Appendix C: Results of the Interrogation of the Department of Environment and Conservation's W.A Herbarium (WAHerb) Specimen Database, Threatened and Priority Flora Database (TPFL) and Threatened and Priority Flora List (TP List) (DEC 2011b)

Note: shading denotes taxon that has records located within the Study Area

Taxon	Conservation Code	TPFL	WAHerb	TP List	Preferred Habitat Requirements	Flowering Period
<i>Acacia congesta</i> subsp. <i>cliftoniana</i>	P1			X	Rocky or lateritic loam	Aug-Sep
<i>Acacia flabellifolia</i>	P3			X	Rocky loam, lateritic gravelly soils; low hills and ridges	Aug
<i>Acacia lineolata</i> subsp. <i>multilineata</i>	P1			X	Yellow sand, rocky clay, sand plains	Jun-Aug
<i>Acacia megacephala</i>	P2	X			White or yellow sand, sandplains	Jul-Sep
<i>Acacia vittata</i>	P2			X	Grey sand, sandy clay, margins of seasonal lakes	Aug
<i>Baeckea</i> sp. Billeranga Hills (ME Trudgen 2206)	P1			X	Yellow sand, clayey sand over granite, stoney hills	Sep
<i>Banksia cypholoba</i>	P3		X	X	Sand and gravelly loam	Aug
<i>Banksia elegans</i>	P4		X	X	Yellow, white or red sand, sandplains, low coastal dunes	Oct-Nov
<i>Banksia fraseri</i> var. <i>crebra</i>	P3		X		White sand on slope, low lateritic hill, brown gravelly loam, grey sandy gravel	Jul-Aug
<i>Banksia fraseri</i> var. <i>oxycedra</i>	P3			X	Lateritic gravel, hill slopes and breakaways	Jul-Sep

Taxon	Conservation Code	TPFL	WAHerb	TP List	Preferred Habitat Requirements	Flowering Period
<i>Banksia scabrella</i>	P4		X		White, grey or yellow sand, sometimes with lateritic gravel, sandplains, laterite ridges	Sep-Jan
<i>Banksia trifontinalis</i>	P3			X	Laterite	Aug-Oct
<i>Beyeria gardneri</i>	P3		X		Yellow sand	Aug-Sep
<i>Calectasia cyanea</i>	T (DRF)		X		White, grey or yellow sand, gravel	Jun-Oct
<i>Calectasia palustris</i>	P1		X		White or grey sand, seasonally inundated swamps	Jul-Oct
<i>Calothamnus arcuatus</i>	P2		X	X	Clay loam over sandstone, yellow sand over gravel, grey sand, sandstone, grey shallow sand-loam, siltstone; upland areas, hillside, creek bank, drainage lines	Apr/Jun/ Aug
<i>Calytrix chrysantha</i>	P4		X		Grey or yellow brown sand, flats	Dec-Feb
<i>Calytrix eneabbensis</i>	P4			X	White, grey or yellow sand over laterite, sandplains	Jul-Oct
<i>Comesperma griffinii</i>	P2		X		Yellow or grey sand, plains	Oct
<i>Daviesia speciosa</i>	T (DRF)	X	X		Gravelly lateritic soils, undulating plains, rises	Apr-May
<i>Diuris eburnea</i>	P1		X	X	Damp areas near rivers	Nov
<i>Eryngium pinnatifidum</i> subsp. <i>palustre</i> ms	P3			X	Clay, sandy clay, clay pans, seasonally wet flats	Oct-Nov

Taxon	Conservation Code	TPFL	WAHerb	TP List	Preferred Habitat Requirements	Flowering Period
<i>Eucalyptus abdita</i>	P2		X		Laterite, sandy clay with gravel over laterite, slopes, breakaways	Oct?/Feb
<i>Eucalyptus crispata</i>	T (DRF)	X	X		Sand, loam with lateritic gravel, lateritic breakaways	Mar-Jun
<i>Eucalyptus leprophloia</i>	T (DRF)	X	X		White or grey sand over laterite, valley slopes	Aug-Oct
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	P4	X	X	X	White or grey sand over laterite, hillslopes, ridges, sandplains	Aug-Dec
<i>Eucalyptus macrocarpa</i> x <i>pyriformis</i>	P3	X	X		Sand, lateritic sand soils, hills, rocky, ironstone ridges, sandplains	Apr/Aug-Oct
<i>Frankenia glomerata</i>	P3			X	White, yellow or yellow-brown sand, white-brown sandy clay, margins of or dunes of salt lakes	Nov
<i>Grevillea erinacea</i>	P3		X		White, grey or yellow sand, gravelly soil or sand, amongst medium or low trees, heathlands, sandplains	Jul-Dec
<i>Grevillea makinsonii</i>	P3		X	X	White, yellow or grey sand over laterite, loam, gravel, clay, rocky hills, sandplains, amongst medium or low trees, heathlands, sandplains	Jul-Oct

Taxon	Conservation Code	TPFL	WAHerb	TP List	Preferred Habitat Requirements	Flowering Period
<i>Grevillea murex</i>	T (DRF)			X	Yellow, brown or red sand, clay loam, amongst medium or low trees or tall sclerophyll shrubland	Aug-Oct
<i>Guichenotia alba</i>	P3		X		Sandy and gravelly soils, low lying flats and depressions	Jul-Aug
<i>Guichenotia quasicalva</i> ms	P2			X	Sandy clay over laterite, drainage lines	Sep-Oct
<i>Haloragis foliosa</i>	P3			X	White-grey sand or limestone	Oct
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	P3		X	X	Sand, disturbed sites	Feb
<i>Hensmania stoniella</i>	P3		X	X	White, grey or lateritic sand, often Winter wet	Sep-Nov
<i>Homalocalyx chapmanii</i>	P2		X	X	Yellow or grey-brown sand, undulating plains, weathered granite	Sep-Oct
<i>Hopkinsia anoectocolea</i>	P3			X	White or grey sand, often saline, Winter wet depressions, floodplains, salt lakes	Sep-Dec
<i>Hypocalymma angustifolium</i> subsp. Hutt River (S. Patrick 2982)	T (DRF)			X	Moist, brown black peat-clay, peat-loam, peat, grey clay; swamps, creeks	Aug-Sep
<i>Lasiopetalum ogilvieanum</i>	P1	X	X		White, grey or yellow sand, stoney loam, undulating plains, lateritic rises	Jul-Oct

Taxon	Conservation Code	TPFL	WAHerb	TP List	Preferred Habitat Requirements	Flowering Period
<i>Leucopogon marginatus</i>	T (DRF)			X	Yellow and lateritic gravelly sand, undulating plains	Jul-Aug
<i>Leucopogon</i> sp. Dudawa (M. Hislop & J. Borger MH 3829)	P1			X	Sandstone breakaways, rocky grey loam over sandstone	Sep
<i>Melaleuca sclerophylla</i>	P3		X		Gravelly sand, clayey sand, granite outcrops, rises	Jun-Sep
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	P3		X	X	White, grey or lateritic sand, clay gravel	Mar-Oct
<i>Micromyrtus rogeri</i>	P1	X	X	X	Yellow-brown sandy soils, gravel, laterite, breakaways	Jul-Oct
<i>Micromyrtus uniovula</i>	P2		X		Sandy soil over laterite, rises	Sep-Nov
<i>Paracaleana dixonii</i>	T (DRF)	X	X	X	Grey sand over granite	Oct-Jan
<i>Persoonia filiformis</i>	P2		X		Yellow or white sand over laterite	Nov-Dec
<i>Persoonia rudis</i>	P3		X		White, grey or yellow sand, often over laterite	Sep-Jan
<i>Pityrodia viscida</i>	P3		X		Lateritic sand	Sep-Feb
<i>Schoenus badius</i>	P2		X	X	Grey sand, moist areas	Sep-Oct
<i>Schoenus</i> sp. Eneabba (F. Obbens & C. Godden I154)	P2		X		Grey, yellow or white sand, undulating sandplains, midslopes, tops of rises	Apr
<i>Scholtzia</i> sp. Yandanooka (R. Soullier 646)	P1			X	Dry yellow-red sand, granite, sandplains,	Nov-Dec

Taxon	Conservation Code	TPFL	WAHerb	TP List	Preferred Habitat Requirements	Flowering Period
					outcrops	
<i>Stawellia dimorphantha</i>	P4	X	X	X	White, grey or yellow sand	Jun-Nov
<i>Stylidium drummondianum</i>	P3		X	X	Sand or clayey sand over laterite, upper hillslopes, breakaways, low heath, mallee	Aug-Oct
<i>Stylidium</i> sp. Three Springs (J.A. Wege & C. Wilkins JAW 600)	P2		X		Yellow-brown clayey sand over laterite, yellow-brown clayey loam over granite, ironstone breakaway, loamy soils over granite, clay loams with scattered gravel, rocky hill with lateritic stones	Sep
<i>Stylidium torticarpum</i>	P3		X	X	Sandy clay and clay loam over laterite, adjacent to creek lines, depressions, beneath breakaways, heath or mallee shrubland	Sep-Nov
<i>Synaphea aephyrsa</i>	P3		X		Gravelly laterite, sand over laterite	Jul-Oct
<i>Synaphea oulopha</i>	P1			X	Grey sand, gravelly loam, clay, lateritic breakaways and rises	Jul-Oct
<i>Synaphea sparsiflora</i>	P2	X	X		Sandy loam over laterite	Aug-Sep
<i>Thelymitra stellata</i>	T (DRF)	X			Sand, gravel, lateritic loam	Oct-Nov
<i>Thryptomene</i> sp. Mingenew (Diels & Pritzel 332)	P3	X	X	X	Yellow sand, loam	Jun-Jul
<i>Thysanotus vernalis</i>	P3		X		Sandy loam	Sep-Oct

Taxon	Conservation Code	TPFL	WAHerb	TP List	Preferred Habitat Requirements	Flowering Period
<i>Triglochin protuberans</i>	P3			X	Red loam, grey mud over clay, Winter wet sites, claypans, near salt lakes, margins of pools	Aug-Oct
<i>Verticordia dasystylis</i> subsp. <i>oestopioia</i>	P1		X	X	Gritty soils over granite, outcrops	Oct
<i>Verticordia densiflora</i> var. <i>roseostella</i>	P3		X		Sandy, gravelly soils	Sep-Dec
<i>Verticordia luteola</i> var. <i>luteola</i>	P3			X	Grey sand over gravel, flats	Nov-Dec
<i>Verticordia luteola</i> var. <i>rosea</i>	P1	X		X	White sand, flats	Dec-Jan
<i>Verticordia penicillaris</i>	P4			X	Shallow gritty soils, granite outcrops	Sep-Oct

Appendix D: Conservation Codes for Western Australian Flora (DEC 2012a)

Under the Wildlife Conservation Act, the Minister for the Environment may declare species of flora to be protected if they are considered to be in danger of extinction, rare or otherwise in need of special protection. Schedules 1 and 2 deal with those that are threatened and those that are presumed extinct, respectively.

T: Threatened Flora (Declared Rare Flora – Extant)

Taxa which have been adequately searched for and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such (Schedule 1 under the Wildlife Conservation Act 1950).

Threatened Flora (Schedule 1) are further ranked by the Department according to their level of threat using IUCN Red List Criteria:

- CR: Critically Endangered – considered to be facing an extremely high risk of extinction in the wild
- EN: Endangered – considered to be facing a very high risk of extinction in the wild
- VU: Vulnerable – considered to be facing a high risk of extinction in the wild

X: Presumed Extinct Flora (Declared Rare Flora – Extinct)

Taxa that have been adequately searched for and there is no reasonable doubt that the last individual has died, and have been gazetted as such (Schedule 2 under the Wildlife Conservation Act 1950).

Taxa that have not yet been adequately surveyed to be listed under Schedule 1 or 2 are added to the Priority Flora List under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened flora or fauna. Taxa that are adequately known, are rare but not threatened, or meet criteria for Near Threatened, or that have been recently removed from the threatened list for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring. Conservation Dependent species are placed in Priority 5.

1: Priority One – Poorly-known Taxa

Taxa that are known from one or a few collections or sight records (generally less than 5), all on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, Shire, Westrail and Main Roads WA road, gravel and soil reserves, and active mineral leases and under threat of habitat destruction or degradation. Taxa may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes.

2: Priority Two – Poorly-known Taxa

Taxa that are known from one or a few collections or sight records, some of which are on lands not under imminent threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc.

Taxa may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes.

3: Priority Three – Poorly-known Taxa

Taxa that are known from collections or sight records from several localities not under imminent threat, or from few but widespread localities with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Taxa may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and known threatening processes exist that could affect them.

4: Priority Four – Rare, Near Threatened and other taxa in need of monitoring

1. **Rare.** Taxa that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands

2. **Near Threatened.** Taxa that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable.

3. Taxa that have been removed from the list of threatened species during the past 5 years for reasons other than taxonomy.

5: Priority 5 – Conservation Dependent Taxa

Taxa that are not threatened but are subject to a specific conservation program, the cessation of which would result in the taxon becoming threatened within 5 years.

Appendix E: Environmental Weed Strategy - Criteria for the Assessment and Rating of Weeds in Terms of their Environmental Impact on Biodiversity (CALM 1999)

ENVIRONMENTAL WEEDS RATING

- **Invasiveness**- ability to invade bushland in good to excellent condition or ability to invade waterways (Score as yes or no).
- **Distribution** – wide current or potential distribution including consideration of known history of wide spread distribution elsewhere in the world (Score as yes or no).
- **Environmental Impacts** – ability to change the structure, composition and function of ecosystems; in particular an ability to form a monoculture in a vegetation community (Score as yes or no).

The Rating System used in the Environmental Weed Strategy for Western Australia

High	A weed species would have to score yes for all three criteria. Rating a weed species as high would indicate prioritising this weed for control and/or research.
Moderate	A weed species would have to score yes for two of the above criteria. Rating a weed species as moderate would indicate that control or research effort should be directed to it if funds are available; however it should be monitored (possibly a reasonably high level of monitoring).
Mild	A weed species scoring one of the criteria. A mild rating would indicate monitoring of the weed and control where appropriate.
Low	A weed species would score none of the criteria. A low ranking would mean that this species would require a low level of monitoring.

Appendix F: Vegetation Condition Ranking Scale for the South West Botanical Province (Keighery 1994)

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

Appendix G: Vascular Plant Taxa Recorded in the West Erragulla Study Area, 2011 - 2012

Family	Taxon	2011	2012
Amaranthaceae	<i>Ptilotus declinatus</i>	*	
	<i>Ptilotus manglesii</i>	*	*
	<i>Ptilotus stirlingii</i>	*	
Anarthriaceae	<i>Anarthria polyphylla</i>	*	
	<i>Lyginia imberbis</i>	*	
Apiaceae	<i>Actinotus leucocephalus</i>	*	
	<i>Daucus glochidiatus</i>	*	
	<i>Homalosciadium homalocarpum</i>	*	*
	<i>Platysace juncea</i> sens. lat.	*	
	<i>Platysace trachymenioides</i>	*	
	<i>Platysace xerophila</i>	*	
	<i>Xanthosia huegelii</i>	*	*
Araliaceae	<i>Hydrocotyle hispidula</i>	*	
	<i>Trachymene cyanopetala</i>	*	*
	<i>Trachymene ornata</i>	*	*
	<i>Trachymene pilosa</i>	*	*
Asparagaceae	<i>Acanthocarpus canaliculatus</i>	*	
	<i>Acanthocarpus</i> sp. Ajana (C.A. Gardner 8596)	*	*
	<i>Arthropodium dyeri</i>	*	*
	<i>Chamaescilla corymbosa</i>	*	
	<i>Chamaescilla versicolor</i>	*	*
	<i>Dichopogon preissii</i>	*	
	<i>Laxmannia omnifertilis</i>	*	
	<i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i>	*	*
	<i>Lomandra hastilis</i>	*	
	<i>Lomandra micrantha</i> subsp. <i>micrantha</i>	*	*
	<i>Sowerbaea laxiflora</i>	*	*
	<i>Thysanotus asper</i>	*	
	<i>Thysanotus dichotomus</i>	*	
	<i>Thysanotus manglesianus</i>	*	*
	<i>Thysanotus patersonii</i>	*	*
	<i>Thysanotus pyramidalis</i>	*	*
	<i>Thysanotus sparteus</i>	*	
	<i>Thysanotus ?tenellus</i>	*	
	<i>Thysanotus thyrsoideus</i>	*	
	<i>Thysanotus</i> sp. (unidentified)	*	
<i>Thysanotus</i> sp.		*	
Asteraceae	* <i>Arctotheca calendula</i>	*	*
	<i>Blennospora drummondii</i>	*	*
	<i>Brachyscome iberidifolia</i>	*	*
	<i>Brachyscome perpusilla</i>	*	
	<i>Calotis hispidula</i>	*	
	<i>Gnephosis angianthoides</i>	*	*
	<i>Gnephosis drummondii</i>	*	*
	<i>Gnephosis tenuissima</i>	*	
	<i>Hyalosperma cotula</i>	*	*

Family	Taxon	2011	2012
Asteraceae cont.	<i>*Hypochaeris glabra</i>	*	*
	<i>Lagenophora huegelii</i>	*	
	<i>Millotia myosotidifolia</i>	*	*
	<i>*Monoculus monstrosus</i>	*	*
	<i>Olearia ?dampieri</i>	*	*
	<i>Olearia rudis</i>	*	*
	<i>Podolepis capillaris</i>	*	*
	<i>Podolepis lessonii</i>	*	*
	<i>Podotheca gnaphalioides</i>	*	*
	<i>Pterochaeta paniculata</i>	*	*
	<i>Rhodanthe laevis</i>	*	
	<i>Rhodanthe manglesii</i>	*	*
	<i>Rhodanthe polycephala</i>	*	*
	<i>Senecio pinnatifolius</i> var. <i>latilobus</i>	*	*
	<i>Siloxerus filifolius</i>	*	
	<i>Trichocline spathulata</i>	*	
	<i>*Ursinia anthemoides</i>	*	*
	<i>Waitzia acuminata</i> var. <i>acuminata</i>	*	*
	<i>Waitzia acuminata</i> var. <i>albicans</i>	*	*
	<i>Waitzia suaveolens</i> var. <i>suaveolens</i>	*	
Boraginaceae	<i>*Echium plantagineum</i>	*	*
	<i>Halgania anagalloides</i>	*	
	<i>Halgania</i> sp. Wongan Hills (K.F. Kenneally 2393)	*	
	<i>Borya sphaerocephala</i>	*	*
Boryaceae			
Brassicaceae	<i>*Brassica tournefortii</i>	*	*
Campanulaceae	<i>Isotoma hypocrateriformis</i>	*	
	<i>Lobelia rarifolia</i>	*	
	<i>Lobelia rhytidosperra</i>	*	
	<i>*Wahlenbergia capensis</i>	*	
	<i>Wahlenbergia gracilentia</i>	*	
Caryophyllaceae	<i>*Petrorhagia dubia</i>	*	*
Casuarinaceae	<i>Allocasuarina campestris</i>	*	*
	<i>Allocasuarina grevilleoides</i> (P3)	*	
	<i>Allocasuarina humilis</i>	*	*
	<i>Allocasuarina microstachya</i>	*	*
Celastraceae	<i>Stackhousia dielsii</i>	*	
	<i>Tripterococcus brunonis</i>	*	
Centrolepidaceae	<i>Centrolepis aristata</i>	*	
	<i>Centrolepis pilosa</i>	*	
	<i>Centrolepis polygyna</i>	*	
Chenopodiaceae	<i>Enchylaena tomentosa</i>	*	
	<i>Rhagodia preissii</i> subsp. <i>preissii</i>	*	*
Colchicaceae	<i>Burchardia congesta</i>	*	*
Convolvulaceae	<i>*Cuscuta epithymum</i>	*	*
Crassulaceae	<i>Crassula colorata</i> var. <i>acuminata</i>	*	*
Cyperaceae	<i>Caustis dioica</i>	*	*
	<i>*Isolepis marginata</i>	*	
	<i>Lepidosperma</i> aff. <i>costale</i>	*	

Family	Taxon	2011	2012
Cyperaceae cont.	<i>Lepidosperma brunonianum sens. lat.</i>	*	
	<i>Lepidosperma pubisquameum</i>	*	
	<i>Lepidosperma</i> aff. <i>scabrum</i>	*	
	<i>Lepidosperma</i> sp. A2 Inland Flat (G.J. Keighery 7000)	*	
	<i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A)	*	*
	<i>Lepidosperma tenue</i>	*	*
	<i>Mesomelaena preissii</i>	*	
	<i>Mesomelaena pseudostygia</i>	*	*
	<i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (P3)	*	*
	<i>Mesomelaena tetragona</i>	*	*
	<i>Schoenus andrewsii</i>	*	
	<i>Schoenus armeria</i>	*	*
	<i>Schoenus badius</i> (P2)	*	
	<i>Schoenus brevisetis</i>	*	
	<i>Schoenus clandestinus</i>	*	*
	<i>Schoenus curvifolius</i>	*	*
	<i>Schoenus insolitus</i>	*	
	<i>Schoenus minutulus</i>	*	
	<i>Schoenus nanus</i>	*	
	<i>Schoenus pleiostemoneus</i>	*	*
	<i>Schoenus</i> sp. A3 Ciliate Sheaths (K.R. Newbey 9402)	*	*
	<i>Schoenus unispiculatus</i>	*	*
	<i>Tetraria microcarpa</i>	*	*
Dasypogonaceae	<i>Calectasia hispida</i>	*	
	<i>Calectasia narragara</i>	*	*
Dilleniaceae	<i>Hibbertia acerosa</i>	*	
	<i>Hibbertia crassifolia</i>	*	*
	<i>Hibbertia huegelii</i>	*	
	<i>Hibbertia hypericoides</i>	*	*
	<i>Hibbertia spicata</i> subsp. <i>spicata</i>	*	
	<i>Hibbertia subvaginata</i>	*	
Droseraceae	<i>Drosera eneabba</i>	*	
	<i>Drosera erythrorhiza</i>	*	*
	<i>Drosera ?leucoblata</i>	*	
	<i>Drosera macrantha</i> subsp. <i>macrantha</i>	*	*
	<i>Drosera menziesii</i> subsp. <i>menziesii</i>	*	*
	<i>Drosera ?porrecta</i>	*	*
	<i>Drosera pilos</i>	*	*
Ecdeiocoleaceae	<i>Ecdeiocolea monostachya</i>	*	*
Elaeocarpaceae	<i>Tetratheca confertifolia</i>	*	
	<i>Tetratheca paucifolia</i>	*	
Ericaceae	<i>Andersonia lehmanniana</i>	*	
	<i>Astroloma glaucescens</i>	*	*

Family	Taxon	2011	2012	
Ericaceae cont.	<i>Astroloma microdonta</i>	*		
	<i>Astroloma pedicellatum</i> ms	*	*	
	<i>Astroloma serratifolium</i>	*		
	<i>Astroloma xerophyllum</i>	*		
	<i>Conostephium preissii</i>	*		
	<i>Leucopogon glaucifolius</i>	*		
	<i>Leucopogon hamulosus</i>	*		
	<i>Leucopogon hispidus</i>	*	*	
	<i>Leucopogon leptanthus</i>	*		
	<i>Leucopogon planifolius</i>	*		
	<i>Lissanthe powelliae</i>	*		
	<i>Leucopogon</i> sp.	*		
	<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	*	*	
	<i>Leucopogon</i> sp. Burma Road (M. Hislop 2032)	*		
	<i>Leucopogon</i> sp. Northern ciliate (R. Davis 3393)	*	*	
	<i>Leucopogon</i> sp. Yandanooka (M. Hislop 2507)	*		
	<i>Lysinema pentapetalum</i>	*	*	
	Euphorbiaceae	<i>Beyeria gardneri</i> (P3)	*	
		<i>Monotaxis bracteata</i>	*	*
		<i>Stachystemon axillaris</i>	*	
Fabaceae	<i>Acacia aciphylla</i>		*	
	<i>Acacia acuaria</i>	*		
	<i>Acacia acuminata</i>	*	*	
	<i>Acacia assimilis</i> subsp. <i>assimilis</i>	*		
	<i>Acacia auronitens</i>	*		
	<i>Acacia barbinervis</i> subsp. <i>borealis</i>	*		
	<i>Acacia blakelyi</i>	*	*	
	<i>Acacia comans</i>	*	*	
	<i>Acacia dilatata</i>	*	*	
	<i>Acacia ericksoniae</i>	*	*	
	<i>Acacia fagonioides</i>	*		
	<i>Acacia</i> ? <i>fagonioides</i>		*	
	<i>Acacia</i> ? <i>idiomorpha</i>	*		
	<i>Acacia isoneura</i> subsp. <i>isoneura</i> (P3)	*	*	
	<i>Acacia lasiocarpa</i> var. ? <i>bracteolata</i>	*		
	<i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i>	*	*	
	<i>Acacia multispicata</i>	*		
	<i>Acacia neurophylla</i> subsp. <i>neurophylla</i>	*	*	
	<i>Acacia pulchella</i>	*		
	<i>Acacia rostelifera</i>	*		
<i>Acacia saligna</i>	*	*		
<i>Acacia sessilis</i>	*			
<i>Acacia signata</i>	*			
<i>Acacia stenoptera</i>	*			

Family	Taxon	2011	2012
Fabaceae (cont.)	<i>Acacia tetragonophylla</i>	*	*
	<i>Bossiaea eriocarpa</i>	*	*
	<i>Chorizema aciculare</i> subsp. <i>laxum</i>	*	*
	<i>Chorizema racemosum</i>	*	*
	<i>Cristonia biloba</i>	*	*
	<i>Daviesia angulata</i>	*	
	<i>Daviesia daphnoides</i>	*	*
	<i>Daviesia divaricata</i> subsp. <i>divaricata</i> ms	*	*
	<i>Daviesia hakeoides</i> subsp. <i>subnuda</i>	*	*
	<i>Daviesia incrassata</i> subsp. <i>teres</i>	*	*
	<i>Daviesia nudiflora</i>	*	*
	<i>Daviesia oxyclada</i>	*	
	<i>Daviesia pedunculata</i>	*	*
	<i>Daviesia triflora</i>	*	
	<i>Daviesia ?umbonata</i>	*	
	<i>Gastrolobium bennettsianum</i>	*	
	<i>Gastrolobium callistachys</i>	*	*
	<i>Gastrolobium plicatum</i>	*	*
	<i>Gastrolobium spinosum</i>	*	*
	<i>Gompholobium glutinosum</i>	*	
	<i>Gompholobium knightianum</i>	*	
	<i>Gompholobium laxum</i>	*	*
	<i>Gompholobium marginatum</i>	*	
	<i>Gompholobium muticum</i>	*	
	<i>Gompholobium pungens</i>	*	*
	<i>Gompholobium tomentosum</i>	*	*
	<i>Hovea pungens</i>	*	
	<i>Isotropis cuneifolia</i>	*	*
	<i>Isotropis drummondii</i>	*	
	<i>Jacksonia angulata</i>	*	*
	<i>Jacksonia foliosa</i>	*	*
	<i>Jacksonia hakeoides</i>	*	*
	<i>Jacksonia macrocalyx</i>	*	
	<i>Jacksonia nutans</i>	*	*
	<i>Jacksonia restioides</i>	*	
	<i>Jacksonia sternbergiana</i>	*	*
	<i>Leptosema aphyllum</i>	*	
	<i>Mirbelia floribunda</i>	*	
	<i>Mirbelia trichocalyx</i>	*	
	<i>Sphaerolobium pulchellum</i>	*	*
	* <i>Trifolium campestre</i> var. <i>campestre</i>	*	*
Geraniaceae	* <i>Erodium cicutarium</i>	*	*
Goodeniaceae	<i>Dampiera alata</i>	*	
	<i>Dampiera altissima</i>	*	*
	<i>Dampiera juncea</i>	*	*
	<i>Dampiera lavandulacea</i>	*	*
	<i>Dampiera lindleyi</i>	*	*
	<i>Dampiera oligophylla</i>	*	*

Family	Taxon	2011	2012
Goodeniaceae cont.	<i>Dampiera spicigera</i>	*	*
	<i>Dampiera teres</i>	*	*
	<i>Dampiera teres</i> (broad-leaf variant)	*	
	<i>Goodenia berardiana</i>	*	
	<i>Goodenia coerulea</i>	*	*
	<i>Goodenia hassallii</i>	*	
	<i>Goodenia micrantha</i>	*	
	<i>Goodenia trichophylla</i>	*	
	<i>Lechenaultia biloba</i>	*	
	<i>Lechenaultia hirsuta</i>	*	
	<i>Lechenaultia linarioides</i>	*	*
	<i>Scaevola canescens</i>	*	*
	<i>Scaevola glandulifera</i>	*	
	<i>Scaevola phlebopetala</i>	*	
	<i>Scaevola virgata</i>	*	
	<i>Velleia rosea</i>	*	
	<i>Velleia trinervis</i>	*	
	Haemodoraceae	<i>Anigozanthos humilis</i> subsp. <i>humilis</i>	*
<i>Anigozanthos pulcherrimus</i>		*	
<i>Conostylis aculeata</i> subsp. <i>breviflora</i>		*	*
<i>Conostylis androstemma</i>		*	
<i>Conostylis candicans</i>		*	*
<i>Conostylis canteriata</i>		*	*
<i>Conostylis crassinervia</i> subsp. <i>absens</i>		*	*
<i>Conostylis dielsii</i> subsp. <i>dielsii</i>		*	*
<i>Conostylis hiemalis</i>		*	*
<i>Conostylis prolifera</i>		*	*
<i>Conostylis resinosa</i>		*	*
<i>Haemodorum brevisepalum</i>		*	
<i>Haemodorum discolor</i>		*	
<i>Haemodorum loratum</i> (P3)		*	
<i>Haemodorum spicatum</i>		*	
<i>Haemodorum venosum</i>		*	
<i>Tribonanthes australis</i>		*	
Haloragaceae		<i>Glischrocaryon aureum</i>	*
	<i>Gonocarpus nodulosus</i>	*	*
	<i>Gonocarpus pithyoides</i>	*	
Hemerocallidaceae	<i>Dianella revoluta</i>	*	
	<i>Johnsonia pubescens</i> subsp. <i>pubescens</i>	*	*
	<i>Tricoryne elatior</i>	*	
Iridaceae	<i>Tricoryne humilis</i>	*	
	<i>Orthrosanthus laxus</i> var. <i>laxus</i>	*	
	<i>Patersonia graminea</i>	*	*
Lamiaceae	<i>Patersonia occidentalis</i>	*	*
	<i>Hemiandra rubriflora</i>	*	

Family	Taxon	2011	2012
Lamiaceae cont.	<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687) (P3)	*	
	<i>Hemigenia drummondii</i>	*	*
	<i>Hemiphora bartlingii</i>	*	
	<i>Quoya verbascina</i>	*	*
Lauraceae	<i>Cassytha flava</i>	*	*
	<i>Cassytha glabella</i> forma <i>bicallosa</i>	*	
	<i>Cassytha</i> ? <i>pomiformis</i>	*	
	<i>Cassytha</i> ? <i>racemosa</i>	*	
	<i>Cassytha</i> sp.		*
Loganiaceae	<i>Logania spermacoea</i>	*	
Loranthaceae	<i>Amyema miquelii</i>	*	
	<i>Nuytsia floribunda</i>	*	
Malvaceae	<i>Guichenotia angustifolia</i>	*	
	<i>Guichenotia micrantha</i>	*	*
	<i>Guichenotia sarotes</i>	*	*
	<i>Keraudrenia hermanniifolia</i>	*	
	<i>Lasiopetalum drummondii</i>	*	*
	<i>Lasiopetalum ogilvieanum</i> (P1)	*	
	<i>Lasiopetalum</i> sp. Watheroo (K. Shepherd & C. Wilkins KS 220)	*	
	<i>Babingtonia camphorosmae</i>	*	*
	<i>Baeckea crispiflora</i> var. <i>tenuior</i>	*	*
	<i>Baeckea decipiens</i> (1)		*
	<i>Baeckea grandiflora</i>	*	*
	<i>Baeckea</i> sp. Bunney Road (S. Patrick 4059)	*	
Myrtaceae	<i>Beaufortia elegans</i>	*	*
	<i>Calothamnus longissimus</i>	*	*
	<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	*	*
	<i>Calothamnus sanguineus</i>	*	*
	<i>Calytrix aurea</i>	*	
	<i>Calytrix chrysantha</i> (P4)	*	
	<i>Calytrix depressa</i>	*	
	<i>Calytrix drummondii</i>	*	
	<i>Calytrix flavescens</i>	*	
	<i>Calytrix fraseri</i>	*	
	<i>Calytrix gracilis</i>	*	
	<i>Calytrix leschenaultii</i>	*	
	<i>Calytrix oldfieldii</i>	*	*
	<i>Calytrix sapphirina</i>	*	*
	<i>Calytrix strigosa</i>	*	*
	<i>Darwinia speciosa</i>	*	*
	<i>Eremaea beaufortoides</i> var. <i>microphylla</i>	*	*
	<i>Eremaea ectadioclada</i>	*	*
	<i>Eremaea violacea</i> subsp. <i>violacea</i>	*	
	<i>Eucalyptus abdita</i> (P2)	*	

Family	Taxon	2011	2012
Myrtaceae cont.	<i>Eucalyptus accedens</i>	*	*
	<i>Eucalyptus arachnaea</i> subsp. <i>arachnaea</i>	*	
	<i>Eucalyptus camaldulensis</i> subsp. <i>obtusata</i>	*	
	<i>Eucalyptus conveniens</i>	*	*
	<i>Eucalyptus crispata</i> (T)	*	
	<i>Eucalyptus diminuta</i>	*	
	<i>Eucalyptus drummondii</i>	*	
	<i>Eucalyptus gittinsii</i> subsp. <i>illucida</i>	*	
	<i>Eucalyptus horistes</i>	*	
	<i>Eucalyptus jucunda</i>	*	
	<i>Eucalyptus loxophleba</i> subsp. <i>loxophleba</i>	*	*
	<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i> (P4)	*	
	<i>Eucalyptus macrocarpa</i> x <i>pyriformis</i> (P3)	*	
	<i>Eucalyptus opimiflora</i>	*	
	<i>Eucalyptus pyriformis</i>	*	
	<i>Eucalyptus todtiana</i>	*	*
	<i>Eucalyptus</i> sp. (unidentified 2)	*	
	<i>Hypocalymma gardneri</i> (P3)	*	
	<i>Hypocalymma hirsutum</i>	*	*
	<i>Hypocalymma xanthopetalum</i>	*	*
	<i>Leptospermum oligandrum</i>	*	*
	<i>Leptospermum spinescens</i>	*	*
	<i>Malleostemon decipiens</i> (P1)	*	
	<i>Melaleuca acutifolia</i>	*	*
	<i>Melaleuca aspalathoides</i>	*	*
	<i>Melaleuca concreta</i>	*	*
	<i>Melaleuca dichroma</i>	*	
	<i>Melaleuca leuropoma</i>	*	*
	<i>Melaleuca</i> aff. <i>leuropoma</i>	*	*
	<i>Melaleuca marginata</i>	*	*
	<i>Melaleuca radula</i>	*	*
	<i>Melaleuca tinkeri</i>	*	
	<i>Melaleuca trichophylla</i>	*	*
	<i>Melaleuca viminea</i> subsp. <i>viminea</i>	*	*
	<i>Micromyrtus rogeri</i> (P1)	*	
	<i>Pileanthus filifolius</i>	*	
	<i>Scholtzia laxiflora</i>	*	*
	<i>Thryptomene mucronulata</i>	*	
	<i>Thryptomene racemulosa</i>	*	*
	<i>Thryptomene</i> sp. Mingenew (Diels & Pritzel 332) (P3)	*	*
	<i>Verticordia blepharophylla</i>	*	
<i>Verticordia brachypoda</i>	*		
<i>Verticordia centipeda</i>	*		

Family	Taxon	2011	2012	
Myrtaceae cont.	<i>Verticordia chrysantha</i>	*		
	<i>Verticordia chrysanthella</i>	*	*	
	<i>Verticordia densiflora</i> var. <i>densiflora</i>	*	*	
	<i>Verticordia endlicheriana</i> var. <i>manicula</i>	*		
	<i>Verticordia eriocephala</i>	*		
	<i>Verticordia grandis</i>	*	*	
	<i>Verticordia huegelii</i>	*		
	<i>Verticordia laciniata</i>	*		
	<i>Verticordia luteola</i> var. <i>luteola</i> (P3)	*		
	<i>Verticordia monadelpha</i> var. <i>monadelpha</i>	*		
	<i>Verticordia nobilis</i>	*	*	
	<i>Verticordia pennigera</i>	*		
	<i>Verticordia picta</i>	*		
	Orchidaceae	<i>Caladenia flava</i>	*	*
<i>Diuris laxiflora</i>		*		
<i>Diuris setacea</i>		*		
<i>Elythranthera brunonis</i>		*	*	
<i>Leporella fimbriata</i>		*		
<i>Paracaleana dixonii</i> (T)		*		
<i>Paracaleana nigrita</i>		*		
<i>Pterostylis sargentii</i>		*		
<i>Pterostylis vittata</i>		*	*	
<i>Thelymitra benthamiana</i>		*		
<i>Thelymitra stellata</i> (T)		*		
Orobanchaceae		<i>*Parentucellia latifolia</i>	*	*
Phyllanthaceae		<i>Poranthera microphylla</i>	*	
Pittosporaceae		<i>Marianthus bicolor</i>	*	
	<i>Marianthus ringens</i>	*		
Plantaginaceae	<i>Plantago debilis</i>	*		
Poaceae	<i>Amphipogon caricinus</i> var. <i>caricinus</i>	*	*	
	<i>Amphipogon turbinatus</i>	*		
	<i>Austrostipa compressa</i>	*		
	<i>Austrostipa elegantissima</i>	*	*	
	<i>Austrostipa hemipogon</i>	*		
	<i>Austrostipa macalpinei</i>	*	*	
	<i>Austrostipa</i> sp. Marchagee (B.R. Maslin 1407)	*		
	<i>Austrostipa variabilis</i>	*	*	
	<i>*Avena barbata</i>	*	*	
	<i>*Briza maxima</i>	*	*	
	<i>*Bromus diandrus</i>	*	*	
	<i>*Ehrharta brevifolia</i>	*	*	
	<i>*Ehrharta calycina</i>	*		
	<i>*Ehrharta longiflora</i>	*	*	
	<i>Neurachne alopecuroidea</i>	*	*	
	<i>*Pentameris airoides</i> subsp. <i>airoides</i>	*	*	

Family	Taxon	2011	2012
Poaceae cont.	<i>Rytidosperma acerosum</i>	*	*
	<i>Rytidosperma setaceum</i>	*	
	<i>Triodia danthonioides</i>	*	*
	* <i>Vulpia myuros</i>	*	*
Polygalaceae	<i>Comesperma acerosum</i>	*	
	<i>Comesperma calymega</i>	*	
	<i>Comesperma volubile</i>	*	*
Polygonaceae	<i>Muehlenbeckia adpressa</i>	*	*
Portulacaceae	<i>Calandrinia calyptrata</i>	*	
	<i>Calandrinia corrigioloides</i>	*	
	<i>Calandrinia</i> sp. Blackberry (D.M. Porter 171)	*	*
Primulaceae	* <i>Lysimachia arvensis</i>	*	*
Proteaceae	<i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i>	*	
	<i>Banksia attenuata</i>	*	*
	<i>Banksia bipinnatifida</i> subsp. <i>multifida</i>	*	
	<i>Banksia candolleana</i>	*	
	<i>Banksia carlinoides</i>	*	*
	<i>Banksia dallanneyi</i> subsp. <i>media</i>	*	*
	<i>Banksia fraseri</i> var. <i>fraseri</i>	*	*
	<i>Banksia leptophylla</i> var. <i>melletica</i>	*	*
	<i>Banksia menziesii</i>	*	
	<i>Banksia prionotes</i>	*	
	<i>Banksia scabrella</i> (P4)	*	*
	<i>Banksia sessilis</i> var. <i>flabellifolia</i>	*	*
	<i>Banksia shuttleworthiana</i>	*	*
	<i>Conospermum boreale</i> subsp. ? <i>ascendens</i>	*	*
	<i>Conospermum nervosum</i>	*	
	<i>Grevillea biformis</i> subsp. <i>biformis</i>	*	*
	<i>Grevillea biternata</i>	*	*
	<i>Grevillea candelabroides</i>	*	
	<i>Grevillea eriostachya</i>	*	
	<i>Grevillea shuttleworthiana</i> subsp. <i>canarina</i>	*	*
	<i>Grevillea umbellulata</i>	*	*
	<i>Hakea auriculata</i>	*	*
	<i>Hakea brownii</i>	*	
	<i>Hakea circumalata</i>	*	*
	<i>Hakea costata</i>	*	*
	<i>Hakea cygna</i> subsp. <i>cygna</i>	*	*
	<i>Hakea incrassata</i>	*	*
	<i>Hakea lissocarpha</i>	*	*
	<i>Hakea meisneriana</i>	*	
	<i>Hakea orthorrhyncha</i> var. <i>filiformis</i>	*	*
	<i>Hakea platysperma</i>	*	
<i>Hakea polyanthema</i>	*	*	

Family	Taxon	2011	2012	
Proteaceae cont.	<i>Hakea prostrata</i>	*		
	<i>Hakea psilorrhyncha</i>	*	*	
	<i>Hakea smilacifolia</i>	*		
	<i>Hakea spathulata</i>	*	*	
	<i>Hakea stenocarpa</i>	*	*	
	<i>Hakea trifurcata</i>	*	*	
	<i>Isopogon divergens</i>	*	*	
	<i>Isopogon tridens</i>	*		
	<i>Lambertia multiflora</i> var. <i>multiflora</i>	*	*	
	<i>Persoonia filiformis</i> (P2)	*		
	<i>Persoonia rudis</i> (P3)	*		
	<i>Petrophile brevifolia</i>	*		
	<i>Petrophile chrysantha</i>	*		
	<i>Petrophile drummondii</i>	*	*	
	<i>Petrophile macrostachya</i>	*	*	
	<i>Petrophile megalostegia</i>	*	*	
	<i>Petrophile scabriuscula</i>	*	*	
	<i>Petrophile seminuda</i>	*		
	<i>Petrophile shuttleworthiana</i>	*	*	
	<i>Stirlingia latifolia</i>	*		
	<i>Stirlingia simplex</i>	*		
	<i>Synaphea aephyrsa</i> (P3)	*	*	
	<i>Synaphea oulopha</i> (P1)	*		
	<i>Synaphea spinulosa</i> subsp. <i>spinulosa</i>	*		
	<i>Xylomelum angustifolium</i>	*	*	
	Pteridaceae	<i>Cheilanthes adiantoides</i>	*	*
Restionaceae	<i>Alexgeorgea nitens</i>	*	*	
	<i>Chordifex sinuosus</i>	*		
	<i>Desmocladius asper</i>	*	*	
	<i>Desmocladius lateriticus</i>	*		
	<i>Desmocladius parthenicus</i>	*		
	<i>Desmocladius semiplanus</i>	*	*	
	<i>Harperia lateriflora</i>	*	*	
	<i>Lepidobolus chaetocephalus</i>	*		
	<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	*	*	
	Rhamnaceae	<i>Cryptandra intermedia</i>	*	
	<i>Cryptandra intermedia</i> (atypical variant)		*	
	<i>Cryptandra myriantha</i>	*	*	
	<i>Cryptandra nutans</i>	*	*	
	<i>Cryptandra pungens</i>	*		
<i>Cryptandra spyridioides</i>	*			
<i>Polianthion wichurae</i>	*			
<i>Stenanthemum humile</i>	*			
<i>Stenanthemum intricatum</i>	*			
<i>Stenanthemum notiale</i> subsp. <i>notiale</i>	*	*		
<i>Stenanthemum ?tridentatum</i>	*			
<i>Trymalium angustifolium</i>	*			

Family	Taxon	2011	2012
Rubiaceae	<i>Opercularia vaginata</i>	*	*
Rutaceae	<i>Boronia coerulescens</i> subsp. <i>spinescens</i>	*	
	<i>Boronia cymosa</i>	*	*
	<i>Boronia ramosa</i> subsp. <i>anethifolia</i>	*	
	<i>Diplolaena eneabbensis</i>	*	*
	<i>Geleznovia verrucosa</i>	*	*
Santalaceae	<i>Leptomeria empetriformis</i>	*	
	<i>Santalum acuminatum</i>	*	*
Sapindaceae	<i>Diplopeltis huegelii</i> subsp. <i>lehmannii</i>	*	
	<i>Dodonaea divaricata</i>	*	
	<i>Dodonaea ericoides</i>	*	*
Solanaceae	<i>Anthocercis genistoides</i>	*	*
Stylidiaceae	<i>Levenhookia octomaculata</i>	*	
	<i>Levenhookia pusilla</i>	*	
	<i>Levenhookia stipitata</i>	*	
	<i>Stylidium adpressum</i>	*	
	<i>Stylidium androsaceum</i>	*	*
	<i>Stylidium caricifolium</i>	*	
	? <i>Stylidium carnosum</i> subsp. <i>Narrow leaves</i> (J.A. Wege 490) (P1)	*	
	<i>Stylidium crossocephalum</i>	*	
	<i>Stylidium dichotomum</i>	*	*
	<i>Stylidium diuroides</i> subsp. <i>paucifoliatum</i>	*	
	<i>Stylidium drummondianum</i> (P3)	*	*
	<i>Stylidium emarginatum</i>	*	
	<i>Stylidium eriopodum</i>	*	
	<i>Stylidium flagellum</i>	*	*
	<i>Stylidium maitlandianum</i>	*	
	<i>Stylidium petiolare</i>	*	*
	<i>Stylidium pseudocaespitosum</i> (P2)	*	
	<i>Stylidium purpureum</i> ms	*	
	<i>Stylidium repens</i>	*	
	<i>Stylidium rigidulum</i>	*	*
	<i>Stylidium</i> sp. <i>Kalbarri</i> (A. Carr 145)	*	*
	<i>Stylidium stenosepalum</i>	*	
	<i>Stylidium torticarpum</i> (P3)	*	*
Thymelaeaceae	<i>Pimelea angustifolia</i>	*	*
	<i>Pimelea imbricata</i> var. <i>piligera</i>	*	
	<i>Pimelea leucantha</i>	*	
	<i>Pimelea sulphurea</i>	*	*
Violaceae	<i>Hybanthus floribundus</i> subsp. <i>floribundus</i>	*	
Vitaceae	<i>Clematicissus angustissima</i>	*	*
Xanthorrhoeaceae	<i>Xanthorrhoea ?brunonis</i>	*	
	<i>Xanthorrhoea drummondii</i>	*	
Zamiaceae	<i>Macrozamia fraseri</i>	*	*

Appendix H: Raw Data Recorded within Quadrats and Sites 2011 - 2012

Site Name: WE001
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 26/09/2011
 GPS Location: GDA94 (Zone 50) 337808E 6739503N
 Community: 1a
 Landform Type: Mid Slope
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sand
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 2 - Excellent
 Disturbance: Exotic Weeds
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
* <i>Arctotheca calendula</i>	0.1	0.1
<i>Austrostipa macalpinei</i>	0.2	0.1
<i>Austrostipa</i> sp. Marchagee (B.R. Maslin 1407)	0.3	0.1
<i>Calandrinia calyptrata</i>	0.1	4
<i>Calandrinia corrigioloides</i>	0.1	1
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>		
<i>Conostylis aculeata</i> subsp. <i>breviflora</i>	0.2	0.5
<i>Crassula colorata</i> var. <i>acuminata</i>	0.1	2
<i>Dianella revoluta</i>	0.5	0.3
* <i>Ehrharta calycina</i>	0.3	0.2
<i>Eucalyptus accedens</i>	10	50
<i>Gastrolobium spinosum</i>	1.5	7
<i>Gompholobium pungens</i>	0.2	0.2
<i>Hakea lissocarpha</i>	0.3	0.5
<i>Hovea pungens</i>		
* <i>Hypochoeris glabra</i>	0.1	0.1
* <i>Isolepis marginata</i>	0.1	0.1
<i>Olearia rudis</i>	1	3
<i>Opercularia vaginata</i>	0.1	0.1
* <i>Parentucellia latifolia</i>	0.1	0.1
* <i>Pentameris airoides</i> subsp. <i>airoides</i>	0.1	0.1
<i>Senecio pinnatifolius</i> var. <i>latilobus</i>		

<i>Thysanotus manglesianus</i>		0.1
<i>Trachymene pilosa</i>	0.1	2
* <i>Ursinia anthemoides</i>	0.3	0.2
* <i>Wahlenbergia capensis</i>	0.2	0.1
<i>Wahlenbergia gracilentia</i>	0.1	0.1

PHOTOS

Site Name: WE002
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 26/09/2011
 GPS Location: GDA94 (Zone 50) 337822E 6739289N
 Community: 7a
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: W
 Soil Type: Sand
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: <2%
 Vegetation Condition: 1 - Pristine
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia dilatata</i>	0.3	0.2
<i>Acacia lasiocarpa</i> var. <i>?bracteolata</i>	0.4	0.5
<i>Allocasuarina humilis</i>	0.3	0.2
<i>Allocasuarina microstachya</i>	0.3	0.2
<i>Baeckea grandiflora</i>	0.3	0.2
<i>Banksia fraseri</i> var. <i>?fraseri</i>	0.3	0.3
<i>Boronia cymosa</i>	0.3	0.2
<i>Boronia ramosa</i> subsp. <i>anethifolia</i>	0.1	0.1
<i>Borya sphaerocephala</i>	0.1	0.1
<i>Burchardia congesta</i>	0.2	0.1
<i>Calothamnus longissimus</i>	0.5	5
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	1	10
<i>Calothamnus sanguineus</i>	0.5	1
<i>Cassytha ?racemosa</i>		0.1
<i>Caustis dioica</i>	0.3	0.2
<i>Chamaescilla versicolor</i>	0.1	0.1
<i>Chorizema aciculare</i> subsp. <i>laxum</i>	0.2	0.1
<i>Dampiera lindleyi</i>	0.4	0.2
<i>Dampiera teres</i> (broad-leaf variant)	0.4	0.2
<i>Daviesia daphnoides</i>	0.4	0.5
<i>Daviesia oxyclada</i>	0.3	0.1
<i>Desmocladius lateriticus</i>	0.2	0.2

<i>Diplolaena eneabbensis</i>	0.4	0.2
<i>Drosera eneabba</i>	0.1	0.1
<i>Drosera pilos</i>	0.1	0.1
<i>Ecdeiocolea monostachya</i>	0.4	10
<i>Eucalyptus conveniens</i>	3	15
<i>Geleznowia verrucosa</i>	0.3	0.1
<i>Glischrocaryon aureum</i>	0.5	0.5
<i>Hakea auriculata</i>	0.4	1
<i>Hakea incrassata</i>	0.4	1
<i>Hakea lissocarpha</i>	0.5	3
<i>Hakea spathulata</i>	0.3	0.5
<i>Hibbertia crassifolia</i>	0.2	0.1
<i>Hibbertia hypericoides</i>	0.3	0.1
<i>Laxmannia omnifertilis</i>	0.1	0.1
<i>Lepidosperma brunonianum sens. lat.</i>	0.3	0.1
<i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A)	0.2	0.3
<i>Levenhookia pusilla</i>	0.1	0.1
<i>Melaleuca aspalathoides</i>	0.3	15
<i>Mesomelaena preissii</i>	0.2	0.2
<i>Mirbelia floribunda</i>	0.3	0.1
<i>Neurachne alopecuroidea</i>	0.2	0.2
<i>Opercularia vaginata</i>	0.2	0.2
<i>Petrophile brevifolia</i>	0.2	0.1
<i>Polianthion wichurae</i>	0.2	0.2
<i>Pterochaeta paniculata</i>	0.1	0.1
<i>Schoenus armeria</i>	0.2	0.1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Stylidium diuroides</i> subsp. <i>paucifoliatum</i>	0.1	0.1
<i>Stylidium drummondianum</i> (3)	0.1	0.2
<i>Stylidium</i> sp. Kalbarri (A. Carr 145)	0.1	0.1
<i>Stylidium stenosepalum</i>	0.2	0.1
<i>Synaphea aephyrsa</i> (3)	0.2	0.3
<i>Thysanotus manglesianus</i>		0.1
<i>Thysanotus patersonii</i>		0.1
<i>Tricoryne humilis</i>	0.2	0.1
<i>Verticordia laciniata</i>	0.3	0.1
<i>Xanthosia huegelii</i>	0.1	0.1

PHOTOS



Site Name: WE003
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 27/09/2011
 GPS Location: GDA94 (Zone 50) 336938E 6739443N
 Community: 10
 Landform Type: Lower Slope
 Slope Class: Very Gently Inclined (1 degree)
 Aspect: S
 Soil Type: Sand
 Soil Colour: Yellow
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia auronitens</i>	0.3	0.5
<i>Acacia comans</i>	0.5	0.5
<i>Acanthocarpus</i> sp. Ajana (C.A. Gardner 8596)	0.2	0.1
<i>Astroloma serratifolium</i>	0.2	0.2
<i>Banksia attenuata</i>	0.5	1
<i>Banksia shuttleworthiana</i>	0.5	5
<i>Burchardia congesta</i>	0.3	0.1
<i>Conospermum boreale</i> subsp. ? <i>ascendens</i>	0.4	1
<i>Conostylis dielsii</i> subsp. <i>dielsii</i>	0.2	0.2
<i>Cryptandra spyridioides</i>	0.2	0.1
<i>Dampiera oligophylla</i>	0.3	0.2
<i>Dampiera teres</i> (broad-leaf variant)	0.2	0.1
<i>Darwinia speciosa</i>	0.2	0.1
<i>Daviesia divaricata</i> subsp. <i>divaricata</i> ms	0.5	2
<i>Daviesia nudiflora</i>	0.4	2
<i>Drosera menziesii</i>	0.2	0.1
<i>Ecdeiocolea monostachya</i>	0.5	15
<i>Eremaea violacea</i> subsp. <i>violacea</i>	0.4	5
<i>Geleznovia verrucosa</i>	0.3	0.1
<i>Grevillea biformis</i> subsp. <i>biformis</i>	1	1

<i>Hakea cygna</i> subsp. <i>cygna</i>		
<i>Hakea polyanthema</i>	0.5	0.3
<i>Hibbertia crassifolia</i>	0.3	0.1
<i>Hibbertia hypericoides</i>	0.2	0.2
<i>Isopogon tridens</i>	0.4	0.2
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	1
<i>Leucopogon leptanthus</i>	0.2	0.2
<i>Leucopogon planifolius</i>	0.3	0.2
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.3	0.1
<i>Levenhookia pusilla</i>	0.1	0.1
<i>Melaleuca leuropoma</i>	0.4	7
<i>Mesomelaena pseudostygia</i>	0.4	10
<i>Mirbelia trichocalyx</i>	0.3	0.1
<i>Monotaxis bracteata</i>	0.1	0.1
<i>Neurachne alopecuroidea</i>	0.2	0.1
<i>Opercularia vaginata</i>	0.1	0.1
<i>Persoonia filiformis</i> (2)	0.2	0.1
<i>Petrophile macrostachya</i>	0.3	0.2
<i>Pileanthus filifolius</i>	0.4	1
<i>Pimelea sulphurea</i>	0.4	0.1
<i>Podotheca gnaphalioides</i>	0.2	0.1
<i>Scaevola canescens</i>	0.2	0.2
<i>Schoenus clandestinus</i>	0.1	0.3
<i>Scholtzia laxiflora</i>	0.3	0.2
<i>Stylidium adpressum</i>	0.1	0.1
<i>Thysanotus patersonii</i>		0.1
<i>Thysanotus sparteus</i>	0.4	0.1
<i>Trachymene pilosa</i>	0.1	0.1
<i>Tricoryne humilis</i>	0.1	0.1
<i>Xylomelum angustifolium</i>	2	3

PHOTOS



Site Name: WE004
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 27/09/2011
 GPS Location: GDA94 (Zone 50) 336362E 6739499N
 Community: 8
 Landform Type: Break-away (other)
 Slope Class: Moderately Inclined (10 degrees)
 Aspect: S
 Soil Type: Clay Loam
 Soil Colour: Brown
 Rock Outcrop: Laterite, 20-50% bedrock exposed
 CF Abundance: 50-90%
 CF Sizes: 2-6mm, 6-20mm, 20-60mm, 60-200mm
 CF Types: Laterite
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia lasiocarpa</i> var. <i>?bracteolata</i>	0.3	0.1
<i>Allocasuarina campestris</i>	1	5
<i>Allocasuarina humilis</i>	1	5
<i>Anthocercis genistoides</i>		
<i>Banksia fraseri</i> var. <i>?fraseri</i>	0.3	0.5
<i>Boronia cymosa</i>	0.1	0.1
<i>Calothamnus longissimus</i>	0.5	0.5
<i>Chamaescilla versicolor</i>	0.1	0.2
<i>Conostylis androstemma</i>	0.2	0.2
<i>Cristonia biloba</i>	0.2	0.1
<i>Cryptandra myriantha</i>	0.3	0.3
<i>Dampiera lindleyi</i>	0.3	1
<i>Dodonaea ericoides</i>	0.3	0.2
<i>Gastrolobium plicatum</i>	0.4	1
<i>Glischrocaryon aureum</i>	0.5	0.3
<i>Goodenia hassallii</i>	0.2	0.1
<i>Guichenotia sarotes</i>	0.4	0.1
<i>Hakea auriculata</i>	1	1

<i>Hakea incrassata</i>	0.5	5
<i>Hakea lissocarpha</i>	0.4	1
<i>Hakea stenocarpa</i>	0.4	0.2
<i>Hibbertia hypericoides</i>	0.3	0.5
<i>Hibbertia spicata</i> subsp. <i>spicata</i>	0.3	0.5
<i>Isotropis drummondii</i>	0.2	0.1
<i>Lepidosperma tenue</i>	0.5	2
<i>Marianthus bicolor</i>	0.5	0.2
<i>Melaleuca concreta</i>		
<i>Melaleuca radula</i>	1	20
<i>Neurachne alopecuroidea</i>	0.2	0.1
<i>Opercularia vaginata</i>	0.2	0.2
<i>Polianthion wichurae</i>	0.3	0.1
<i>Pterochaeta paniculata</i>	0.1	0.1
<i>Scaevola virgata</i>	0.3	0.2
<i>Stylidium caricifolium</i>	0.2	0.2
<i>Stylidium drummondianum</i> (3)	0.1	1
<i>Synaphea aephyrsa</i> (3)	0.2	0.2
<i>Tetradlea confertifolia</i>	0.2	0.1
<i>Thysanotus manglesianus</i>		0.1
<i>Trachymene pilosa</i>	0.1	0.1
<i>Tricoryne elatior</i>	0.3	0.2
<i>Trymalium angustifolium</i>	0.3	0.3
<i>Xanthorrhoea drummondii</i>	0.5	0.5

PHOTOS



Site Name: WE005
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 27/09/2011
 GPS Location: GDA94 (Zone 50) 336412E 6739386N
 Community: 7a
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: S
 Soil Type: Clay Loam
 Soil Colour: Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 50-90%
 CF Sizes: 2-6mm, 6-20mm, 20-60mm
 CF Types: Laterite
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia comans</i>	0.3	0.5
<i>Allocasuarina campestris</i>	0.4	0.2
<i>Allocasuarina humilis</i>	0.3	0.2
<i>Allocasuarina microstachya</i>	0.4	2
<i>Babingtonia camphorosmae</i>	0.2	0.1
<i>Baeckea crispiflora</i> var. <i>tenuior</i>	0.3	0.2
<i>Banksia carlinoides</i>	0.3	0.2
<i>Banksia fraseri</i> var. <i>?fraseri</i>	0.3	0.5
<i>Banksia shuttleworthiana</i>	0.3	0.5
<i>Boronia cymosa</i>	0.2	0.1
<i>Borya sphaerocephala</i>	0.1	0.1
<i>Burchardia congesta</i>	0.3	0.1
<i>Calytrix flavescens</i>	0.2	0.1
<i>Chamaescilla versicolor</i>	0.1	0.2
<i>Chorizema aciculare</i> subsp. <i>laxum</i>	0.3	0.1
<i>Conostylis dielsii</i> subsp. <i>dielsii</i>	0.1	0.1
<i>Cryptandra myriantha</i>	0.2	0.2
<i>Daviesia daphnoides</i>	0.4	0.5

<i>Daviesia oxyclada</i>	0.2	0.2
<i>Dodonaea ericoides</i>	0.2	0.4
<i>Ecdeiocolea monostachya</i>	0.5	25
<i>Elythranthera brunonis</i>	0.2	0.1
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	0.3	0.2
<i>Gastrolobium plicatum</i>	0.4	0.5
<i>Hakea auriculata</i>	0.5	1
<i>Hakea incrassata</i>	0.4	1
<i>Hakea lissocarpha</i>	0.5	4
<i>Hibbertia crassifolia</i>	0.3	0.1
<i>Hibbertia hypericoides</i>	0.3	0.1
<i>Jacksonia restioides</i>	0.3	1
<i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A)	0.2	0.2
<i>Levenhookia pusilla</i>	0.1	0.1
<i>Melaleuca aspalathoides</i>	0.3	25
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.2	0.2
<i>Petrophile chrysantha</i>	0.2	0.1
<i>Petrophile shuttleworthiana</i>	0.4	0.5
<i>Pimelea sulphurea</i>	0.3	0.1
<i>Pterochaeta paniculata</i>	0.1	0.1
<i>Schoenus armeria</i>	0.2	0.2
<i>Schoenus clandestinus</i>	0.1	0.2
<i>Stylidium diuroides</i> subsp. <i>paucifoliatum</i>	0.2	0.1
<i>Stylidium drummondianum</i> (3)	0.1	0.2
<i>Thysanotus patersonii</i>		0.1
<i>Tricoryne humilis</i>	0.1	0.1
<i>Verticordia picta</i>	0.4	0.1

PHOTOS



Site Name: WE006
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 27/09/2011
 GPS Location: GDA94 (Zone 50) 334498E 6740034N
 Community: 13a
 Landform Type: Lower Slope
 Slope Class: Very Gently Inclined (1 degree)
 Aspect: W
 Soil Type: Sand
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i>	0.2	0.1
<i>Acacia stenoptera</i>	0.2	0.1
<i>Alexgeorgea nitens</i>	0.1	0.2
<i>Allocasuarina humilis</i>	1.5	6
<i>Andersonia lehmanniana</i>	0.3	0.2
<i>Anigozanthos humilis</i> subsp. <i>humilis</i>	0.2	0.2
<i>Astroloma xerophyllum</i>	0.3	0.2
<i>Baeckea grandiflora</i>	0.4	0.5
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.2	2
<i>Banksia scabrella</i> (4)	0.4	0.5
<i>Beaufortia elegans</i>	0.4	0.2
<i>Calothamnus sanguineus</i>	0.5	1
<i>Calytrix fraseri</i>	0.4	0.2
<i>Cassytha</i> ? <i>pomiformis</i>	0.1	0.1
<i>Chordifex sinuosus</i>	0.2	0.2
<i>Conostylis canteriata</i>	0.1	0.3
<i>Conostylis hiemalis</i>	0.2	0.1
<i>Cryptandra myriantha</i>	0.1	0.1
<i>Desmocladius semiplanus</i>	0.1	0.3
<i>Eremaea beaufortoides</i> var. <i>microphylla</i>	0.4	4

<i>Eremaea ectadioclada</i>	0.3	0.2
<i>Eucalyptus todtiana</i>	4	5
<i>Gompholobium tomentosum</i>	0.4	1
<i>Goodenia coerulea</i>	0.2	0.1
<i>Hakea psilorrhyncha</i>	1.5	0.5
<i>Hibbertia crassifolia</i>	0.3	0.4
<i>Hibbertia hypericoides</i>	0.4	5
<i>Hibbertia subvaginata</i>	0.5	0.5
<i>Isotropis cuneifolia</i>	0.1	0.1
<i>Jacksonia hakeoides</i>	0.2	0.2
<i>Johnsonia pubescens</i> subsp. <i>pubescens</i>	0.1	0.1
<i>Lambertia multiflora</i> var. <i>multiflora</i>	1.5	6
<i>Lasiopetalum drummondii</i>	0.2	0.2
<i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i>	0.1	0.1
<i>Leptospermum oligandrum</i>	0.5	0.5
<i>Leptospermum spinescens</i>	0.4	0.2
<i>Leucopogon hispidus</i>	0.2	0.5
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.5	0.5
<i>Leucopogon</i> sp. Northern ciliate (R. Davis 3393)	0.2	0.2
<i>Lyginia imberbis</i>	0.3	0.2
<i>Melaleuca leuropoma</i>	0.4	0.5
<i>Melaleuca</i> aff. <i>leuropoma</i>	1	15
<i>Opercularia vaginata</i>	0.2	0.2
<i>Podotherca gnaphalioides</i>	0.1	0.1
<i>Quoya verbascina</i>	0.4	0.2
<i>Scaevola phlebopetala</i>	0.1	0.1
<i>Schoenus</i> sp. A3 Ciliate Sheaths (K.R. Newbey 9402)	0.3	0.1
<i>Stachystemon axillaris</i>	0.3	0.1
<i>Stylidium crossocephalum</i>	0.1	0.1
<i>Stylidium maitlandianum</i>	0.3	0.1
<i>Stylidium rigidulum</i>	0.1	0.1
<i>Stylidium</i> sp. Kalbarri (A. Carr 145)	0.1	0.1
<i>Thysanotus manglesianus</i>		0.1
<i>Trachymene pilosa</i>	0.1	0.1
* <i>Wahlenbergia capensis</i>	0.3	0.1
<i>Xanthosia huegelii</i>	0.1	0.1

PHOTOS



Site Name: WE007
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 27/09/2011
 GPS Location: GDA94 (Zone 50) 334382E 6740263N
 Community: 14
 Landform Type: Wetland
 Slope Class: Level (0 degrees)
 Soil Type: Sand
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia saligna</i>		
<i>Austrostipa macalpinei</i>	0.2	0.1
<i>Banksia carlinoides</i>	1	10
<i>Caladenia flava</i>	0.1	0.1
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	1	15
<i>Calytrix depressa</i>	0.5	2
<i>Caustis dioica</i>	0.3	0.3
<i>Conostylis aculeata</i> subsp. <i>breviflora</i>	0.1	1
<i>Conostylis canteriata</i>	0.2	0.1
<i>Dampiera teres</i> (broad-leaf variant)	0.4	5
<i>Daviesia oxyclada</i>	0.2	0.1
<i>Diuris laxiflora</i>	0.2	0.1
<i>Drosera menziesii</i>		0.1
<i>Elythranthera brunonis</i>	0.2	0.1
<i>Gnephosis drummondii</i>	0.1	0.1
<i>Goodenia coerulea</i>	0.1	0.1
<i>Grevillea umbellulata</i>	0.3	1
<i>Hakea lissocarpha</i>	1	5
<i>Hakea spathulata</i>	0.3	0.5
<i>Hakea trifurcata</i>	0.5	0.5
<i>Harperia lateriflora</i>	0.2	0.5
<i>Hibbertia acerosa</i>	0.2	0.2

<i>Hyalosperma cotula</i>	0.1	3
<i>Hydrocotyle hispidula</i>	0.1	0.1
<i>Isotoma hypocrateriformis</i>	0.1	0.2
<i>Jacksonia angulata</i>	0.5	2
<i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i>	0.1	0.1
<i>Leptosema aphyllum</i>	0.2	0.2
<i>Levenhookia pusilla</i>	0.1	0.3
<i>Melaleuca leuropoma</i>	0.4	0.5
<i>Melaleuca trichophylla</i>	0.3	5
<i>Neurachne alopecuroidea</i>	0.1	0.2
<i>Opercularia vaginata</i>	0.2	2
<i>Podotrochea gnaphalioides</i>	0.1	0.3
<i>Pterochaeta paniculata</i>	0.1	0.3
<i>Ptilotus manglesii</i>	0.1	0.1
<i>Schoenus badius</i> (2)	0.1	0.1
<i>Siloxerus filifolius</i>	0.1	0.1
<i>Sowerbaea laxiflora</i>	0.2	0.1
<i>Thysanotus manglesianus</i>		0.1
<i>Trachymene pilosa</i>	0.1	0.3
<i>Tribonanthes australis</i>	0.2	0.1
* <i>Ursinia anthemoides</i>	0.2	0.1
<i>Verticordia blepharophylla</i>	1	0.3
<i>Verticordia densiflora</i> var. <i>densiflora</i>	1.2	15
<i>Wahlenbergia gracilentia</i>	0.1	0.1

PHOTOS



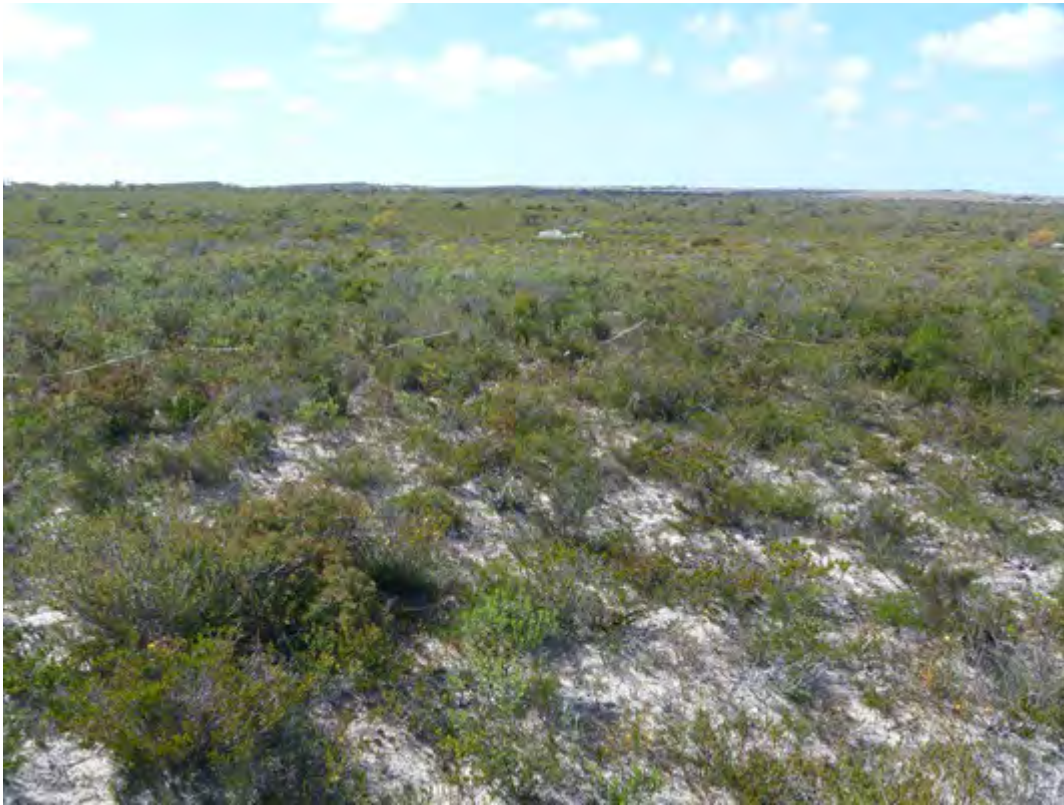
Site Name: WE008
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 28/09/2011
 GPS Location: GDA94 (Zone 50) 334133E 6740257N
 Community: 14
 Landform Type: Lower Slope
 Slope Class: Gently Inclined (3 degrees)
 Soil Type: Sandy Loam
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia dilatata</i>	0.2	0.1
<i>Allocasuarina humilis</i>	0.3	0.2
<i>Allocasuarina microstachya</i>	0.3	5
<i>Anarthria polyphylla</i>	0.1	0.1
<i>Babingtonia camphorosmae</i>	0.2	0.5
<i>Banksia carlinoides</i>	0.5	10
<i>Borya sphaerocephala</i>	0.1	0.1
<i>Burchardia congesta</i>	0.3	0.1
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	0.5	0.5
<i>Calytrix depressa</i>	0.3	0.5
<i>Caustis dioica</i>	0.3	0.1
<i>Chamaescilla versicolor</i>	0.1	0.1
<i>Chorizema aciculare</i> subsp. <i>laxum</i>	0.1	0.1
<i>Conostylis canteriata</i>	0.1	0.1
<i>Dampiera teres</i> (broad-leaf variant)	0.2	0.2
<i>Daviesia angulata</i>	1	2
<i>Drosera menziesii</i>		0.2
<i>Elythranthera brunonis</i>	0.1	0.1
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	0.5	0.5
<i>Goodenia trichophylla</i>	0.2	0.1
<i>Grevillea umbellulata</i>	0.3	0.5
<i>Hakea lissocarpha</i>	0.5	5

<i>Hakea spathulata</i>	0.2	0.2
<i>Hakea trifurcata</i>	0.4	1
<i>Harperia lateriflora</i>	0.2	15
<i>Hibbertia acerosa</i>	0.2	0.2
<i>Hibbertia crassifolia</i>	0.4	0.2
<i>Hyalosperma cotula</i>	0.1	0.2
<i>Jacksonia angulata</i>	0.4	6
<i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i>	0.1	0.1
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.2	0.3
<i>Lepidosperma</i> aff. <i>scabrum</i>	0.2	0.1
<i>Leporella fimbriata</i>	0.1	0.1
<i>Leucopogon glaucifolius</i>	0.2	0.5
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.4	0.3
<i>Levenhookia pusilla</i>	0.1	0.1
<i>Melaleuca</i> aff. <i>leuropoma</i>	0.4	0.5
<i>Melaleuca leuropoma</i>	0.3	0.5
<i>Melaleuca trichophylla</i>	0.3	10
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.1	0.1
<i>Schoenus badius</i> (2)	0.1	0.1
<i>Schoenus brevisetis</i>	0.2	0.1
<i>Schoenus clandestinus</i>	0.1	0.2
<i>Stenanthemum notiale</i> subsp. <i>notiale</i>	0.1	0.1
<i>Stylidium androsaceum</i>	0.1	0.1
<i>Stylidium dichotomum</i>	0.1	0.1
<i>Stylidium petiolare</i>	0.1	0.1
<i>Thysanotus patersonii</i>		0.1
<i>Tribonanthes australis</i>	0.1	0.1
<i>Verticordia densiflora</i> var. <i>densiflora</i>	0.3	0.1
<i>Verticordia pennigera</i>	0.2	0.1

PHOTOS



Site Name: WE009
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 28/09/2011
 GPS Location: GDA94 (Zone 50) 334338E 6740983N
 Community: 7a
 Landform Type: Crest
 Slope Class: Gently Inclined (3 degrees)
 Aspect: N
 Soil Type: Clay Loam
 Soil Colour: Brown
 Rock Outcrop: Laterite, 2-10% bedrock exposed
 CF Abundance: >90%
 CF Sizes: 2-6mm, 6-20mm
 CF Types: Laterite
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia auronitens</i>	0.1	0.1
<i>Allocasuarina humilis</i>	0.5	1
<i>Allocasuarina microstachya</i>	0.2	0.2
<i>Astroloma glaucescens</i>	0.4	0.2
<i>Baeckea grandiflora</i>	0.4	4
<i>Banksia carlinoides</i>	0.5	5
<i>Banksia fraseri</i> var. ? <i>fraseri</i>	0.5	5
<i>Banksia shuttleworthiana</i>	0.3	2
<i>Boronia cymosa</i>	0.3	0.2
<i>Burchardia congesta</i>	0.3	0.1
<i>Caladenia flava</i>	0.3	0.5
<i>Cassytha glabella</i> forma <i>bicallosa</i>	0.1	0.1
<i>Caustis dioica</i>	0.3	0.2
<i>Chamaescilla versicolor</i>	0.1	0.1
<i>Conostylis androstemma</i>	0.2	0.3
<i>Conostylis dielsii</i> subsp. <i>dielsii</i>	0.1	0.1
<i>Cristonia biloba</i>	0.3	0.2
<i>Dampiera lindleyi</i>	0.3	0.5

<i>Dampiera teres (broad-leaf variant)</i>	0.3	0.2
<i>Darwinia speciosa</i>	0.2	0.1
<i>Dodonaea ericoides</i>	0.2	0.2
<i>Ecdeiocolea monostachya</i>	0.5	20
<i>Elythranthera brunonis</i>	0.2	0.1
<i>Eremaea beaufortioides var. microphylla</i>	0.4	0.5
<i>Gastrolobium plicatum</i>	0.4	0.5
<i>Glischrocaryon aureum</i>	0.4	0.2
<i>Hakea auriculata</i>	0.5	5
<i>Hakea lissocarpha</i>	0.5	3
<i>Hakea stenocarpa</i>	0.3	0.2
<i>Hibbertia hypericoides</i>	0.4	0.5
<i>Hibbertia spicata</i> subsp. <i>spicata</i>	0.3	0.5
<i>Isopogon divergens</i>	0.4	0.2
<i>Jacksonia restioides</i>	0.3	0.2
<i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A)	0.2	0.1
<i>Melaleuca aspalathoides</i>	0.3	25
<i>Melaleuca tinkeri</i>		
<i>Mesomelaena pseudostygia</i>	0.3	0.5
<i>Mesomelaena tetragona</i>	0.3	0.1
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.1	0.1
<i>Petrophile brevifolia</i>	0.3	0.1
<i>Petrophile shuttleworthiana</i>	0.5	2
<i>Pimelea sulphurea</i>	0.5	0.2
<i>Scaevola canescens</i>	0.2	0.1
<i>Schoenus brevisetis</i>	0.2	0.1
<i>Schoenus clandestinus</i>	0.1	0.2
<i>Stylidium drummondianum</i> (3)	0.1	0.2
<i>Thysanotus dichotomus</i>	0.3	0.2
<i>Thysanotus patersonii</i>	0.1	0.1
<i>Velleia trinervis</i>		

PHOTOS



Site Name: WE010
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 28/09/2011
 GPS Location: GDA94 (Zone 50) 334136E 6741451N
 Community: 7a
 Landform Type: Upper Slope
 Slope Class: Gently Inclined (3 degrees)
 Soil Type: Clay Loam
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia dilatata</i>	0.3	0.5
<i>Allocasuarina humilis</i>	0.3	0.2
<i>Astroloma glaucescens</i>	0.3	0.2
<i>Babingtonia camphorosmae</i>	0.3	0.2
<i>Baeckea grandiflora</i>	0.3	0.2
<i>Banksia carlinoides</i>	0.5	0.5
<i>Banksia fraseri</i> var. ? <i>fraseri</i>	0.2	0.2
<i>Banksia scabrella</i> (4)	1	1
<i>Boronia cymosa</i>	0.2	0.2
<i>Boronia ramosa</i> subsp. <i>anethifolia</i>	0.3	0.1
<i>Borya sphaerocephala</i>	0.1	0.1
<i>Calothamnus sanguineus</i>	0.5	2
<i>Calytrix flavescens</i>	0.3	0.5
<i>Calytrix leschenaultii</i>	0.2	0.2
<i>Caustis dioica</i>	0.3	0.2
<i>Chorizema aciculare</i> subsp. <i>laxum</i>	0.2	0.1
<i>Conostylis aculeata</i> subsp. <i>breviflora</i>	0.1	0.1
<i>Conostylis androstemma</i>	0.3	0.5
<i>Conostylis canteriata</i>	0.2	0.1
<i>Cryptandra pungens</i>	0.4	0.2
<i>Dampiera lindleyi</i>	0.3	2
<i>Darwinia speciosa</i>	0.2	0.1

<i>Daviesia daphnoides</i>	0.4	0.3
<i>Daviesia oxyclada</i>	0.3	0.1
<i>Desmocladius lateriticus</i>	0.3	0.3
<i>Diplolaena eneabbensis</i>	0.3	0.2
<i>Dodonaea ericoides</i>	0.2	0.2
<i>Drosera menziesii</i>		0.1
<i>Elythranthera brunonis</i>	0.2	0.1
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	0.3	0.2
<i>Eucalyptus conveniens</i>	2	10
<i>Gastrolobium plicatum</i>	0.5	3.5
<i>Glischrocaryon aureum</i>	0.3	0.3
<i>Goodenia trichophylla</i>	0.1	0.1
<i>Hakea incrassata</i>	0.4	1
<i>Hakea lissocarpha</i>	0.3	0.2
<i>Hakea spathulata</i>	0.3	1
<i>Hibbertia hypericoides</i>	0.3	3
<i>Hibbertia spicata</i> subsp. <i>spicata</i>	0.3	0.2
<i>Hypocalymma xanthopetalum</i>	0.2	0.1
<i>Jacksonia restioides</i>	0.3	2
<i>Laxmannia omnifertilis</i>	0.1	0.1
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.2
<i>Lepidosperma pubisquamum</i>	0.3	0.1
<i>Lepidosperma</i> sp. A2 Inland Flat (G.J. Keighery 7000)	0.4	1
<i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A)	0.2	0.1
<i>Lepidosperma tenue</i>	0.2	0.2
<i>Levenhookia pusilla</i>	0.1	0.1
<i>Melaleuca</i> aff. <i>leuropoma</i>	1	5
<i>Melaleuca tinkerii</i>	0.4	10
<i>Melaleuca trichophylla</i>	0.2	5
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.2	0.2
<i>Petrophile brevifolia</i>	0.3	0.2
<i>Petrophile chrysantha</i>	0.5	15
<i>Pimelea sulphurea</i>	0.4	0.1
<i>Polianthion wichurae</i>	0.4	1
<i>Poranthera microphylla</i>	0.1	0.1
<i>Schoenus brevisetis</i>	0.2	0.1
<i>Schoenus clandestinus</i>	0.1	0.2
<i>Schoenus curvifolius</i>	0.2	0.1
<i>Schoenus nanus</i>	0.1	0.1
<i>Stylidium diuroides</i> subsp. <i>paucifoliatum</i>	0.2	0.1

<i>Thysanotus dichotomus</i>	0.3	0.2
<i>Thysanotus manglesianus</i>		0.1
<i>Tricoryne humilis</i>	0.1	0.1
<i>Velleia trinervis</i>	0.2	0.3
<i>Xanthosia huegelii</i>	0.1	0.1

PHOTOS

Site Name: WE011
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 28/09/2011
 GPS Location: GDA94 (Zone 50) 333971E 6741681N
 Community: 8
 Landform Type: Break-away (other)
 Slope Class: Steep (23 degrees)
 Aspect: S
 Soil Type: Clay Loam
 Soil Colour: Brown
 Rock Outcrop: Laterite, 20-50% bedrock exposed
 CF Abundance: 50-90%
 CF Sizes: 2-6mm, 6-20mm, 20-60mm, 60-200mm
 CF Types: Laterite
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia lasiocarpa</i> var. <i>?bracteolata</i>	0.2	0.2
<i>Allocasuarina campestris</i>	1	20
<i>Austrostipa macalpinei</i>	0.1	0.1
<i>Baeckea grandiflora</i>	0.3	0.1
<i>Banksia fraseri</i> var. <i>?fraseri</i>	0.4	0.3
<i>Boronia cymosa</i>	0.2	0.2
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	1	5
<i>Chamaescilla corymbosa</i>	0.1	0.1
<i>Cheilanthes adiantoides</i>	0.1	0.1
<i>Comesperma volubile</i>		
<i>Cryptandra myriantha</i>	0.3	0.2
<i>Cryptandra pungens</i>	0.4	0.2
<i>Dampiera lindleyi</i>	0.4	1
<i>Dodonaea ericoides</i>	0.2	0.2
<i>Drosera macrantha</i>		0.2
<i>Ecdeiocolea monostachya</i>	0.4	0.5
<i>Gastrolobium plicatum</i>	0.4	1
<i>Glischrocaryon aureum</i>	0.5	0.5

<i>Hakea auriculata</i>	0.5	1
<i>Hakea incrassata</i>	0.3	0.2
<i>Hakea lissocarpha</i>	0.5	0.5
<i>Hibbertia hypericoides</i>	0.4	1
<i>Hibbertia spicata</i> subsp. <i>spicata</i>	0.3	0.3
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	3
<i>Lepidosperma tenue</i>	0.4	0.5
<i>Levenhookia pusilla</i>	0.1	0.1
<i>Marianthus bicolor</i>	0.5	2
<i>Melaleuca concreta</i>	1	2
<i>Melaleuca marginata</i>		
<i>Melaleuca radula</i>	1	5
<i>Melaleuca tinkeri</i>	0.4	0.5
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.1	0.1
<i>Polianthion wichurae</i>	0.1	0.3
<i>Santalum acuminatum</i>	1	0.5
<i>Scaevola virgata</i>	0.4	5
<i>Stylidium drummondianum</i> (3)	0.1	0.1
<i>Stylidium torticarpum</i> (3)		
<i>Thysanotus manglesianus</i>		0.1
<i>Trachymene pilosa</i>	0.1	0.1
<i>Trymalium angustifolium</i>	0.3	0.3
<i>Wahlenbergia gracilentia</i>	0.1	0.1

PHOTOS



Site Name: WE012
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 28/09/2011
 GPS Location: GDA94 (Zone 50) 334135E 6741623N
 Community: 7b
 Landform Type: Upper Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: N
 Soil Type: Clay Loam
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 2-10%
 CF Sizes: 2-6mm, 6-20mm, 20-60mm, 60-200mm
 CF Types: Laterite
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia barbinervis</i> subsp. <i>borealis</i>	0.3	0.1
<i>Acanthocarpus</i> sp. <i>Ajana</i> (C.A. Gardner 8596)	0.2	0.1
<i>Allocasuarina humilis</i>	0.5	5
<i>Anigozanthos humilis</i> subsp. <i>humilis</i>	0.1	0.1
<i>Babingtonia camphorosmae</i>	0.3	0.2
<i>Baeckea grandiflora</i>	0.4	0.5
<i>Banksia carlinoides</i>	0.4	2
<i>Banksia fraseri</i> var. <i>?fraseri</i>	0.2	0.5
<i>Banksia scabrella</i> (4)	0.5	2
<i>Banksia shuttleworthiana</i>	0.3	0.5
<i>Beaufortia elegans</i>	0.5	0.5
<i>Boronia cymosa</i>	0.2	0.3
<i>Boronia ramosa</i> subsp. <i>anethifolia</i>	0.2	0.1
<i>Calothamnus sanguineus</i>	0.5	7
<i>Cassytha ?pomiformis</i>		0.1
<i>Caustis dioica</i>	0.3	0.5
<i>Conostylis androstemma</i>	0.2	0.1
<i>Conostylis canteriata</i>	0.1	0.1

<i>Cryptandra myriantha</i>	0.2	0.2
<i>Cryptandra pungens</i>	0.2	0.1
<i>Dampiera lindleyi</i>	0.4	0.2
<i>Dampiera teres (broad-leaf variant)</i>	0.2	0.1
<i>Darwinia speciosa</i>	0.2	0.1
<i>Daviesia daphnoides</i>	0.3	0.2
<i>Daviesia pedunculata</i>	0.3	0.1
<i>Eucalyptus conveniens</i>	2.5	10
<i>Gastrolobium plicatum</i>	0.3	0.2
<i>Geleznovia verrucosa</i>	0.2	0.1
<i>Gompholobium knightianum</i>	0.1	0.1
<i>Hakea auriculata</i>	0.4	0.2
<i>Hakea incrassata</i>	0.4	2
<i>Hakea lissocarpha</i>	0.4	0.2
<i>Hakea stenocarpa</i>	0.4	5
<i>Halgania</i> sp. Wongan Hills (K.F. Kenneally 2393)	0.2	0.1
<i>Hibbertia hypericoides</i>	0.4	8
<i>Hibbertia spicata</i> subsp. <i>spicata</i>	0.3	0.2
<i>Hypocalymma hirsutum</i>	0.2	0.1
<i>Jacksonia restioides</i>	0.3	1
<i>Lepidobolus chaetocephalus</i>	0.3	0.2
<i>Leptomeria empetriformis</i>	0.3	0.2
<i>Leptospermum spinescens</i>	0.2	0.1
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.4	0.5
<i>Lysinema pentapetalum</i>	0.4	0.2
<i>Melaleuca aspalathoides</i>	0.3	8
<i>Melaleuca leuropoma</i>	0.4	0.5
<i>Mesomelaena pseudostygia</i>	0.2	0.5
<i>Monotaxis bracteata</i>	0.2	0.1
<i>Petrophile brevifolia</i>	0.2	0.1
<i>Petrophile scabriuscula</i>	0.2	0.1
<i>Petrophile shuttleworthiana</i>	1	4
<i>Pimelea sulphurea</i>	0.4	0.2
<i>Polianthion wichurae</i>	0.2	0.1
<i>Scaevola canescens</i>	0.2	0.2
<i>Schoenus armeria</i>	0.2	0.5
<i>Schoenus brevisetis</i>	0.2	0.1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Stylidium crossocephalum</i>	0.2	0.1
<i>Stylidium diuroides</i> subsp. <i>paucifoliatum</i>	0.3	0.1
<i>Stylidium drummondianum</i> (3)	0.1	0.1
<i>Stylidium rigidulum</i>	0.1	0.1
<i>Synaphea aephynsa</i> (3)	0.3	0.2

<i>Thysanotus dichotomus</i>	0.3	0.2
<i>Tricoryne humilis</i>	0.1	0.1
<i>Xanthorrhoea ?brunonis</i>	1.5	5

PHOTOS

Site Name: WE013
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 29/09/2011
 GPS Location: GDA94 (Zone 50) 334284E 6741724N
 Community: 7b
 Landform Type: Upper Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: N
 Soil Type: Sandy Loam
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia barbinervis</i> subsp. <i>borealis</i>	0.2	0.1
<i>Allocasuarina humilis</i>	0.5	0.5
<i>Allocasuarina microstachya</i>	0.2	0.2
<i>Andersonia lehmanniana</i>	0.3	0.2
<i>Astroloma xerophyllum</i>	0.3	0.2
<i>Baeckea grandiflora</i>	0.3	1
<i>Banksia bipinnatifida</i> subsp. <i>multifida</i>	0.2	0.1
<i>Banksia carlinoides</i>	0.3	1
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.2	0.5
<i>Banksia scabrella</i> (4)	0.5	1
<i>Banksia shuttleworthiana</i>	0.3	0.5
<i>Beaufortia elegans</i>	0.3	0.2
<i>Burchardia congesta</i>	0.3	0.1
<i>Calothamnus sanguineus</i>	0.4	0.3
<i>Caustis dioica</i>	0.3	0.2
<i>Chordifex sinuosus</i>	0.2	0.3
<i>Comesperma acerosum</i>	0.3	0.1
<i>Conostylis canteriata</i>	0.1	0.2
<i>Conostylis hiemalis</i>	0.1	0.2
<i>Cryptandra myriantha</i>	0.2	0.1

<i>Dampiera lindleyi</i>	0.3	0.5
<i>Darwinia speciosa</i>	0.2	0.1
<i>Daviesia pedunculata</i>	0.2	0.2
<i>Desmocladius semiplanus</i>	0.1	0.1
<i>Drosera ?porrecta</i>	0.1	0.1
<i>Ecdeiocolea monostachya</i>	0.5	0.5
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	0.4	5
<i>Eremaea ectadioclada</i>	0.2	0.2
<i>Gastrolobium plicatum</i>	0.3	0.5
<i>Goodenia coerulea</i>	0.1	0.1
<i>Hakea brownii</i>	0.5	0.5
<i>Hakea spathulata</i>	0.3	2
<i>Hakea stenocarpa</i>	0.3	0.5
<i>Hibbertia hypericoides</i>	0.5	7
<i>Hibbertia spicata</i> subsp. <i>spicata</i>	0.3	3
<i>Hypocalymma hirsutum</i>	0.1	0.1
<i>Johnsonia pubescens</i> subsp. <i>pubescens</i>	0.1	0.1
<i>Lambertia multiflora</i> var. <i>multiflora</i>	0.5	5
<i>Lasiopetalum drummondii</i>	0.2	0.2
<i>Lepidosperma</i> aff. <i>scabrum</i>	0.3	0.1
<i>Leucopogon hispidus</i>	0.2	0.2
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.4	0.5
<i>Lysinema pentapetalum</i>	0.3	0.1
<i>Melaleuca leuropoma</i>	0.3	0.5
<i>Melaleuca</i> aff. <i>leuropoma</i>	0.5	0.2
<i>Melaleuca trichophylla</i>	0.3	5
<i>Mesomelaena pseudostygia</i>	0.3	1
<i>Mesomelaena tetragona</i>	0.2	0.1
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.1	0.1
<i>Persoonia filiformis</i> (2)	0.2	0.1
<i>Petrophile brevifolia</i>	0.2	0.1
<i>Petrophile macrostachya</i>	0.4	0.2
<i>Pileanthus filifolius</i>	0.2	0.2
<i>Scaevola canescens</i>	0.1	0.1
<i>Schoenus brevisetis</i>	0.1	0.1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Schoenus insolitus</i>	0.3	0.2
<i>Schoenus</i> sp. A3 Ciliate Sheaths (K.R. Newbey 9402)	0.2	0.2
<i>Scholtzia laxiflora</i>	0.4	2
<i>Stenanthemum humile</i>	0.1	0.1
<i>Stylidium crossocephalum</i>	0.1	0.2

<i>Stylidium diuroides</i> subsp. <i>paucifoliatum</i>	0.2	0.1
<i>Stylidium rigidulum</i>	0.1	0.1
<i>Thysanotus dichotomus</i>	0.3	0.2
<i>Xanthorrhoea ?brunonis</i>	1	6
<i>Xanthosia huegelii</i>	0.2	0.1

PHOTOS

Site Name: WE014
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 29/09/2011
 GPS Location: GDA94 (Zone 50) 334082E 6743780N
 Community: 7a
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: W
 Soil Type: Clay Loam
 Soil Colour: Brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina microstachya</i>	0.3	0.5
<i>Astroloma glaucescens</i>	0.3	0.1
<i>Babingtonia camphorosmae</i>	0.2	0.5
<i>Banksia carlinoides</i>	0.4	0.2
<i>Banksia fraseri</i> var. ? <i>fraseri</i>	0.3	0.2
<i>Boronia cymosa</i>	0.3	0.2
<i>Borya sphaerocephala</i>	0.1	0.1
<i>Calothamnus longissimus</i>	0.5	3
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	0.4	0.5
<i>Calytrix flavescens</i>	0.2	0.3
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Chamaescilla versicolor</i>	0.1	0.1
<i>Chorizema aciculare</i> subsp. <i>laxum</i>	0.1	0.1
<i>Conostylis androstemma</i>	0.2	0.5
<i>Dodonaea ericoides</i>	0.2	0.2
<i>Drosera erythrorhiza</i>	0.1	0.1
<i>Drosera menziesii</i>	0.1	0.1
<i>Elythranthera brunonis</i>	0.2	0.1
<i>Gastrolobium plicatum</i>	0.2	0.2
<i>Glischrocaryon aureum</i>	0.5	1

<i>Goodenia trichophylla</i>	0.1	0.1
<i>Hakea incrassata</i>	0.3	0.5
<i>Hakea lissocarpha</i>	0.5	3
<i>Hakea spathulata</i>	0.4	3
<i>Hibbertia hypericoides</i>	0.3	0.5
<i>Hibbertia spicata</i> subsp. <i>spicata</i>	0.3	0.2
<i>Hypocalymma hirsutum</i>	0.2	0.1
<i>Jacksonia restioides</i>	0.3	0.5
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.2
<i>Lepidosperma</i> sp. A2 Inland Flat (G.J. Keighery 7000)	0.3	0.3
<i>Lepidosperma tenue</i>	0.4	0.2
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.3	0.2
<i>Levenhookia pusilla</i>	0.1	0.1
<i>Melaleuca tinkeri</i>	0.4	40
<i>Melaleuca trichophylla</i>	0.3	5
<i>Mirbelia floribunda</i>	0.2	0.2
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.1	0.1
<i>Petrophile chrysantha</i>	0.4	3
<i>Podotheca gnaphalioides</i>	0.1	0.1
<i>Poranthera microphylla</i>	0.1	0.1
<i>Pterochaeta paniculata</i>	0.1	0.1
<i>Schoenus clandestinus</i>	0.1	0.2
<i>Schoenus unispiculatus</i>	0.2	0.1
<i>Stenanthemum intricatum</i>	0.2	0.1
<i>Stylidium diuroides</i> subsp. <i>paucifoliatum</i>	0.1	0.1
<i>Stylidium drummondianum</i> (3)	0.1	0.1
<i>Stylidium emarginatum</i>	0.1	0.1
<i>Stylidium petiolare</i>	0.1	0.1
<i>Velleia trinervis</i>	0.2	0.1

PHOTOS



Site Name: WE015
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 29/09/2011
 GPS Location: GDA94 (Zone 50) 334250E 6743863N
 Community: 9
 Landform Type: Break-away (other)
 Slope Class: Steep (23 degrees)
 Aspect: W
 Soil Type: Clay Loam
 Soil Colour: Brown
 Rock Outcrop: Laterite, 10-20% bedrock exposed
 CF Abundance: 50-90%
 CF Sizes: 2-6mm, 6-20mm, 20-60mm
 CF Types: Laterite
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Banksia fraseri</i> var. ? <i>fraseri</i>	0.3	0.5
<i>Boronia cymosa</i>	0.3	0.1
<i>Borya sphaerocephala</i>	0.1	0.2
<i>Calytrix flavescens</i>	0.2	0.2
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Conostylis androstemma</i>	0.3	0.5
<i>Cryptandra pungens</i>	0.4	0.2
<i>Dampiera alata</i>	0.3	0.3
<i>Dampiera lindleyi</i>	0.3	0.5
<i>Dodonaea ericoides</i>	0.2	0.2
<i>Elythranthera brunonis</i>	0.1	0.1
<i>Gastrolobium plicatum</i>	1	3
<i>Glischrocaryon aureum</i>	0.5	1
<i>Hakea lissocarpha</i>	0.3	0.3
<i>Hakea prostrata</i>		
<i>Hibbertia hypericoides</i>	0.3	0.1
<i>Hibbertia spicata</i> subsp. <i>spicata</i>	0.3	0.5
<i>Hypocalymma hirsutum</i>	0.2	0.1

<i>Lepidosperma</i> sp. A2 Inland Flat (G.J. Keighery 7000)	0.3	0.5
<i>Lepidosperma tenue</i>	0.3	0.2
<i>Leucopogon</i> sp. Yandanooka (M. Hislop 2507)	0.3	0.5
<i>Lissanthe powelliae</i>	0.5	0.5
<i>Marianthus bicolor</i>	0.5	0.1
<i>Melaleuca concreta</i>	1	2
<i>Melaleuca marginata</i>	1	5
<i>Melaleuca tinkerii</i>	0.4	70
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Petrophile chrysantha</i>	1	1
<i>Schoenus clandestinus</i>	0.1	0.5
<i>Stylidium drummondianum</i> (3)	0.1	0.5
<i>Stylidium torticarpum</i> (3)	0.1	0.2

PHOTOS

Site Name: WE016
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 29/09/2011
 GPS Location: GDA94 (Zone 50) 335278E 6744815N
 Community: 10
 Landform Type: Lower Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: W
 Soil Type: Sand
 Soil Colour: Yellow
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Anigozanthos humilis</i> subsp. <i>humilis</i>	0.1	0.1
<i>Astroloma serratifolium</i>	0.3	0.1
<i>Banksia attenuata</i>	1	2
<i>Banksia shuttleworthiana</i>	0.3	0.1
<i>Burchardia congesta</i>	0.3	0.1
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	0.5	1
<i>Calytrix sapphirina</i>	0.3	0.1
<i>Conospermum boreale</i> subsp. <i>?ascendens</i>	0.5	2
<i>Conostephium preissii</i>	0.3	0.2
<i>Conostylis canteriata</i>	0.2	0.1
<i>Cryptandra myriantha</i>	0.1	0.1
<i>Dampiera oligophylla</i>	0.3	0.2
<i>Dampiera spicigera</i>	0.3	0.2
<i>Daviesia divaricata</i> subsp. <i>divaricata</i> ms	0.5	3
<i>Daviesia nudiflora</i>	0.4	3
<i>Drosera macrantha</i>	0.1	0.1
<i>Drosera ?porrecta</i>	0.1	0.1
<i>Ecdeiocola monostachya</i>	0.5	10
<i>Eremaea violacea</i> subsp. <i>violacea</i>	0.4	0.5
<i>Grevillea bififormis</i> subsp. <i>bififormis</i>	1.2	0.5

<i>Hakea circumalata</i>	0.4	1
<i>Hakea polyanthema</i>	0.5	2
<i>Hibbertia hypericoides</i>	0.2	0.2
<i>Hibbertia spicata</i> subsp. <i>spicata</i>	0.3	0.2
<i>Isopogon tridens</i>	0.5	2
<i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i>	0.1	0.1
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.5	0.5
<i>Lepidosperma brunonianum</i> sens. lat.	0.3	0.2
<i>Leptospermum oligandrum</i>	0.5	1
<i>Leptospermum spinescens</i>	0.3	0.1
<i>Levenhookia pusilla</i>	0.1	0.1
<i>Levenhookia stipitata</i>	0.1	0.1
<i>Logania spermacocea</i>	0.2	0.3
<i>Melaleuca leuropoma</i>	0.5	10
<i>Mesomelaena pseudostygia</i>	0.4	5
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (3)		
<i>Monotaxis bracteata</i>	0.2	0.1
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.1	0.1
<i>Persoonia filiformis</i> (2)	0.2	0.2
<i>Petrophile brevifolia</i>	0.3	0.2
<i>Petrophile macrostachya</i>	0.4	0.5
<i>Pileanthus filifolius</i>	0.3	0.5
<i>Pimelea angustifolia</i>	0.4	0.1
<i>Platysace juncea</i> sens. lat.	0.1	0.1
<i>Pterochaeta paniculata</i>	0.1	0.1
<i>Scaevola canescens</i>	0.1	0.3
<i>Schoenus brevisetis</i>	0.1	0.1
<i>Schoenus clandestinus</i>	0.1	0.1
? <i>Schoenus</i> sp.	0.1	0.1
<i>Scholtzia laxiflora</i>	0.5	5
<i>Stenanthemum intricatum</i>	0.1	0.1
<i>Stylidium adpressum</i>	0.1	0.5
<i>Stylidium crossocephalum</i>	0.1	0.1
<i>Stylidium rigidulum</i>	0.1	0.1
<i>Verticordia grandis</i>	0.3	0.2
<i>Xylomelum angustifolium</i>	4	10

PHOTOS



Site Name: WE017
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 29/09/2011
 GPS Location: GDA94 (Zone 50) 335209E 6743589N
 Community: 7b
 Landform Type: Crest
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sand
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia fagonioides</i>	0.2	0.2
<i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i>	0.3	0.2
<i>Allocasuarina humilis</i>	0.4	0.5
<i>Andersonia lehmanniana</i>	0.2	0.2
<i>Anigozanthos humilis</i> subsp. <i>humilis</i>	0.2	0.1
<i>Babingtonia camphorosmae</i>	0.3	0.2
<i>Banksia bipinnatifida</i> subsp. <i>multifida</i>	0.1	0.2
<i>Banksia carlinoides</i>	0.4	5
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.2	0.2
<i>Banksia scabrella</i> (4)	0.5	4
<i>Banksia shuttleworthiana</i>	0.3	0.5
<i>Beaufortia elegans</i>	0.4	0.5
<i>Calothamnus sanguineus</i>	0.5	2
<i>Calytrix flavescens</i>	0.3	0.3
<i>Cassytha glabella</i> forma <i>bicallosa</i>	0.1	0.1
<i>Caustis dioica</i>	0.2	0.3
<i>Comesperma calymega</i>	0.1	0.1
<i>Conostylis canteriata</i>	0.1	0.2
<i>Cristonia biloba</i>	0.3	0.1
<i>Darwinia speciosa</i>	0.2	0.1
<i>Daviesia daphnoides</i>	0.3	0.2
<i>Daviesia pedunculata</i>	0.4	0.2

<i>Desmocladius lateriticus</i>	0.2	0.2
<i>Desmocladius parthenicus</i>	0.2	0.1
<i>Desmocladius semiplanus</i>	0.1	0.1
<i>Diplolaena eneabbensis</i>	0.3	0.2
<i>Drosera erythrorhiza</i>	0.1	0.1
<i>Drosera ?porrecta</i>	0.1	0.1
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	0.4	3
<i>Eremaea ectadioclada</i>	0.3	0.2
<i>Gastrolobium plicatum</i>	0.3	0.3
<i>Goodenia coerulea</i>	0.1	0.1
<i>Hakea incrassata</i>	0.3	0.5
<i>Hakea lissocarpha</i>	0.3	0.2
<i>Hakea polyanthema</i>	0.5	5
<i>Hakea trifurcata</i>	0.4	0.2
<i>Hemiandra rubriflora</i>	0.1	0.1
<i>Hibbertia hypericoides</i>	0.3	8
<i>Hibbertia spicata</i> subsp. <i>spicata</i>	0.5	5
<i>Hypocalymma hirsutum</i>	0.2	0.1
<i>Lambertia multiflora</i> var. <i>multiflora</i>	0.4	1
<i>Lasiopetalum</i> sp. Watheroo (K. Shepherd & C. Wilkins KS 220)	0.2	0.2
<i>Leptospermum spinescens</i>	0.3	0.2
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.4	0.3
<i>Levenhookia pusilla</i>	0.1	0.1
<i>Melaleuca aspalathoides</i>	0.3	0.5
<i>Melaleuca</i> aff. <i>leuropoma</i>	0.75	20
<i>Melaleuca leuropoma</i>	0.3	5
<i>Mesomelaena pseudostygia</i>	0.2	0.1
<i>Monotaxis bracteata</i>	0.2	0.1
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.1	0.2
<i>Petrophile brevifolia</i>	0.3	0.2
<i>Petrophile macrostachya</i>	0.3	0.5
<i>Pileanthus filifolius</i>	0.2	0.2
<i>Schoenus brevisetis</i>	0.2	0.1
<i>Schoenus clandestinus</i>	0.1	0.2
<i>Scholtzia laxiflora</i>	0.3	0.2
<i>Stylidium adpressum</i>	0.1	0.1
<i>Stylidium crossocephalum</i>	0.2	0.1
<i>Stylidium diuroides</i> subsp. <i>paucifoliatum</i>	0.2	0.1
<i>Stylidium repens</i>	0.1	0.1
<i>Stylidium rigidulum</i>	0.1	0.1
<i>Stylidium</i> sp. Kalbarri (A. Carr 145)	0.2	0.1

<i>Verticordia laciniata</i>	0.5	0.5
<i>Verticordia nobilis</i>	0.3	0.1
<i>Verticordia pennigera</i>	0.2	0.2

PHOTOS



Site Name: WE018
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 30/09/2011
 GPS Location: GDA94 (Zone 50) 334879E 6741786N
 Community: 13a
 Landform Type: Lower Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: N
 Soil Type: Sand
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia pulchella</i>	1	0.5
<i>Allocasuarina humilis</i>	0.5	3
<i>Anigozanthos humilis</i> subsp. <i>humilis</i>	0.2	0.5
<i>Astroloma xerophyllum</i>	0.3	0.2
<i>Austrostipa macalpinei</i>	0.1	0.1
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.2	0.3
<i>Banksia scabrella</i> (4)	0.5	2
<i>Boronia ramosa</i> subsp. <i>anethifolia</i>	0.2	0.1
<i>Calothamnus sanguineus</i>	1.2	5
<i>Calytrix fraseri</i>	0.3	0.2
<i>Calytrix sapphirina</i>	0.3	0.5
<i>Cassytha</i> ? <i>pomiformis</i>		0.2
<i>Caustis dioica</i>	0.3	0.2
<i>Chordifex sinuosus</i>	0.2	0.1
<i>Conospermum boreale</i> subsp. ? <i>ascendens</i>	0.4	0.2
<i>Conostylis canteriata</i>	0.2	0.3
<i>Conostylis hiemalis</i>	0.2	0.1
<i>Daviesia nudiflora</i>	0.4	0.5
<i>Desmocladius parthenicus</i>	0.1	0.1
<i>Desmocladius semiplanus</i>	0.1	0.2

<i>Drosera ?porrecta</i>	0.1	0.1
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	1	8
<i>Eucalyptus todtiana</i>	5	5
<i>Gompholobium tomentosum</i>	0.3	0.2
<i>Goodenia coerulea</i>	0.2	0.1
<i>Hakea polyanthema</i>	0.4	0.5
<i>Hakea prostrata</i>	1	0.5
<i>Hakea psilorrhyncha</i>	1	0.2
<i>Hakea trifurcata</i>	0.5	0.5
<i>Hibbertia hypericoides</i>	1	8
<i>Hibbertia spicata</i> subsp. <i>spicata</i>	0.3	0.5
<i>Isotropis cuneifolia</i>	0.1	0.1
<i>Lambertia multiflora</i> var. <i>multiflora</i>	1.2	5
<i>Lasiopetalum drummondii</i>	0.3	0.5
<i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i>	0.1	0.1
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.5	2
<i>Leucopogon</i> sp. Northern ciliate (R. Davis 3393)	0.2	0.1
<i>Levenhookia stipitata</i>	0.1	0.1
<i>Lomandra hastilis</i>	0.4	0.5
<i>Lysinema pentapetalum</i>	0.5	0.3
<i>Melaleuca leuropoma</i>	0.3	5
<i>Melaleuca</i> aff. <i>leuropoma</i>	0.4	0.3
<i>Mesomelaena pseudostygia</i>	0.3	0.2
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.2	0.2
<i>Petrophile scabriuscula</i>	0.5	0.2
<i>Pimelea leucantha</i>		
<i>Polianthion wichurae</i>	0.3	0.3
<i>Quoya verbascina</i>	0.4	0.2
<i>Schoenus brevisetis</i>	0.2	0.2
<i>Schoenus curvifolius</i>	0.2	0.1
<i>Scholtzia laxiflora</i>	1	10
<i>Stylidium crossocephalum</i>	0.2	0.2
<i>Stylidium purpureum</i> ms	0.2	0.1
<i>Stylidium repens</i>	0.1	0.1
<i>Stylidium rigidulum</i>	0.1	0.1
<i>Stylidium</i> sp. Kalbarri (A. Carr 145)	0.2	0.1
<i>Trachymene pilosa</i>	0.1	0.1
<i>Verticordia densiflora</i> var. <i>densiflora</i>	0.3	0.2

PHOTOS



Site Name: WE019
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 30/09/2011
 GPS Location: GDA94 (Zone 50) 335172E 6742250N
 Community: 10
 Landform Type: Flat
 Slope Class: Level (0 degrees)
 Aspect: N
 Soil Type: Sand
 Soil Colour: Yellow
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia auronitens</i>	0.2	0.1
<i>Acanthocarpus</i> sp. Ajana (C.A. Gardner 8596)	0.2	0.1
<i>Allocasuarina humilis</i>	0.4	0.5
<i>Astroloma microdonta</i>	0.2	0.1
<i>Banksia attenuata</i>	0.5	4
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.2	0.5
<i>Banksia shuttleworthiana</i>	0.4	3
<i>Burchardia congesta</i>	0.3	0.1
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	1	1
<i>Conospermum boreale</i> subsp. <i>?ascendens</i>	0.5	2
<i>Conostylis androstemma</i>	0.1	0.1
<i>Conostylis canteriata</i>	0.1	0.2
<i>Cryptandra spyridioides</i>	0.1	0.1
<i>Dampiera oligophylla</i>	0.2	0.1
<i>Dampiera teres</i> (broad-leaf variant)	0.2	0.1
<i>Darwinia speciosa</i>	0.2	0.1
<i>Daviesia divaricata</i> subsp. <i>divaricata</i> ms	0.5	6
<i>Daviesia nudiflora</i>	0.3	0.2
<i>Daviesia pedunculata</i>	0.3	0.2
<i>Drosera macrantha</i>		0.1

<i>Ecdeiocola monostachya</i>	0.5	8
<i>Eremaea violacea</i> subsp. <i>violacea</i>	0.3	0.5
<i>Goodenia coerulea</i>	0.2	0.1
<i>Hakea cygna</i> subsp. <i>cygna</i>	0.4	0.5
<i>Hakea polyanthema</i>	0.5	0.5
<i>Hibbertia crassifolia</i>	0.3	0.1
<i>Hibbertia hypericoides</i>	0.3	0.2
<i>Isopogon tridens</i>	0.3	0.2
<i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i>	0.1	0.1
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	1
<i>Leptospermum oligandrum</i>	0.6	0.2
<i>Leptospermum spinescens</i>	0.4	0.2
<i>Leucopogon hispidus</i>	0.2	0.5
<i>Levenhookia pusilla</i>	0.1	0.1
<i>Logania spermacocea</i>	0.2	0.1
<i>Melaleuca leuropoma</i>	0.4	5
<i>Mesomelaena pseudostygia</i>	0.5	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (3)	0.2	2
<i>Monotaxis bracteata</i>	0.2	0.1
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Persoonia filiformis</i> (2)	0.2	0.2
<i>Petrophile macrostachya</i>	0.3	0.5
<i>Petrophile megalostegia</i>	0.3	0.2
<i>Pileanthus filifolius</i>	0.3	0.1
<i>Pimelea angustifolia</i>	0.3	0.1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Stackhousia dielsii</i>	0.3	0.3
<i>Stylidium adpressum</i>	0.1	0.1
<i>Stylidium diuroides</i> subsp. <i>paucifoliatum</i>	0.2	0.1
<i>Stylidium maitlandianum</i>	0.1	0.1
<i>Stylidium repens</i>	0.1	0.1
<i>Thysanotus patersonii</i>		0.1
<i>Tricoryne humilis</i>	0.1	0.1
<i>Verticordia grandis</i>	0.5	0.3
<i>Xylomelum angustifolium</i>	3	5

PHOTOS



Site Name: WE020
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 30/09/2011
 GPS Location: GDA94 (Zone 50) 338203E 6744279N
 Community: 1b
 Landform Type: Upper Slope
 Slope Class: Very Gently Inclined (1 degree)
 Aspect: N
 Soil Type: Clay
 Soil Colour: Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 2 - Excellent
 Disturbance: Exotic Weeds
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia lasiocarpa</i> var. ? <i>bracteolata</i>	0.3	0.2
<i>Acanthocarpus canaliculatus</i>	0.2	0.1
* <i>Arctotheca calendula</i>	0.2	0.3
<i>Astroloma pedicellatum</i> ms	0.3	0.5
<i>Austrostipa</i> sp. Marchagee (B.R. Maslin 1407)	0.2	0.3
<i>Brachyscome perpusilla</i>	0.1	0.1
<i>Calandrinia calyptrata</i>	0.1	0.1
<i>Calandrinia</i> sp. Blackberry (D.M. Porter 171)	0.3	2
<i>Calotis hispidula</i>	0.1	0.3
<i>Crassula colorata</i> var. <i>acuminata</i>	0.1	0.1
<i>Daucus glochidiatus</i>	0.2	0.1
<i>Desmocladius asper</i>	0.2	0.3
<i>Dianella revoluta</i>	0.2	0.1
<i>Diplopeltis huegelii</i> subsp. <i>lehmannii</i>	0.2	0.1
<i>Dodonaea divaricata</i>	0.5	3
<i>Enchylaena tomentosa</i>	0.2	0.1
<i>Eucalyptus accedens</i>	12	40
<i>Gastrolobium plicatum</i>	1	8
<i>Glischrocaryon aureum</i>	0.3	0.3
<i>Goodenia berardiana</i>	0.2	10

<i>Hibbertia spicata</i> subsp. <i>spicata</i>	0.2	0.2
* <i>Hypochaeris glabra</i>	0.2	0.3
<i>Isotoma hypocrateriformis</i>	0.1	0.1
<i>Lagenophora huegelii</i>	0.1	0.1
* <i>Lysimachia arvensis</i>	0.1	0.1
<i>Orthrosanthus laxus</i> var. <i>laxus</i>	0.2	0.1
* <i>Pentameris airoides</i> subsp. <i>airoides</i>	0.2	0.2
<i>Plantago debilis</i>	0.1	0.3
<i>Podolepis lessonii</i>	0.2	3
<i>Ptilotus manglesii</i>	0.1	0.2
<i>Rhagodia preissii</i> subsp. <i>preissii</i>	0.4	0.2
<i>Rhodanthe laevis</i>	0.1	0.1
<i>Rhodanthe manglesii</i>	0.2	5
<i>Rytidosperma setaceum</i>	0.1	0.1
<i>Stylidium torticarpum</i> (3)	0.1	0.1
<i>Trachymene cyanopetala</i>	0.2	10
<i>Trachymene pilosa</i>	0.1	0.1
<i>Velleia rosea</i>	0.1	0.1
<i>Velleia trinervis</i>	0.2	0.1
<i>Wahlenbergia gracilentia</i>	0.4	0.2

PHOTOS

Site Name: WE021
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 24/10/2011
 GPS Location: GDA94 (Zone 50) 333578E 6745279N
 Community: 13a
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: E
 Soil Type: Sand over laterite (other)
 Soil Colour: Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: <2%
 CF Sizes: 6-20mm
 CF Types: Laterite
 Vegetation Condition: 1 - Pristine
 Fire: >8 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia barbinervis</i> subsp. <i>borealis</i>	0.4	0.1
<i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i>	1	0.1
<i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i>	1	1
<i>Allocasuarina humilis</i>	0.3	0.1
<i>Andersonia lehmanniana</i>	0.3	0.1
<i>Anigozanthos humilis</i> subsp. <i>humilis</i>	0.1	0.1
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.3	0.1
<i>Banksia leptophylla</i> var. <i>melletica</i>	0.8	35
<i>Banksia sessilis</i> var. <i>flabellifolia</i>	1.4	8
<i>Beaufortia elegans</i>	0.6	0.5
<i>Calothamnus sanguineus</i>	0.6	0.1
<i>Calytrix sapphirina</i>	0.4	0.1
<i>Cassytha flava</i>		0.1
<i>Conostylis canteriata</i>	0.2	0.1
<i>Desmocladus asper</i>	0.3	0.1
<i>Desmocladus parthenicus</i>	0.1	0.1
<i>Desmocladus semiplanus</i>	0.1	0.1
<i>Eremaea beaufortoides</i> var. <i>microphylla</i>	0.8	0.1
<i>Eremaea ectadioclada</i>	0.6	0.1

<i>Hibbertia crassifolia</i>	0.6	0.1
<i>Hibbertia hypericoides</i>	0.4	0.2
<i>Hibbertia subvaginata</i>	0.4	0.1
<i>Isotropis cuneifolia</i>	0.2	0.1
<i>Lambertia multiflora</i> var. <i>multiflora</i>	1	0.1
<i>Lasiopetalum drummondii</i>	0.3	0.1
<i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i>	0.1	0.1
<i>Leucopogon hispidus</i>	0.3	0.1
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.8	0.1
<i>Leucopogon</i> sp. Northern ciliate (R. Davis 3393)	0.6	1
<i>Lyginia imberbis</i>	0.3	0.1
<i>Lysinema pentapetalum</i>	0.3	0.1
<i>Melaleuca leuropoma</i>	0.4	1
<i>Melaleuca</i> aff. <i>leuropoma</i>	1	3
<i>Mesomelaena pseudostygia</i>	0.3	0.1
<i>Nuytsia floribunda</i>	4	0.2
<i>Patersonia occidentalis</i>	0.3	0.1
<i>Pileanthus filifolius</i>	0.4	0.1
<i>Quoya verbascina</i>	0.6	0.1
<i>Schoenus armeria</i>	0.2	0.1
<i>Schoenus curvifolius</i>	0.3	0.1
<i>Stenanthemum humile</i>	0.1	0.1
<i>Stylidium crossocephalum</i>	0.1	0.1
<i>Stylidium repens</i>	0.1	0.1
<i>Thysanotus thyrsoideus</i>	0.4	0.1
<i>Verticordia densiflora</i> var. <i>densiflora</i>	0.8	4
<i>Xanthosia huegelii</i>	0.1	0.1

PHOTOS



Site Name: WE022
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 24/10/2011
 GPS Location: GDA94 (Zone 50) 334088E 6745002N
 Community: 8
 Landform Type: Ridge
 Slope Class: Level (0 degrees)
 Soil Type: Silty clay (other)
 Soil Colour: Brown
 Rock Outcrop: Laterite, 10-20% bedrock exposed
 CF Abundance: 10-20%
 CF Sizes: 2-6mm, 6-20mm, 20-60mm
 Vegetation Condition: 1 - Pristine
 Fire: > 5 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia acuaria</i>	0.4	0.1
<i>Allocasuarina campestris</i>	0.6	0.1
<i>Allocasuarina humilis</i>	0.3	3
<i>Amphipogon turbinatus</i>	0.3	0.1
<i>Banksia fraseri</i> var. ? <i>fraseri</i>	0.6	2
<i>Banksia shuttleworthiana</i>	0.4	1
<i>Boronia cymosa</i>	0.3	0.1
<i>Burchardia congesta</i>	0.4	0.1
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Chorizema aciculare</i> subsp. <i>laxum</i>	0.2	0.1
<i>Conostylis androstemma</i>	0.2	0.1
<i>Cryptandra myriantha</i>	0.4	0.1
<i>Dampiera lindleyi</i>	0.4	0.1
<i>Daviesia oxyclada</i>	0.4	0.1
<i>Daviesia pedunculata</i>	0.3	0.4
<i>Daviesia triflora</i>	0.4	0.1
<i>Ecdeiocolea monostachya</i>	0.6	10
<i>Gastrolobium plicatum</i>	0.5	0.3
<i>Goodenia coerulea</i>	0.4	0.1
<i>Goodenia hassallii</i>	0.3	0.1
<i>Goodenia</i> aff. <i>hassallii</i>	0.4	0.1
<i>Hakea auriculata</i>	0.6	3

<i>Hakea incrassata</i>	0.5	3
<i>Hakea lissocarpa</i>	0.6	8
<i>Hakea stenocarpa</i>	0.5	0.2
<i>Hakea trifurcata</i>	0.6	2
<i>Hibbertia hypericoides</i>	0.4	0.1
<i>Isopogon divergens</i>	0.4	3
<i>Jacksonia restioides</i>	0.2	0.1
<i>Lepidosperma tenue</i>	0.3	0.1
<i>Melaleuca aspalathoides</i>	0.4	15
<i>Melaleuca concreta</i>		
<i>Melaleuca radula</i>	0.8	0.1
<i>Melaleuca tinkeri</i>	0.4	1
<i>Mesomelaena pseudostygia</i>	0.3	0.1
<i>Neurachne alopecuroidea</i>	0.2	0.1
<i>Opercularia vaginata</i>	0.3	0.1
<i>Patersonia graminea</i>	0.3	0.1
<i>Petrophile shuttleworthiana</i>	0.5	4
<i>Schoenus armeria</i>	0.3	0.1
<i>Schoenus brevisetis</i>	0.2	0.1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Stylidium drummondianum</i> (3)	0.1	0.1
<i>Waitzia suaveolens</i> var. <i>suaveolens</i>	0.1	0.1

PHOTOS

Site Name: WE023
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 25/10/2011
 GPS Location: GDA94 (Zone 50) 331909E 6741361N
 Community: 10
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: SW
 Soil Type: Sand
 Soil Colour: Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 5 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia auronitens</i>	0.3	0.1
<i>Allocasuarina humilis</i>	0.5	0.1
<i>Allocasuarina microstachya</i>	0.4	0.5
<i>Amphipogon turbinatus</i>	0.2	0.1
<i>Astroloma glaucescens</i>	0.4	0.1
<i>Austrostipa macalpinei</i>	0.2	0.1
<i>Babingtonia camphorosmae</i>	0.4	0.1
<i>Banksia shuttleworthiana</i>	0.3	0.5
<i>Boronia cymosa</i>	0.3	0.1
<i>Burchardia congesta</i>	0.4	0.1
<i>Cassytha flava</i>		0.1
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Conospermum boreale</i> subsp. <i>?ascendens</i>	0.3	0.2
<i>Conostylis canteriata</i>	0.1	0.1
<i>Cristonia biloba</i>	0.3	0.1
<i>Dampiera spicigera</i>	0.3	0.1
<i>Darwinia speciosa</i>	0.3	0.1
<i>Daviesia divaricata</i> subsp. <i>divaricata</i> ms	0.3	0.1
<i>Daviesia nudiflora</i>	0.4	0.1
<i>Drosera ?menziesii</i>	0.3	0.1
<i>Ecdeiocolea monostachya</i>	0.4	16
<i>Gastrolobium plicatum</i>	0.4	0.1

<i>Goodenia coerulea</i>	0.3	0.1
<i>Hakea auriculata</i>	0.6	0.1
<i>Hakea circumalata</i>	0.3	0.5
<i>Hakea incrassata</i>	0.4	0.1
<i>Hakea polyanthema</i>	0.6	0.1
<i>Hibbertia hypericoides</i>	0.3	2
* <i>Hypochaeris glabra</i>	0.2	0.1
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.1
<i>Leptospermum oligandrum</i>	0.4	0.1
<i>Leptospermum spinescens</i>	0.4	0.1
<i>Leucopogon hispidus</i>	0.3	0.2
<i>Levenhookia stipitata</i>	0.1	0.1
<i>Levenhookia ?stipitata</i>	0.1	0.1
<i>Melaleuca aspalathoides</i>	0.4	15
<i>Melaleuca leuropoma</i>	0.3	2
<i>Mesomelaena pseudostygia</i>	0.3	3
<i>Monotaxis bracteata</i>	0.2	0.1
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Persoonia filiformis</i> (2)	0.3	0.1
<i>Pileanthus filifolius</i>	0.3	1
<i>Pimelea angustifolia</i>	0.3	0.1
<i>Scaevola canescens</i>	0.3	0.1
<i>Schoenus brevisetis</i>	0.2	0.1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Scholtzia laxiflora</i>	0.5	2
<i>Stenanthemum notiale</i> subsp. <i>notiale</i>	0.3	0.1
<i>Stylidium diuroides</i> subsp. <i>paucifoliatum</i>	0.3	0.1
<i>Stylidium repens</i>	0.1	0.1
<i>Thysanotus dichotomus</i>	0.3	0.1
<i>Verticordia pennigera</i>	0.3	0.1

PHOTOS



Site Name: WE024
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 25/10/2011
 GPS Location: GDA94 (Zone 50) 331705E 6741485N
 Community: 14
 Landform Type: Drainage Line
 Slope Class: Gently Inclined (3 degrees)
 Aspect: NW
 Soil Type: Sand
 Soil Colour: Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 5years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia dilatata</i>	0.3	0.1
* <i>Arctotheca calendula</i>	0.05	0.1
<i>Austrostipa macalpinei</i>	0.2	0.1
<i>Borya sphaerocephala</i>	0.05	0.1
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	0.6	1
<i>Calytrix depressa</i>	0.4	0.2
<i>Conostylis aculeata</i> subsp. <i>breviflora</i>	0.3	0.1
<i>Crassula colorata</i> var. <i>acuminata</i>	0.05	0.1
<i>Dampiera teres</i>	0.6	1
<i>Desmocladus asper</i>	0.3	0.1
<i>Gnephosis tenuissima</i>	0.05	0.1
<i>Haemodorum brevisepalum</i>	0.3	0.1
<i>Hakea circumalata</i>	0.4	1
<i>Hakea lissocarpha</i>	0.4	1
* <i>Hypochaeris glabra</i>	0.1	0.1
<i>Isotoma hypocrateriformis</i>	0.1	0.1
<i>Jacksonia angulata</i>	0.4	0.1
<i>Jacksonia hakeoides</i>	0.4	2
<i>Lepidosperma tenue</i>	0.3	0.2
<i>Levenhookia stipitata</i>	0.05	0.1
<i>Lomandra ?micrantha</i> subsp. <i>micrantha</i>	0.3	0.1
<i>Melaleuca concreta</i>	0.6	30

<i>Melaleuca leuropoma</i>	0.3	1
<i>Melaleuca radula</i>	0.6	1
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.1	0.1
<i>Podotheca gnaphalioides</i>	0.1	0.1
<i>Schoenus badius</i> (2)	0.05	0.1
<i>Siloxerus filifolius</i>	0.05	0.1
<i>Stylidium dichotomum</i>	0.1	0.1
<i>Trachymene pilosa</i>	0.05	0.1
* <i>Vulpia myuros</i>	0.1	0.1

PHOTOS

Site Name: WE025
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 25/10/2011
 GPS Location: GDA94 (Zone 50) 332100E 6742266N
 Community: 10
 Landform Type: Crest
 Slope Class: Moderately Inclined (10 degrees)
 Aspect: W
 Soil Type: Sand
 Soil Colour: Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 5 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia auronitens</i>	0.3	0.2
<i>Actinotus leucocephalus</i>	0.2	0.1
<i>Allocasuarina microstachya</i>	0.4	0.2
<i>Anigozanthos humilis</i> subsp. <i>humilis</i>	0.4	0.1
<i>Astroloma glaucescens</i>	0.3	0.1
<i>Astroloma microdonta</i>	0.3	0.1
<i>Austrostipa macalpinei</i>	0.2	0.1
<i>Babingtonia camphorosmae</i>	0.5	0.1
<i>Baeckea grandiflora</i>	0.4	0.1
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.3	0.1
<i>Banksia shuttleworthiana</i>	0.4	0.1
<i>Beaufortia elegans</i>	0.4	0.1
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	0.8	0.1
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Caustis dioica</i>	0.4	0.1
<i>Conostylis canteriata</i>	0.3	0.1
<i>Dampiera spicigera</i>	0.3	0.1
<i>Darwinia speciosa</i>	0.2	0.1
<i>Daviesia nudiflora</i>	0.5	0.1
<i>Ecdeiocolea monostachya</i>	0.5	5
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	0.6	1
<i>Geleznowia verrucosa</i>	0.2	0.1

<i>Goodenia coerulea</i>	0.4	0.1
<i>Hakea circumalata</i>	0.6	0.1
<i>Hakea lissocarpha</i>	0.6	0.1
<i>Hibbertia crassifolia</i>	0.4	0.1
<i>Hibbertia hypericoides</i>	0.5	3
<i>Hypocalymma xanthopetalum</i>	0.3	0.1
<i>Jacksonia nutans</i>	0.4	0.2
<i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i>	0.05	0.1
<i>Leptomeria empetriformis</i>	0.3	0.1
<i>Leptospermum oligandrum</i>	0.5	0.5
<i>Leptospermum spinescens</i>	0.4	0.1
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.5	0.1
<i>Levenhookia stipitata</i>	0.05	0.1
<i>Melaleuca aspalathoides</i>	0.3	0.3
<i>Melaleuca leuropoma</i>	0.4	10
? <i>Mesomelaena preissi</i>	0.3	0.1
<i>Mesomelaena pseudostygia</i>	0.4	1
<i>Monotaxis bracteata</i>	0.2	0.1
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.2	0.2
<i>Petrophile macrostachya</i>	0.5	0.1
<i>Petrophile megalostegia</i>	0.3	0.1
<i>Pileanthus filifolius</i>	0.4	1
<i>Pimelea angustifolia</i>	0.2	0.1
<i>Pterochaeta paniculata</i>	0.05	0.1
<i>Scaevola canescens</i>	0.3	0.1
<i>Schoenus badius</i> (2)	0.05	0.1
<i>Schoenus brevisetis</i>	0.1	0.1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Scholtzia laxiflora</i>	0.6	8
<i>Stenanthemum notiale</i> subsp. <i>notiale</i>	0.4	0.1
<i>Stylidium crossocephalum</i>	0.1	0.1
<i>Stylidium diuroides</i> subsp. <i>paucifoliatum</i>	0.3	0.1
<i>Stylidium repens</i>	0.1	0.1
<i>Stylidium rigidulum</i>	0.1	0.1
<i>Thysanotus dichotomus</i>	0.2	0.1
<i>Thysanotus</i> ? <i>tenellus</i>	0.2	0.1

PHOTOS



Site Name: WE026
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 25/10/2011
 GPS Location: GDA94 (Zone 50) 332369E 6742776N
 Community: 7a
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: NW
 Soil Type: Sand
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: 5 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina microstachya</i>	0.3	1
<i>Austrostipa macalpinei</i>	0.2	0.1
<i>Babingtonia camphorosmae</i>	0.4	0.1
<i>Boronia cymosa</i>	0.3	0.1
<i>Borya sphaerocephala</i>	0.05	0.1
<i>Burchardia congesta</i>	0.3	0.1
<i>Calothamnus sanguineus</i>	0.8	0.1
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Conostylis androstemma</i>	0.2	0.1
<i>Conostylis dielsii</i> subsp. <i>dielsii</i>	0.1	0.1
<i>Cryptandra myriantha</i>	0.3	0.1
<i>Dampiera lavandulacea</i>	0.2	0.1
<i>Drosera eneabba</i>	0.05	0.1
<i>Ecdeiocolea monostachya</i>	0.5	5
<i>Gastrolobium plicatum</i>	0.4	0.1
<i>Glischrocaryon aureum</i>	0.4	0.1
<i>Goodenia trichophylla</i>	0.3	0.1
<i>Hakea incrassata</i>	0.4	0.1
<i>Hakea spathulata</i>	0.4	0.1
<i>Hibbertia crassifolia</i>	0.4	0.1
<i>Hibbertia hypericoides</i>	0.4	3
<i>Hypocalymma hirsutum</i>	0.2	0.1

<i>Isotoma hypocrateriformis</i>	0.2	0.1
<i>Laxmannia omnifertilis</i>	0.3	0.1
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.1
<i>Lepidosperma tenue</i>	0.3	0.1
<i>Levenhookia stipitata</i>	0.05	0.1
<i>Melaleuca aspalathoides</i>	0.4	25
? <i>Mesomelaena preissi</i>	0.3	0.1
<i>Mesomelaena pseudostygia</i>	0.4	1
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.2	0.1
<i>Pterochaeta paniculata</i>	0.05	0.1
<i>Schoenus badius</i> (2)	0.05	0.1
<i>Schoenus brevisetis</i>	0.2	0.1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Scholtzia laxiflora</i>	0.4	1
<i>Stylidium androsaceum</i>	0.05	0.1
<i>Stylidium dichotomum</i>	0.1	0.1
<i>Stylidium diuroides</i> subsp. <i>paucifoliatum</i>	0.3	0.1
<i>Stylidium</i> sp. Kalbarri (A. Carr 145)	0.2	0.1
<i>Thryptomene ?racemulosa</i>	0.3	0.1
<i>Thysanotus dichotomus</i>	0.3	0.1
<i>Verticordia densiflora</i> var. <i>densiflora</i>	0.3	0.1
<i>Verticordia laciniata</i>	0.6	0.2
<i>Verticordia pennigera</i>	0.3	0.1

PHOTOS



Site Name: WE027
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 25/10/2011
 GPS Location: GDA94 (Zone 50) 333470E 6745582N
 Community: 10
 Landform Type: Upper Slope
 Slope Class: Level (0 degrees)
 Soil Type: Sand
 Soil Colour: Yellow/Brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: >7 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia acuaria</i>	0.4	0.1
<i>Acacia auronitens</i>	0.3	0.1
<i>Astroloma glaucescens</i>	0.4	0.1
<i>Astroloma microdonta</i>	0.3	0.1
<i>Baeckea grandiflora</i>	0.4	0.1
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.4	1
<i>Banksia scabrella</i> (4)	0.5	1
<i>Banksia shuttleworthiana</i>	0.5	1
<i>Beaufortia elegans</i>	0.8	1
<i>Boronia cymosa</i>	0.4	0.1
<i>Cassytha flava</i>		0.1
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Conospermum boreale</i> subsp. <i>?ascendens</i>	0.6	0.1
<i>Cryptandra myriantha</i>	0.3	0.1
<i>Dampiera oligophylla</i>	0.4	0.1
<i>Dampiera spicigera</i>	0.4	0.1
<i>Daviesia daphnoides</i>	0.8	0.1
<i>Daviesia divaricata</i> subsp. <i>divaricata</i> ms	0.6	1
<i>Daviesia pedunculata</i>	0.3	0.2
<i>Drosera ?leucoblata</i>	0.5	0.1
<i>Ecdeiocolea monostachya</i>	0.7	4
<i>Eremaea violacea</i> subsp. <i>violacea</i>	0.4	0.1
<i>Gastrolobium plicatum</i>	0.5	0.1

<i>Geleznovia verrucosa</i>	0.3	0.1
<i>Hakea circumalata</i>	0.7	0.2
<i>Hakea cygna</i> subsp. <i>cygna</i>	0.8	0.1
<i>Hakea polyanthema</i>	0.6	1
<i>Hibbertia crassifolia</i>	0.5	1
<i>Hibbertia hypericoides</i>	0.4	3
<i>Hypocalymma hirsutum</i>	0.4	0.1
<i>Isopogon tridens</i>	0.5	0.1
<i>Jacksonia hakeoides</i>	0.5	0.2
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.1
<i>Levenhookia stipitata</i>	0.05	0.1
<i>Melaleuca aspalathoides</i>	0.4	0.5
<i>Melaleuca leuropoma</i>	0.4	3
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (3)	0.3	2
<i>Mesomelaena tetragona</i>	0.3	0.1
<i>Monotaxis bracteata</i>	0.3	0.1
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Patersonia graminea</i>	0.3	0.1
<i>Petrophile megalostegia</i>	0.3	0.1
<i>Pileanthus filifolius</i>	0.5	3
<i>Scaevola canescens</i>	0.3	0.1
? <i>Schoenus</i> sp.	0.05	0.1
<i>Scholtzia laxiflora</i>	0.5	1
<i>Stackhousia dielsii</i>	0.3	0.1
<i>Stenanthemum intricatum</i>	0.1	0.1
<i>Stylidium adpressum</i>	0.1	0.1
<i>Stylidium diuroides</i> subsp. <i>paucifoliatum</i>	0.3	0.1
<i>Stylidium repens</i>	0.1	0.1
<i>Stylidium</i> sp. Kalbarri (A. Carr 145)	0.3	0.1
<i>Tricoryne humilis</i>	0.05	0.1
<i>Verticordia grandis</i>	0.6	0.1
<i>Verticordia laciniata</i>	0.6	0.1

PHOTOS



Site Name: WE028
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 25/10/2011
 GPS Location: GDA94 (Zone 50) 333482E 6744752N
 Community: 8
 Landform Type: breakaway (other)
 Slope Class: Very Steep (37 degrees)
 Aspect: SW
 Soil Type: Silty clay (other)
 Soil Colour: Grey
 Rock Outcrop: Laterite, 2-10% bedrock exposed
 CF Abundance: 50-90%
 CF Sizes: 2-6mm, 6-20mm, 20-60mm, 60-200mm
 CF Types: Laterite
 Vegetation Condition: 1 - Pristine
 Fire: > 5 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina campestris</i>	1	3
<i>Anthocercis genistoides</i>	0.6	0.3
<i>Banksia fraseri</i> var. ? <i>fraseri</i>	0.5	0.1
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	1	0.2
<i>Conostylis androstemma</i>	0.2	0.1
<i>Dampiera lavandulacea</i>	0.3	0.4
<i>Dampiera lindleyi</i>	0.3	0.1
<i>Dianella revoluta</i>	0.5	0.1
<i>Dodonaea ericoides</i>	0.2	0.1
<i>Ecdeiocolea monostachya</i>	0.5	1
<i>Gastrolobium plicatum</i>	0.5	0.2
<i>Glischrocaryon aureum</i>	0.6	0.1
<i>Hakea auriculata</i>	0.6	0.1
<i>Hakea lissocarpha</i>	1	15
<i>Hibbertia spicata</i> subsp. <i>spicata</i>	0.4	0.1
<i>Lepidosperma brunonianum</i> sens. lat.	0.3	0.1
<i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A)	0.3	0.1
<i>Lepidosperma tenue</i>	0.5	0.1

<i>Marianthus bicolor</i>	1	0.3
<i>Melaleuca concreta</i>	1	10
<i>Melaleuca radula</i>	1	5
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.2	0.1
<i>Petrophile chrysantha</i>	0.3	0.1
<i>Pterochaeta paniculata</i>	0.05	0.1
<i>Scaevola virgata</i>	0.1	0.1
<i>Tricoryne elatior</i>	0.4	0.1
<i>Trymalium angustifolium</i>	0.4	0.1

PHOTOS

Site Name: WE029
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 26/10/2011
 GPS Location: GDA94 (Zone 50) 333533E 6745909N
 Community: 3
 Landform Type: Drainage Line
 Slope Class: Gently Inclined (3 degrees)
 Aspect: N
 Soil Type: Clay
 Soil Colour: Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 7 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia ericksoniae</i>	0.4	0.1
<i>Dampiera lindleyi</i>	0.4	0.1
<i>Eucalyptus arachnaea</i> subsp. <i>arachnaea</i>		
<i>Gastrolobium bennettsianum</i>	0.8	0.1
<i>Guichenotia angustifolia</i>	0.5	0.1
<i>Lepidosperma</i> sp. A2 Inland Flat (G.J. Keighery 7000)	0.4	0.1
<i>Marianthus ringens</i>		0.1
<i>Melaleuca concreta</i>	1.2	40
<i>Melaleuca marginata</i>	0.4	5
<i>Melaleuca radula</i>	1	0.1
<i>Neurachne alopecuroidea</i>	0.1	0.1

PHOTOS



Site Name: WE030
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 26/10/2011
 GPS Location: GDA94 (Zone 50) 333696E 6745833N
 Community: 7b
 Landform Type: Ridge
 Slope Class: Very Gently Inclined (1 degree)
 Aspect: E
 Soil Type: Sandy Loam
 Soil Colour: Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 50-90%
 CF Sizes: 2-6mm, 6-20mm, 20-60mm
 CF Types: Laterite
 Vegetation Condition: 1 - Pristine
 Fire: > 7 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia acuarua</i>	0.4	0.1
<i>Acacia dilatata</i>	0.3	0.1
<i>Acanthocarpus</i> sp. Ajana (C.A. Gardner 8596)	0.3	0.1
<i>Allocasuarina campestris</i>	1.2	2
<i>Austrostipa macalpinei</i>	0.3	0.1
<i>Babingtonia camphorosmae</i>	0.3	0.1
<i>Baeckea grandiflora</i>	0.4	0.1
<i>Banksia bipinnatifida</i> subsp. <i>multifida</i>	0.3	0.1
<i>Banksia carlinoides</i>	1.2	1
<i>Banksia shuttleworthiana</i>	0.6	0.5
<i>Beaufortia elegans</i>	1	0.1
<i>Burchardia congesta</i>	0.3	0.1
<i>Calothamnus sanguineus</i>	0.5	0.1
<i>Calytrix flavescens</i>	0.4	0.1
<i>Cassytha flava</i>		0.1
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Caustis dioica</i>	0.3	0.1
<i>Conostylis dielsii</i> subsp. <i>dielsii</i>	0.05	0.1
<i>Dampiera lindleyi</i>	0.3	0.2

<i>Dampiera spicigera</i>	0.3	0.1
<i>Daviesia daphnoides</i>	0.8	0.1
<i>Daviesia oxyclada</i>	0.5	0.1
<i>Ecdeiocolea monostachya</i>	0.7	15
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	0.8	0.1
<i>Gastrolobium plicatum</i>	1	0.2
<i>Goodenia coerulea</i>	0.2	0.1
<i>Hakea auriculata</i>	0.8	0.5
<i>Hakea incrassata</i>	0.6	0.2
<i>Hakea lissocarpha</i>	0.8	0.5
<i>Hakea stenocarpa</i>	0.5	1
<i>Hakea trifurcata</i>	1.2	10
<i>Hibbertia crassifolia</i>	0.4	0.1
<i>Hibbertia hypericoides</i>	0.6	0.1
<i>Jacksonia restioides</i>	0.3	0.1
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.1
<i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A)	0.3	0.1
<i>Melaleuca aspalathoides</i>	0.5	5
<i>Melaleuca radula</i>	1	0.1
<i>Mesomelaena pseudostygia</i>	0.4	0.1
<i>Patersonia graminea</i>	0.4	0.1
<i>Petrophile shuttleworthiana</i>	1	1
<i>Pterochaeta paniculata</i>	0.05	0.1
<i>Schoenus armeria</i>	0.2	0.1
? <i>Schoenus</i> sp.	0.05	0.1
<i>Stylidium</i> sp. Kalbarri (A. Carr 145)	0.3	0.1
<i>Tricoryne humilis</i>	0.05	0.1
<i>Verticordia chrysantha</i>	0.6	0.1

PHOTOS



Site Name: WE031
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 26/10/2011
 GPS Location: GDA94 (Zone 50) 334119E 6748240N
 Community: 10
 Landform Type: Sand dune (other)
 Slope Class: Gently Inclined (3 degrees)
 Aspect: NW
 Soil Type: Sand
 Soil Colour: Brown over yellow (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 7 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina campestris</i>	1.2	3
<i>Allocasuarina microstachya</i>	0.3	0.1
<i>Amphipogon turbinatus</i>	0.2	0.1
* <i>Arctotheca calendula</i>	0.1	0.1
<i>Astroloma microdonta</i>	0.3	0.1
<i>Baeckea grandiflora</i>	0.3	0.1
<i>Banksia attenuata</i>	1.2	2
<i>Banksia shuttleworthiana</i>	0.6	0.1
<i>Burchardia congesta</i>	0.3	0.1
<i>Calytrix strigosa</i>	0.3	0.1
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Conospermum boreale</i> subsp. <i>?ascendens</i>	0.5	0.1
<i>Dampiera oligophylla</i>	0.3	0.1
<i>Dampiera spicigera</i>	0.3	0.1
<i>Darwinia speciosa</i>	0.3	0.1
<i>Daviesia divaricata</i> subsp. <i>divaricata</i> ms	0.5	4
<i>Daviesia nudiflora</i>	0.5	0.1
<i>Drosera ?menziesii</i>	0.3	0.1
<i>Ecdeiocolea monostachya</i>	0.5	4
<i>Eremaea violacea</i> subsp. <i>violacea</i>	0.4	0.1
<i>Goodenia coerulea</i>	0.4	0.1
<i>Hakea cygna</i> subsp. <i>cygna</i>	1	0.4

<i>Hibbertia hypericoides</i>	0.5	1
<i>Hypocalymma hirsutum</i>	0.3	0.1
* <i>Hypochaeris glabra</i>	0.2	0.1
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.1
<i>Lepidosperma brunonianum</i> sens. lat.	0.3	0.1
<i>Leptospermum oligandrum</i>	0.6	0.2
<i>Leptospermum spinescens</i>	0.3	0.1
<i>Melaleuca leuropoma</i>	0.5	15
? <i>Mesomelaena preissi</i>	1	0.1
<i>Mesomelaena pseudostygia</i>	0.4	3
<i>Monotaxis bracteata</i>	0.2	0.1
<i>Opercularia vaginata</i>	0.3	0.1
<i>Petrophile macrostachya</i>	0.4	0.1
<i>Pileanthus filifolius</i>	0.3	1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Scholtzia laxiflora</i>	0.5	8
<i>Stenanthemum intricatum</i>	0.2	0.1
<i>Stylidium repens</i>	0.1	0.1
<i>Thysanotus ?tenellus</i>	0.1	0.1
<i>Tricoryne humilis</i>	0.2	0.1
<i>Verticordia chrysanthella</i>	0.2	0.1
<i>Verticordia grandis</i>	1	0.1

PHOTOS

Site Name: WE032
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 26/10/2011
 GPS Location: GDA94 (Zone 50) 334095E 6748049N
 Community: 11
 Landform Type: Sand dune (other)
 Slope Class: Gently Inclined (3 degrees)
 Aspect: NE
 Soil Type: Sand
 Soil Colour: Yellow
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 7 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acanthocarpus</i> sp. Ajana (C.A. Gardner 8596)	0.3	0.1
<i>Allocasuarina campestris</i>	1.4	65
<i>Amphipogon caricinus</i>	0.2	0.1
<i>Austrostipa macalpinei</i>	0.2	0.1
<i>Boronia coerulescens</i> subsp. <i>spinescens</i>	0.4	0.1
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Dampiera spicigera</i>	0.3	0.1
<i>Daviesia divaricata</i> subsp. <i>divaricata</i> ms	0.4	0.1
<i>Ecdeiocolea monostachya</i>	0.4	10
<i>Grevillea eriostachya</i>	1.4	0.1
<i>Hakea circumalata</i>	1	0.5
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.1
<i>Leucopogon hamulosus</i>	0.4	0.1
<i>Levenhookia stipitata</i>	0.05	0.1
<i>Mesomelaena pseudostygia</i>	0.3	0.1
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (3)	0.4	0.5
<i>Patersonia graminea</i>	0.3	0.1
<i>Platysace juncea</i> sens. lat.	0.1	0.1
<i>Pterochaeta paniculata</i>		
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Tricoryne humilis</i>	0.3	0.1
<i>Verticordia grandis</i>	1	0.1

PHOTOS



Site Name: WE033
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 26/10/2011
 GPS Location: GDA94 (Zone 50) 334052E 6747404N
 Community: 7a
 Landform Type: Upper Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: E
 Soil Type: Brown sand over laterite
 Soil Colour: Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 10-20%
 CF Sizes: 6-20mm
 Vegetation Condition: 1 - Pristine
 Fire: > 7 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia auronitens</i>	0.3	0.1
<i>Allocasuarina campestris</i>	1.5	38
<i>Allocasuarina microstachya</i>	0.3	0.1
<i>Astroloma glaucescens</i>	0.3	0.1
<i>Banksia carlinoides</i>	0.7	1
<i>Banksia fraseri</i> var. ? <i>fraseri</i>	0.6	0.1
<i>Boronia cymosa</i>	0.4	0.1
<i>Burchardia congesta</i>	0.4	0.1
<i>Calothamnus longissimus</i>	0.5	0.1
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Conostylis androstemma</i>	0.2	0.1
<i>Conostylis dielsii</i> subsp. <i>dielsii</i>	0.2	0.1
<i>Dampiera spicigera</i>	0.3	0.1
<i>Darwinia speciosa</i>	0.3	0.1
<i>Daviesia hakeoides</i> subsp. <i>subnuda</i>	0.3	0.1
<i>Dodonaea ericoides</i>	0.2	0.1
<i>Ecdeiocolea monostachya</i>	0.6	4
<i>Goodenia coerulea</i>	0.3	0.1
<i>Hakea auriculata</i>	1	2
<i>Hakea circumalata</i>	1	1

<i>Hakea incrassata</i>	0.5	0.1
<i>Hakea lissocarpa</i>	0.6	0.1
<i>Hibbertia crassifolia</i>	0.4	0.1
<i>Hibbertia hypericoides</i>	0.4	0.1
<i>Hypocalymma hirsutum</i>	0.3	0.1
<i>Isopogon divergens</i>	0.6	0.2
<i>Jacksonia foliosa</i>	0.6	0.1
<i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A)	0.4	0.1
<i>Melaleuca aspalathoides</i>	0.4	1
<i>Mesomelaena pseudostygia</i>	0.3	0.1
<i>Micromyrtus rogeri</i> (1)	0.4	3
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.2	0.1
<i>Petrophile chrysantha</i>	0.6	0.1
<i>Petrophile megalostegia</i>	0.3	0.1
<i>Schoenus brevisetis</i>	0.2	0.1
<i>Schoenus clandestinus</i>	0.1	0.1
? <i>Schoenus</i> sp.	0.2	0.1
<i>Stylidium diuroides</i> subsp. <i>paucifoliatum</i>	0.3	0.1
<i>Stylidium</i> sp. Kalbarri (A. Carr 145)	0.2	0.1
<i>Synaphea spinulosa</i> subsp. <i>spinulosa</i>	0.3	0.1

PHOTOS

Site Name: WE034
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 26/10/2011
 GPS Location: GDA94 (Zone 50) 333677E 6746827N
 Community: 13b
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Soil Type: Sand
 Soil Colour: Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 7 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i>	0.3	0.1
<i>Allocasuarina campestris</i>	1.2	20
<i>Amphipogon turbinatus</i>	0.3	0.1
<i>Anigozanthos humilis</i> subsp. <i>humilis</i>	0.1	0.1
<i>Astroloma pedicellatum</i> ms	0.6	0.1
<i>Austrostipa macalpinei</i>	0.2	0.1
<i>Babingtonia camphorosmae</i>	0.5	0.1
<i>Baeckea grandiflora</i>	0.5	0.1
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.3	0.1
<i>Banksia shuttleworthiana</i>	0.8	0.1
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	1	0.1
<i>Cassytha flava</i>		0.1
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Conostylis aculeata</i> subsp. <i>breviflora</i>	0.3	0.1
<i>Conostylis canteriata</i>	0.6	0.1
<i>Crassula colorata</i> var. <i>acuminata</i>	0.1	0.1
<i>Daviesia nudiflora</i>	0.6	0.1
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	0.8	2
<i>Hakea polyanthema</i>	0.6	0.1
<i>Hakea trifurcata</i>	1	0.5
<i>Hibbertia crassifolia</i>	0.4	0.2
<i>Hibbertia hypericoides</i>	0.5	10
<i>Hyalosperma cotula</i>	0.05	0.1

<i>*Hypochaeris glabra</i>	0.05	0.1
<i>Isotoma hypocrateriformis</i>	0.3	0.1
<i>Jacksonia nutans</i>	0.5	0.1
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.2	0.1
<i>Levenhookia stipitata</i>	0.05	0.1
<i>Lobelia rhytidosperma</i>	0.1	0.1
<i>Melaleuca leuropoma</i>	0.6	15
<i>Mesomelaena pseudostygia</i>	0.3	0.1
<i>Mirbelia trichocalyx</i>	0.3	0.1
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>*Pentameris airoides</i> subsp. <i>airoides</i>	0.1	0.1
<i>Petrophile macrostachya</i>	1	0.1
<i>Pileanthus filifolius</i>	0.4	1
<i>Pimelea angustifolia</i>	0.4	0.1
<i>Podotrochea gnaphalioides</i>	0.1	0.1
<i>Pterochaeta paniculata</i>	0.05	0.1
<i>Schoenus badius</i> (2)	0.05	0.1
<i>Schoenus clandestinus</i>	0.05	0.1
<i>Scholtzia laxiflora</i>	0.6	1
<i>Siloxerus filifolius</i>	0.02	0.1
<i>Stenanthemum intricatum</i>	0.1	0.1
<i>Stylidium androsaceum</i>	0.05	0.1
<i>Stylidium crossocephalum</i>	0.1	0.1
<i>Stylidium purpureum</i> ms	0.2	0.1
<i>Stylidium repens</i>	0.1	0.1
<i>Thryptomene ?racemulosa</i>	0.6	0.1
<i>Trachymene pilosa</i>	0.05	0.1
<i>Verticordia laciniata</i>	0.6	0.1
<i>Verticordia pennigera</i>	0.4	0.1

PHOTOS



Site Name: WE035
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 26/10/2011
 GPS Location: GDA94 (Zone 50) 333847E 6747008N
 Community: 12
 Landform Type: Mid Slope
 Slope Class: Moderately Inclined (10 degrees)
 Aspect: SW
 Soil Type: Sand
 Soil Colour: Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: >7 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Actinotus leucocephalus</i>	0.1	0.1
<i>Allocasuarina humilis</i>	0.1	1
<i>Allocasuarina microstachya</i>	0.3	0.1
<i>Austrostipa macalpinei</i>	0.1	0.1
<i>Baeckea grandiflora</i>	0.5	0.1
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.2	0.1
<i>Banksia sessilis</i> var. <i>flabellifolia</i>	2	2
<i>Beaufortia elegans</i>	0.1	0.2
<i>Boronia ramosa</i> subsp. <i>anethifolia</i>	3	0.1
<i>Burchardia congesta</i>	0.6	0.1
<i>Calothamnus sanguineus</i>	0.6	0.1
<i>Calytrix sapphirina</i>	0.3	0.1
<i>Cassytha flava</i>		0.1
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Caustis dioica</i>	0.3	0.1
<i>Centrolepis pilosa</i>	0.05	0.1
<i>Conospermum boreale</i> subsp. <i>?ascendens</i>	0.6	0.1
<i>Conostylis canteriata</i>	0.1	0.1
<i>Darwinia speciosa</i>	0.3	0.1
<i>Desmocladius parthenicus</i>	0.4	0.1
<i>Drosera eneabba</i>	0.05	0.1
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	0.6	1

<i>Eucalyptus tottiana</i>	6	1
<i>Hakea trifurcata</i>	1.2	0.1
<i>Hibbertia crassifolia</i>	0.6	0.5
<i>Hibbertia hypericoides</i>	0.6	2
<i>Jacksonia nutans</i>	0.5	1
<i>Lepidosperma tenue</i>	0.6	0.3
<i>Leptospermum oligandrum</i>	0.3	0.1
<i>Leptospermum spinescens</i>	0.4	0.1
<i>Levenhookia stipitata</i>	0.05	0.1
<i>Lysinema pentapetalum</i>	0.1	0.1
<i>Melaleuca aff. leuropoma</i>	1	10
<i>Melaleuca leuropoma</i>	0.4	3
<i>Neurachne alopecuroidea</i>	0.3	0.1
<i>Petrophile brevifolia</i>	0.4	0.1
<i>Pileanthus filifolius</i>	0.3	1
<i>Pterochaeta paniculata</i>	0.05	0.1
<i>Schoenus clandestinus</i>	0.05	0.1
<i>Stenanthemum notiale</i> subsp. <i>notiale</i>	0.4	0.1
<i>Trachymene pilosa</i>	0.05	0.1
<i>Waitzia acuminata</i> var. <i>acuminata</i>	0.1	0.1

PHOTOS

Site Name: WE036
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 24/10/2011
 GPS Location: GDA94 (Zone 50) 333249E 6742064N
 Community: 9
 Landform Type: Breakaway slope (other)
 Slope Class: Moderately Inclined (10 degrees)
 Aspect: N
 Soil Type: Clay Loam
 Soil Colour: Grey/ white (other)
 Rock Outcrop: (other), 10-20% bedrock exposed
 CF Abundance: 10-20%
 CF Sizes: 2-6mm, 6-20mm, 20-60mm, 60-200mm
 Vegetation Condition: 1 - Pristine
 Fire: > 5 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina campestris</i>	0.6	1.5
<i>Amphipogon caricinus</i>	0.1	0.3
<i>Astroloma pedicellatum</i> ms	0.3	0.2
<i>Borya sphaerocephala</i>	0.1	0.2
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	0.2	0.1
<i>Calytrix depressa</i>	0.3	0.1
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Centrolepis aristata</i>	0.1	0.1
<i>Comesperma volubile</i>	0.2	0.1
<i>Dampiera lindleyi</i>	0.2	0.1
<i>Dodonaea ericoides</i>	0.3	0.2
<i>Ecdeiocolea monostachya</i>	0.5	0.5
<i>Gastrolobium plicatum</i>	0.3	0.3
<i>Glischrocaryon aureum</i>	0.3	0.3
<i>Goodenia micrantha</i>	0.1	0.1
<i>Goodenia trichophylla</i>	0.1	0.1
<i>Guichenotia sarotes</i>	0.2	0.2
<i>Hakea lissocarpha</i>	0.2	0.2
<i>Isotoma hypocrateriformis</i>	0.1	0.2
<i>Lepidosperma</i> sp. A2 Inland Flat (G.J. Keighery)	0.3	0.3

7000)		
<i>Lepidosperma tenue</i>	0.4	1
<i>Leucopogon</i> sp. Yandanooka (M. Hislop 2507)	0.1	0.1
<i>Lobelia rarifolia</i>	0.1	0.1
<i>Melaleuca tinkerii</i>	0.4	40
<i>Micromyrtus rogeri</i> (1)	0.3	4
<i>Mirbelia floribunda</i>	0.3	0.2
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.2	0.1
<i>Petrophile chrysantha</i>	0.3	0.1
<i>Pimelea imbricata</i> var. <i>piligera</i>	0.1	0.1
<i>Pterochaeta paniculata</i>	0.1	0.1
<i>Stylidium caricifolium</i>	0.2	0.3
<i>Stylidium torticarpum</i> (3)	0.1	3
<i>Verticordia chrysanthella</i>	0.4	3
<i>Verticordia huegelii</i>	0.3	0.3

PHOTOS

Site Name: WE037
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 25/10/2011
 GPS Location: GDA94 (Zone 50) 335800E 6744971N
 Community: 14
 Landform Type: Broad depression
 Slope Class: Gently Inclined (3 degrees)
 Aspect: N
 Soil Type: Clay Loam
 Soil Colour: Grey/Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 5 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia dilatata</i>	0.2	0.4
<i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i>	0.4	0.2
<i>Actinotus leucocephalus</i>	0.2	0.2
<i>Allocasuarina humilis</i>	0.4	0.2
<i>Allocasuarina microstachya</i>	0.4	4
<i>Austrostipa compressa</i>	0.3	0.2
<i>Babingtonia camphorosmae</i>	0.2	0.5
<i>Banksia carlinoides</i>	0.6	5
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.2	0.2
<i>Borya sphaerocephala</i>	0.1	0.2
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	1	2
<i>Calothamnus sanguineus</i>	1.2	3
<i>Calytrix depressa</i>	0.3	5
<i>Cassytha</i> ? <i>pomiformis</i>		0.4
<i>Caustis dioica</i>	0.2	0.1
<i>Centrolepis polygyna</i>	0.1	0.1
<i>Chordifex sinuosus</i>	0.3	0.3
<i>Conostylis aculeata</i> subsp. <i>breviflora</i>	0.2	0.4
<i>Cryptandra myriantha</i>	0.2	0.1
<i>Dampiera teres</i> (broad-leaf variant)	0.2	0.1
<i>Drosera menziesii</i>	0.1	0.1
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	0.4	3

<i>Gnephosis tenuissima</i>	0.1	0.1
<i>Goodenia coerulea</i>	0.2	0.2
<i>Hakea costata</i>	0.4	0.5
<i>Hakea lissocarpa</i>	0.4	2
<i>Harperia lateriflora</i>	0.2	15
<i>Hibbertia acerosa</i>	0.1	0.1
<i>Hibbertia crassifolia</i>	0.4	0.3
<i>Hypocalymma hirsutum</i>	0.1	0.1
<i>Jacksonia angulata</i>	0.4	0.2
<i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i>	0.1	0.1
<i>Lepidosperma</i> aff. <i>costale</i>	0.4	0.5
<i>Leucopogon glaucifolius</i>	0.2	0.1
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.4	0.2
<i>Levenhookia octomaculata</i>	0.1	0.2
<i>Lobelia rhytidosperma</i>	0.1	0.1
<i>Melaleuca aspalathoides</i>	0.3	5
<i>Mesomelaena tetragona</i>	0.2	0.1
<i>Neurachne alopecuroidea</i>	0.1	0.2
<i>Opercularia vaginata</i>	0.2	1
<i>Petrophile brevifolia</i>	0.3	0.2
<i>Petrophile seminuda</i>	0.4	0.3
<i>Podotrochea gnaphalioides</i>	0.1	0.1
<i>Pterochaeta paniculata</i>	0.1	0.2
<i>Ptilotus manglesii</i>	0.1	0.1
<i>Schoenus badius</i> (2)	0.1	0.1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Scholtzia laxiflora</i>	0.4	1
<i>Stylidium dichotomum</i>	0.2	0.3
<i>Stylidium purpureum</i> ms	0.2	0.1
<i>Trachymene pilosa</i>	0.1	0.1
<i>Verticordia densiflora</i> var. <i>densiflora</i>	1	5
<i>Verticordia pennigera</i>	0.2	0.2
<i>Waitzia acuminata</i> var. <i>acuminata</i>	0.1	0.1

PHOTOS



Site Name: WE038
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 25/10/2011
 GPS Location: GDA94 (Zone 50) 337363E 6744876N
 Community: 13b
 Landform Type: Open Depression
 Slope Class: Gently Inclined (3 degrees)
 Aspect: NW
 Soil Type: Sand
 Soil Colour: Yellow-Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 5 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia blakelyi</i>	1.7	1
<i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i>	0.4	0.2
<i>Allocasuarina humilis</i>	0.7	1.5
<i>Anigozanthos humilis</i> subsp. <i>humilis</i>	0.1	0.1
<i>Austrostipa compressa</i>	0.3	0.2
<i>Austrostipa hemipogon</i>	1.6	0.3
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.2	1.5
<i>Banksia scabrella</i> (4)	1.5	15
<i>Banksia sessilis</i> var. <i>flabellifolia</i>	2.5	15
<i>Beaufortia elegans</i>	1.2	3
<i>Calothamnus sanguineus</i>	1.5	5
<i>Calytrix fraseri</i>	0.5	0.2
<i>Calytrix strigosa</i>	0.3	1.5
<i>Centrolepis pilosa</i>	0.1	0.1
<i>Conostylis aculeata</i> subsp. <i>breviflora</i>	0.2	0.3
<i>Conostylis candicans</i>	0.1	0.1
<i>Conostylis canteriata</i>	0.1	0.1
<i>Desmocladius lateriticus</i>	0.2	0.1
<i>Desmocladius parthenicus</i>	0.2	0.3
<i>Eremaea beaufortoides</i> var. <i>microphylla</i>	0.5	0.5
<i>Eremaea ectadioclada</i>	0.4	0.5
<i>Eucalyptus todtiana</i>	7	5

<i>Hakea costata</i>	1.2	0.4
<i>Hakea polyanthema</i>	0.5	1
<i>Hakea trifurcata</i>	1.4	2
<i>Hibbertia subvaginata</i>	0.5	0.5
<i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i>	0.1	0.1
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	3
<i>Leucopogon</i> sp. Northern ciliate (R. Davis 3393)	0.4	0.5
<i>Levenhookia octomaculata</i>	0.1	0.1
<i>Lomandra hastilis</i>	0.4	0.2
<i>Melaleuca leuropoma</i>	0.5	6
<i>Mesomelaena pseudostygia</i>	0.4	0.2
<i>Neurachne alopecuroidea</i>	0.3	0.1
<i>Petrophile scabriuscula</i>	0.7	0.8
<i>Thysanotus thyrsoides</i>	0.4	0.1
<i>Trachymene pilosa</i>	0.1	0.2
<i>Verticordia densiflora</i> var. <i>densiflora</i>	1.2	4
<i>Wahlenbergia gracilentia</i>	0.1	0.1

PHOTOS

Site Name: WE039
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 25/10/2011
 GPS Location: GDA94 (Zone 50) 337742E 6745079N
 Community: 7b
 Landform Type: Upper Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: S
 Soil Type: Sandy Loam
 Soil Colour: Brown
 Rock Outcrop: Laterite, 10-20% bedrock exposed
 CF Abundance: 20-50%
 CF Sizes: 6-20mm
 CF Types: Laterite
 Vegetation Condition: 1 - Pristine
 Fire: > 5 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia acuarina</i>		
<i>Acacia dilatata</i>	0.2	0.2
<i>Acanthocarpus</i> sp. Ajana (C.A. Gardner 8596)	0.2	0.1
<i>Allocasuarina campestris</i>	1.5	30
<i>Allocasuarina humilis</i>	0.5	0.5
<i>Baeckea grandiflora</i>	0.4	0.2
<i>Banksia fraseri</i> var. ? <i>fraseri</i>	0.4	2
<i>Banksia shuttleworthiana</i>	0.3	1
<i>Boronia coerulescens</i> subsp. <i>spinescens</i>		
<i>Burchardia congesta</i>	0.3	0.1
<i>Calothamnus longissimus</i>	0.5	0.3
<i>Calothamnus sanguineus</i>	0.6	0.5
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Cassytha</i> ? <i>pomiformis</i>		0.1
<i>Dampiera lindleyi</i>	0.3	0.3
<i>Dampiera teres</i> (broad-leaf variant)	0.2	0.2
<i>Daviesia daphnoides</i>	0.4	0.3
<i>Daviesia hakeoides</i> subsp. <i>subnuda</i>	0.4	0.2
<i>Daviesia</i> ? <i>umbonata</i>	0.6	0.5

<i>Ecdeiocolea monostachya</i>	0.6	10
<i>Gastrolobium spinosum</i>	1.5	3
<i>Glischrocaryon aureum</i>	0.6	0.5
<i>Goodenia hassallii</i>	0.3	0.2
<i>Hakea auriculata</i>	1	5
<i>Hakea incrassata</i>	0.3	0.5
<i>Hakea stenocarpa</i>	0.4	0.3
<i>Halgania</i> sp. Wongan Hills (K.F. Kenneally 2393)	0.3	0.5
<i>Hibbertia hypericoides</i>	0.3	0.3
<i>Hibbertia spicata</i> subsp. <i>spicata</i>	0.5	4
<i>Isopogon divergens</i>	0.5	3
<i>Isotropis drummondii</i>	0.3	0.1
<i>Jacksonia foliosa</i>		
<i>Jacksonia macrocalyx</i>		
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.2
<i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A)	0.2	0.1
<i>Lepidosperma tenue</i>	0.3	0.2
<i>Lobelia rarifolia</i>	0.1	0.1
<i>Melaleuca aspalathoides</i>	0.3	6
<i>Mesomelaena pseudostygia</i>	0.3	0.2
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Patersonia graminea</i>		
<i>Petrophile brevifolia</i>	0.3	0.4
<i>Petrophile shuttleworthiana</i>	1	5
<i>Schoenus brevisetis</i>	0.1	0.1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Stylidium drummondianum</i> (3)	0.1	0.1
<i>Tricoryne humilis</i>	0.2	0.1
<i>Verticordia densiflora</i> var. <i>densiflora</i>	0.4	0.2

PHOTOS



Site Name: WE040
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 25/10/2011
 GPS Location: GDA94 (Zone 50) 338044E 6744932N
 Community: 11
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: NE
 Soil Type: Sand
 Soil Colour: Yellow
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 5years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia blakelyi</i>	2	0.3
<i>Actinotus leucocephalus</i>	0.1	0.1
<i>Amphipogon caricinus</i>	0.1	0.1
<i>Astroloma pedicellatum</i> ms	0.3	0.2
<i>Austrostipa compressa</i>	0.3	0.3
<i>Borya sphaerocephala</i>	0.1	0.1
<i>Burchardia congesta</i>	0.3	0.1
<i>Calytrix strigosa</i>	0.2	0.3
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.3
<i>Cassytha</i> ? <i>pomiformis</i>		0.1
<i>Conostylis dielsii</i> subsp. <i>dielsii</i>	0.1	0.1
<i>Cryptandra myriantha</i>	0.3	0.2
<i>Cryptandra pungens</i>	0.5	0.1
<i>Dampiera oligophylla</i>	0.3	0.2
<i>Dampiera spicigera</i>	0.2	0.1
<i>Daviesia divaricata</i> subsp. <i>divaricata</i> ms	0.6	2
<i>Daviesia nudiflora</i>	0.3	0.2
<i>Ecdeiocolea monostachya</i>	1	20
<i>Geleznowia verrucosa</i>	0.4	0.1
<i>Grevillea biformis</i> subsp. <i>biformis</i>	2	1
<i>Hakea circumalata</i>	1	5
<i>Hakea cygna</i> subsp. <i>cygna</i>	0.8	2

<i>Hibbertia hypericoides</i>	0.4	1
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>		0.3
<i>Lepidosperma brunonianum</i> sens. <i>lat.</i>	0.2	0.1
<i>Leptospermum spinescens</i>	0.2	0.1
<i>Leucopogon planifolius</i>	0.3	0.2
<i>Levenhookia stipitata</i>	0.1	0.1
<i>Melaleuca leuropoma</i>	0.5	3
<i>Mesomelaena pseudostygia</i>	0.4	0.5
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (3)	0.2	1
<i>Neurachne alopecuroidea</i>	0.2	0.1
<i>Opercularia vaginata</i>	0.1	0.2
<i>Pileanthus filifolius</i>	0.2	0.2
<i>Pterochaeta paniculata</i>	0.1	0.1
<i>Scaevola canescens</i>	0.1	0.1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Scholtzia laxiflora</i>	0.8	0.1
<i>Stackhousia dielsii</i>	0.3	0.1
<i>Stenanthemum notiale</i> subsp. <i>notiale</i>	0.3	0.1
<i>Waitzia acuminata</i> var. <i>acuminata</i>	0.1	0.1
<i>Xanthorrhoea drummondii</i>	1.8	1

PHOTOS

Site Name: WE041
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 25/10/2011
 GPS Location: GDA94 (Zone 50) 336402E 6745548N
 Community: 7b
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: W
 Soil Type: Sand
 Soil Colour: Grey/Brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 5 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia dilatata</i>	0.4	0.3
<i>Acanthocarpus</i> sp. Ajana (C.A. Gardner 8596)	0.2	0.1
<i>Allocasuarina humilis</i>	0.4	0.3
<i>Astroloma microdonta</i>	0.1	0.1
<i>Austrostipa compressa</i>	0.3	0.2
<i>Babingtonia camphorosmae</i>	0.2	0.2
<i>Banksia carlinoides</i>	1	7
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.2	0.3
<i>Banksia scabrella</i> (4)	1	7
<i>Burchardia congesta</i>	0.3	0.1
<i>Calothamnus sanguineus</i>	0.6	0.5
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.2
<i>Cassytha</i> ? <i>pomiformis</i>		0.2
<i>Caustis dioica</i>	0.3	0.2
<i>Dampiera lindleyi</i>	0.3	0.2
<i>Daviesia daphnoides</i>	1	3
<i>Daviesia incrassata</i> subsp. <i>teres</i>	0.5	0.5
<i>Diplolaena eneabbensis</i>	0.4	0.3
<i>Ecdeiocolea monostachya</i>	1	12
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	1	2
<i>Goodenia coerulea</i>	0.3	0.1
<i>Hakea circumalata</i>	0.3	0.3

<i>Hakea incrassata</i>	0.3	0.3
<i>Hakea lissocarpha</i>	0.4	0.2
<i>Hakea trifurcata</i>	1.5	5
<i>Hibbertia crassifolia</i>	0.2	0.1
<i>Hibbertia hypericoides</i>	0.4	1
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.2	0.5
<i>Lepidosperma</i> aff. <i>costale</i>	0.3	0.2
<i>Lobelia rhytidosperma</i>	0.1	0.1
<i>Melaleuca aspalathoides</i>	0.4	4
<i>Melaleuca leuropoma</i>	0.4	1
<i>Melaleuca</i> aff. <i>leuropoma</i>	1	0.4
<i>Mesomelaena pseudostygia</i>	0.3	1
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.2	0.2
<i>Petrophile brevifolia</i>	0.3	0.4
<i>Pileanthus filifolius</i>	0.3	0.2
<i>Pterochaeta paniculata</i>	0.1	0.1
<i>Scaevola canescens</i>	0.1	0.1
<i>Schoenus armeria</i>	0.2	0.2
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Scholtzia laxiflora</i>	0.6	0.5

PHOTOS

Site Name: WE042
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 26/10/2011
 GPS Location: GDA94 (Zone 50) 338575E 6744330N
 Community: 8
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: NW
 Soil Type: Clay Loam
 Soil Colour: Grey/Brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 2-10%
 CF Sizes: 2-6mm
 Vegetation Condition: 1 - Pristine
 Fire: < 5 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia acuaria</i>	0.4	0.2
<i>Actinotus leucocephalus</i>	0.1	0.1
<i>Allocasuarina campestris</i>	1.2	8
<i>Baeckea grandiflora</i>	0.4	0.1
<i>Banksia fraseri</i> var. ? <i>fraseri</i>	0.4	3
<i>Boronia coerulescens</i> subsp. <i>spinescens</i>	0.2	0.2
<i>Boronia cymosa</i>	0.3	0.1
<i>Burchardia congesta</i>	0.3	0.1
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	0.3	0.5
<i>Calytrix gracilis</i>	0.3	0.5
<i>Conostylis androstemma</i>	0.2	0.1
<i>Dampiera teres</i> (broad-leaf variant)	0.2	0.1
<i>Daviesia hakeoides</i> subsp. <i>subnuda</i>	0.3	0.2
<i>Daviesia</i> ? <i>umbonata</i>	0.3	0.3
<i>Ecdeiocolea monostachya</i>	0.5	2
<i>Eucalyptus conveniens</i>	2	8
<i>Gastrolobium spinosum</i>	0.5	2
<i>Geleznovia verrucosa</i>	0.1	0.1
<i>Glischrocaryon aureum</i>	0.3	0.3
<i>Gompholobium muticum</i>	0.1	0.3

<i>Goodenia coerulea</i>	0.1	0.1
<i>Goodenia hassallii</i>	0.2	0.2
<i>Grevillea biformis</i> subsp. <i>biformis</i>	0.5	1
<i>Guichenotia micrantha</i>	0.5	1
<i>Hakea auriculata</i>	0.5	2
<i>Hakea circumalata</i>	0.3	0.2
<i>Hakea lissocarpha</i>	0.5	0.5
<i>Hakea meisneriana</i>	0.4	1
<i>Hibbertia hypericoides</i>	0.4	0.2
<i>Isopogon divergens</i>	0.4	0.5
<i>Isotoma hypocrateriformis</i>	0.1	0.1
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.3
<i>Lepidosperma pubisquameum</i>	0.3	0.1
<i>Melaleuca aspalathoides</i>	0.3	0.5
<i>Melaleuca radula</i>	0.4	0.5
<i>Mesomelaena preissii</i>	0.2	0.1
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (3)	0.2	0.3
<i>Micromyrtus rogeri</i> (1)	0.3	0.5
<i>Mirbelia trichocalyx</i>	0.3	0.5
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.2	0.3
<i>Patersonia graminea</i>	0.3	0.1
<i>Petrophile brevifolia</i>	0.4	0.3
<i>Polianthion wichurae</i>	0.4	0.2
<i>Scaevola canescens</i>	0.1	0.3
<i>Schoenus armeria</i>	0.2	0.3
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Stenanthemum</i> aff. <i>notiale</i> subsp. <i>notiale</i>	0.3	0.2
<i>Stylidium drummondianum</i> (3)	0.1	0.1
<i>Synaphea oulopha</i> (1)	0.1	0.1
<i>Thysanotus dichotomus</i>	0.3	0.2
<i>Waitzia acuminata</i> var. <i>acuminata</i>	0.1	0.1
<i>Xanthorrhoea drummondii</i>	1	1

PHOTOS



Site Name: WE043
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 26/10/2011
 GPS Location: GDA94 (Zone 50) 338568E 6743966N
 Community: 8
 Landform Type: Upper Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: N
 Soil Type: Sandy Loam
 Soil Colour: Grey/Brown (other)
 Rock Outcrop: 2-10% bedrock exposed
 CF Abundance: 50-90%
 CF Sizes: 2-6mm, 6-20mm, 20-60mm, 60-200mm
 Vegetation Condition: 1 - Pristine
 Fire: < 5 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia acuaria</i>	0.3	0.5
<i>Acanthocarpus</i> sp. Ajana (C.A. Gardner 8596)	0.2	0.1
<i>Allocasuarina humilis</i>	0.2	0.2
<i>Baeckea grandiflora</i>	0.2	0.1
<i>Banksia fraseri</i> var. ? <i>fraseri</i>	0.4	2
<i>Banksia shuttleworthiana</i>	0.3	0.3
<i>Boronia cymosa</i>	0.3	0.2
<i>Burchardia congesta</i>	0.3	0.1
<i>Conostylis androstemma</i>	0.1	0.1
<i>Cryptandra myriantha</i>	0.2	0.1
<i>Daviesia hakeoides</i> subsp. <i>subnuda</i>	0.3	1.5
<i>Diuris setacea</i>	0.2	0.1
<i>Dodonaea ericoides</i>	0.2	0.2
<i>Ecdeiocola monostachya</i>	0.5	15
<i>Gastrolobium plicatum</i>	0.5	0.3
<i>Geleznowia verrucosa</i>	0.3	0.1
<i>Glischrocaryon aureum</i>	0.4	0.5
<i>Goodenia coerulea</i>	0.2	0.1
<i>Goodenia hassallii</i>	0.2	0.1
<i>Grevillea bififormis</i> subsp. <i>bififormis</i>	0.4	0.2

<i>Hakea auriculata</i>	0.4	5
<i>Hakea lissocarpha</i>	0.3	0.4
<i>Hibbertia hypericoides</i>	0.3	0.2
<i>Hibbertia spicata</i> subsp. <i>spicata</i>	0.1	0.1
<i>Hypocalymma hirsutum</i>	0.2	0.1
<i>Jacksonia foliosa</i>	0.3	2
<i>Jacksonia restioides</i>	0.2	0.3
<i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A)	0.1	0.2
<i>Melaleuca aspalathoides</i>	0.3	15
<i>Melaleuca radula</i>	0.5	1
<i>Mesomelaena preissii</i>	0.2	0.1
<i>Mesomelaena pseudostygia</i>	0.2	0.3
<i>Micromyrtus rogeri</i> (1)	0.3	1
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.2	0.1
<i>Patersonia graminea</i>	0.2	0.1
<i>Petrophile shuttleworthiana</i>	0.3	0.5
<i>Pimelea sulphurea</i>	0.3	0.1
<i>Scaevola canescens</i>	0.1	0.1
<i>Scaevola glandulifera</i>		
<i>Schoenus armeria</i>	0.2	0.5
<i>Schoenus clandestinus</i>	0.1	1
<i>Synaphea oulopha</i> (1)	0.2	0.1
<i>Tricoryne humilis</i>	0.1	0.1

PHOTOS



Site Name: WE044
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 26/10/2011
 GPS Location: GDA94 (Zone 50) 336322E 6743744N
 Community: 7b
 Landform Type: Lower Slope
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sandy Loam
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: <5 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia dilatata</i>	0.3	0.2
<i>Acacia fagonioides</i>	0.3	0.4
<i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i>	0.6	0.5
<i>Allocasuarina humilis</i>	0.5	4
<i>Allocasuarina microstachya</i>	0.4	1
<i>Amphipogon caricinus</i>	0.4	0.1
<i>Austrostipa compressa</i>	0.3	0.2
<i>Babingtonia camphorosmae</i>	0.2	0.5
<i>Banksia carlinoides</i>	0.4	0.4
<i>Banksia fraseri</i> var. <i>?fraseri</i>	0.4	0.4
<i>Boronia cymosa</i>	0.3	0.2
<i>Borya sphaerocephala</i>	0.1	0.2
<i>Burchardia congesta</i>	0.2	0.1
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	0.6	0.5
<i>Calothamnus sanguineus</i>	0.4	1
<i>Calytrix depressa</i>	0.2	1
<i>Calytrix flavescens</i>	0.2	0.5
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Caustis dioica</i>	0.2	0.1
<i>Chorizema aciculare</i> subsp. <i>laxum</i>	0.1	0.1
<i>Conostylis canteriata</i>	0.1	0.1
<i>Cristonia biloba</i>	0.3	0.1
<i>Cryptandra pungens</i>	0.5	0.5

<i>Cryptandra spyridioides</i>	0.1	0.3
<i>Dampiera lindleyi</i>	0.3	0.2
<i>Daviesia incrassata</i> subsp. <i>teres</i>	0.3	0.2
<i>Daviesia oxyclada</i>	0.2	0.5
<i>Daviesia pedunculata</i>	0.2	0.1
<i>Desmocladius lateriticus</i>	0.2	0.1
<i>Dianella revoluta</i>	0.6	0.2
<i>Ecdeiocolea monostachya</i>	0.5	8
<i>Eremaea beaufortoides</i> var. <i>microphylla</i>	0.3	0.3
<i>Eucalyptus conveniens</i>	2.5	6
<i>Gastrolobium plicatum</i>	0.2	0.2
<i>Goodenia coerulea</i>	0.1	0.1
<i>Goodenia trichophylla</i>	0.1	0.1
<i>Hakea circumalata</i>	0.5	0.5
<i>Hakea incrassata</i>	0.4	2
<i>Hakea lissocarpha</i>	0.4	0.4
<i>Hakea polyanthema</i>	0.4	0.5
<i>Hakea spathulata</i>	0.3	0.5
<i>Harperia lateriflora</i>	0.2	0.1
<i>Hibbertia crassifolia</i>	0.4	0.3
<i>Hibbertia hypericoides</i>	0.5	0.5
<i>Hypocalymma hirsutum</i>	0.2	0.1
<i>Jacksonia nutans</i>	0.3	0.5
<i>Lasiopetalum drummondii</i>	0.3	0.1
<i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i>	0.1	0.1
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.2	0.1
<i>Lepidosperma pubisquameum</i>	0.2	0.1
<i>Leptospermum oligandrum</i>	0.4	0.2
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.3	0.3
<i>Lobelia rhytidosperma</i>	0.1	0.1
<i>Melaleuca</i> aff. <i>leuropoma</i>	0.5	0.3
<i>Melaleuca trichophylla</i>	0.2	3
<i>Mesomelaena pseudostygia</i>	0.3	0.3
<i>Monotaxis bracteata</i>	0.1	0.1
<i>Neurachne alopecuroidea</i>	0.2	0.3
<i>Opercularia vaginata</i>	0.2	0.4
<i>Patersonia graminea</i>	0.2	0.1
<i>Petrophile brevifolia</i>	0.3	0.5
<i>Polianthion wichurae</i>	0.4	0.3
<i>Ptilotus manglesii</i>	0.1	0.1
<i>Schoenus brevisetis</i>	0.2	0.1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Schoenus unispiculatus</i>	0.1	0.1

<i>Stenanthemum intricatum</i>	0.1	0.1
<i>Stylidium adpressum</i>	0.1	0.1
<i>Stylidium dichotomum</i>	0.1	0.2
<i>Stylidium diuroides</i> subsp. <i>paucifoliatum</i>	0.2	0.1
<i>Stylidium purpureum</i> ms	0.1	0.1
<i>Thryptomene ?racemulosa</i>	0.2	0.1
<i>Trachymene pilosa</i>	0.1	0.1
<i>Tripterococcus brunonis</i>	0.2	0.1
<i>Verticordia pennigera</i>	0.2	0.1

PHOTOS

Site Name: WE045
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 26/10/2011
 GPS Location: GDA94 (Zone 50) 336346E 6744538N
 Community: 9
 Landform Type: Perched puddle (other)
 Slope Class: Very Gently Inclined (1 degree)
 Aspect: NE
 Soil Type: Clay Loam
 Soil Colour: Grey/Brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 50-90%
 CF Sizes: 2-6mm, 6-20mm, 20-60mm
 Vegetation Condition: 1 - Pristine
 Fire: <5 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina campestris</i>	0.5	2
<i>Amphipogon caricinus</i>	0.1	0.1
<i>Astroloma pedicellatum</i> ms	0.2	0.5
<i>Borya sphaerocephala</i>	0.1	0.5
<i>Calothamnus longissimus</i>	0.3	0.1
<i>Calytrix depressa</i>	0.2	0.5
<i>Calytrix gracilis</i>	0.2	0.1
<i>Cassytha ?pomiformis</i>		0.4
<i>Conostylis androstemma</i>	0.2	0.1
<i>Cryptandra myriantha</i>	0.3	0.1
<i>Dampiera teres</i>	0.2	0.2
<i>Diuris setacea</i>	0.1	0.1
<i>Dodonaea ericoides</i>	0.2	0.3
<i>Ecdeiocolea monostachya</i>	0.4	1
<i>Gastrolobium plicatum</i>	0.4	0.3
<i>Goodenia trichophylla</i>	0.1	0.1
<i>Grevillea biternata</i>	0.3	0.1
<i>Hakea lissocarpha</i>	0.4	5
<i>Jacksonia angulata</i>	0.2	0.3
<i>Lepidosperma aff.scabrum</i>	0.2	0.2

<i>Lepidosperma</i> sp. A2 Inland Flat (G.J. Keighery 7000)	0.3	0.5
<i>Leucopogon leptanthus</i>	0.2	0.1
<i>Leucopogon</i> sp. Burma Road (M. Hislop 2032)	0.2	0.5
<i>Leucopogon</i> sp. Yandanooka (M. Hislop 2507)	0.2	5
<i>Lobelia rarifolia</i>	0.1	0.1
<i>Melaleuca aspalathoides</i>	0.2	0.5
<i>Melaleuca concreta</i>	0.4	0.7
<i>Melaleuca marginata</i>	0.3	5
<i>Melaleuca radula</i>	0.4	0.5
<i>Melaleuca tinkerii</i>	0.3	5
<i>Mirbelia floribunda</i>	0.1	0.1
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Patersonia graminea</i>	0.2	0.1
<i>Petrophile seminuda</i>	0.3	1
<i>Schoenus clandestinus</i>	0.1	1
<i>Schoenus unispiculatus</i>	0.1	0.1
<i>Stylidium torticarpum</i> (3)	0.1	4
<i>Synaphea oulopha</i> (1)	0.2	0.1
<i>Thryptomene ?racemulosa</i>	0.2	0.2
<i>Verticordia brachypoda</i>	0.3	0.1
<i>Verticordia endlicheriana</i> var. <i>manicula</i>	0.3	5
<i>Verticordia huegelii</i>	0.2	3

PHOTOS



Site Name: WE046
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 26/10/2011
 GPS Location: GDA94 (Zone 50) 337940E 6743315N
 Community: 1b
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: SW
 Soil Type: Sandy Loam
 Soil Colour: Grey/Brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 5 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acanthocarpus canaliculatus</i>	0.2	0.4
<i>Austrostipa elegantissima</i>	0.2	0.1
<i>Desmocladius asper</i>	0.1	0.2
<i>Dianella revoluta</i>	0.1	0.1
<i>Dodonaea divaricata</i>	0.2	0.1
<i>Eucalyptus accedens</i>	9	20
<i>Gastrolobium callistachys</i>	0.4	0.2
<i>Gastrolobium plicatum</i>	1	1
<i>Glischrocaryon aureum</i>	0.1	0.2
<i>Goodenia berardiana</i>	0.1	0.2
<i>Lepidosperma tenue</i>	0.2	0.1
<i>Neurachne alopecuroidea</i>	0.1	0.3
<i>Olearia ?dampieri</i>	1	0.4
<i>Olearia rudis</i>	0.1	0.1
<i>Orthrosanthus laxus</i> var. <i>laxus</i>	0.1	0.1
<i>Ptilotus manglesii</i>	0.1	0.2
<i>Rhagodia preissii</i> subsp. <i>preissii</i>	0.3	0.1
<i>Santalum acuminatum</i>		
<i>Stenanthemum ?tridentatum</i>	0.1	0.2
<i>Stylidium torticarpum</i> (3)	0.1	0.1
<i>Thryptomene ?racemulosa</i>	0.6	0.2
<i>Velleia trinervis</i>	0.1	0.1

PHOTOS



Site Name: WE047
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 27/10/2011
 GPS Location: GDA94 (Zone 50) 337721E 6743074N
 Community: 7b
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: NW
 Soil Type: Sandy Loam
 Soil Colour: Grey/Brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 5 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia comans</i>	0.6	0.1
<i>Acacia stenoptera</i>	0.3	0.2
<i>Actinotus leucocephalus</i>	0.2	0.1
<i>Allocasuarina humilis</i>	1	5
<i>Allocasuarina microstachya</i>	0.3	0.2
<i>Austrostipa compressa</i>	0.3	0.5
<i>Babingtonia camphorosmae</i>	0.4	3
<i>Banksia carlinoides</i>	0.4	0.3
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.2	0.5
<i>Banksia shuttleworthiana</i>	0.3	1
<i>Boronia cymosa</i>	0.3	0.1
<i>Burchardia congesta</i>	0.1	0.1
<i>Calothamnus sanguineus</i>	0.5	2
<i>Calytrix flavescens</i>	0.2	0.2
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.2
<i>Caustis dioica</i>	0.4	1
<i>Conostylis canteriata</i>	0.1	0.1
<i>Dampiera lindleyi</i>	0.3	0.3
<i>Darwinia speciosa</i>	0.2	0.1
<i>Daviesia incrassata</i> subsp. <i>teres</i>	0.3	0.3
<i>Daviesia nudiflora</i>	0.2	0.2
<i>Ecdeiocolea monostachya</i>	0.8	5

<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	0.5	5
<i>Gastrolobium plicatum</i>	0.2	0.3
<i>Hakea incrassata</i>	0.4	0.2
<i>Hakea lissocarpha</i>	0.4	2
<i>Hakea polyanthema</i>	0.4	0.2
<i>Hakea spathulata</i>	0.2	0.4
<i>Harperia lateriflora</i>	0.1	0.1
<i>Hibbertia crassifolia</i>	0.4	0.5
<i>Hibbertia hypericoides</i>	0.4	2
<i>Hypocalymma hirsutum</i>	0.2	0.3
<i>Jacksonia hakeoides</i>	0.4	0.4
<i>Jacksonia nutans</i>	0.3	0.3
<i>Laxmannia omnifertilis</i>	0.2	0.1
<i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i>	0.1	0.1
<i>Leptospermum spinescens</i>	0.4	0.2
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.5	0.4
<i>Lobelia rhytidosperma</i>	0.1	0.1
<i>Melaleuca</i> aff. <i>leuropoma</i>	1	10
<i>Melaleuca leuropoma</i>	0.4	0.2
<i>Melaleuca trichophylla</i>	0.2	3
<i>Mesomelaena pseudostygia</i>	0.3	0.3
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.1	0.2
<i>Petrophile brevifolia</i>	0.4	0.2
<i>Petrophile macrostachya</i>	0.4	0.5
<i>Petrophile scabriuscula</i>	0.3	0.1
<i>Ptilotus manglesii</i>	0.1	0.1
<i>Scaevola canescens</i>	0.1	0.1
<i>Schoenus brevisetis</i>	0.2	0.2
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Stenanthemum intricatum</i>	0.1	0.2
<i>Stylidium purpureum</i> ms	0.2	0.1
<i>Thryptomene</i> ? <i>racemulosa</i>	0.4	3
<i>Thysanotus thyrsoideus</i>	0.3	0.1
<i>Verticordia laciniata</i>	0.3	0.1
<i>Verticordia pennigera</i>	0.3	0.3

PHOTOS



Site Name: WE048
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 27/10/2011
 GPS Location: GDA94 (Zone 50) 332775E 6744405N
 Community: 10
 Landform Type: Upper Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: SE
 Soil Type: Sand over laterite (other)
 Soil Colour: Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 7 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia auronitens</i>	0.3	0.1
<i>Acanthocarpus</i> sp. Ajana (C.A. Gardner 8596)	0.3	0.1
<i>Actinotus leucocephalus</i>	0.1	0.1
<i>Allocasuarina microstachya</i>	0.4	1
<i>Amphipogon caricinus</i>	0.2	0.1
<i>Austrostipa macalpinei</i>	0.2	0.1
<i>Babingtonia camphorosmae</i>	0.6	0.1
<i>Banksia carlinoides</i>	0.5	0.2
<i>Banksia fraseri</i> var. ? <i>fraseri</i>	0.6	0.1
<i>Banksia shuttleworthiana</i>	0.6	3
<i>Boronia cymosa</i>	0.3	0.1
<i>Burchardia congesta</i>	0.3	0.1
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	1	1
<i>Calothamnus sanguineus</i>	0.6	0.3
<i>Cassytha flava</i>		0.1
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Conospermum boreale</i> subsp. ? <i>ascendens</i>	0.6	0.2
<i>Conostylis dielsii</i> subsp. <i>dielsii</i>	0.1	0.1
<i>Cristonia biloba</i>	0.6	0.1
<i>Cryptandra myriantha</i>	0.3	0.1
<i>Dampiera spicigera</i>	0.3	0.1
<i>Daviesia divaricata</i> subsp. <i>divaricata</i> ms	0.6	0.1

<i>Daviesia hakeoides</i> subsp. <i>subnuda</i>	0.5	0.1
<i>Daviesia nudiflora</i>	0.5	0.1
<i>Daviesia pedunculata</i>	0.3	0.1
<i>Drosera</i> ? <i>menziesii</i>	0.3	0.1
<i>Ecdeiocolea monostachya</i>	0.6	25
<i>Eremaea violacea</i> subsp. <i>violacea</i>	0.4	0.1
<i>Gastrolobium plicatum</i>	0.6	0.1
<i>Geleznovia verrucosa</i>	0.6	0.1
<i>Grevillea shuttleworthiana</i> subsp. <i>canarina</i>	0.6	0.1
<i>Hakea cygna</i> subsp. <i>cygna</i>	1	0.2
<i>Hakea incrassata</i>	0.4	0.5
<i>Hakea lissocarpha</i>	0.6	0.1
<i>Hibbertia hypericoides</i>	0.4	2
<i>Isotoma hypocrateriformis</i>	0.1	0.1
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.1
<i>Lepidosperma brunonianum</i> sens. <i>lat.</i>	0.3	0.1
<i>Leptospermum oligandrum</i>	0.6	0.1
<i>Levenhookia stipitata</i>	0.05	0.1
<i>Melaleuca aspalathoides</i>	0.6	2
<i>Melaleuca leuropoma</i>	0.5	15
<i>Mesomelaena pseudostygia</i>	0.3	1
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (3)	0.3	4
<i>Neurachne alopecuroidea</i>	0.2	0.1
<i>Opercularia vaginata</i>	0.3	0.1
<i>Pileanthus filifolius</i>	0.4	0.1
<i>Pimelea angustifolia</i>	0.3	0.1
<i>Pterochaeta paniculata</i>	0.05	0.1
<i>Scaevola canescens</i>	0.3	0.1
<i>Stylidium repens</i>	0.1	0.1
<i>Verticordia grandis</i>	0.6	0.2
<i>Waitzia acuminata</i> var. <i>acuminata</i>	0.1	0.1
<i>Waitzia suaveolens</i> var. <i>suaveolens</i>	0.05	0.1

PHOTOS



Site Name: WE049
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 26/10/2011
 GPS Location: GDA94 (Zone 50) 333274E 6744400N
 Community: 13a
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: SE
 Soil Type: Sand
 Soil Colour: Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 7 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i>	0.6	0.1
<i>Allocasuarina humilis</i>	1	3
<i>Anigozanthos humilis</i> subsp. <i>humilis</i>	0.3	0.1
<i>Austrostipa macalpinei</i>	0.3	0.1
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.3	0.1
<i>Banksia scabrella</i> (4)	0.8	1
<i>Banksia sessilis</i> var. <i>flabellifolia</i>	1.5	5
<i>Beaufortia elegans</i>	1	0.1
<i>Burchardia congesta</i>	0.3	0.1
<i>Calothamnus sanguineus</i>	1	3
<i>Calytrix sapphirina</i>	0.6	0.1
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Caustis dioica</i>	0.3	0.1
<i>Conostephium preissii</i>	0.3	0.1
<i>Conostylis aculeata</i> subsp. <i>breviflora</i>	0.3	0.1
<i>Conostylis canteriata</i>	0.3	0.1
<i>Daviesia nudiflora</i>	6	0.1
<i>Desmocladius asper</i>	0.3	0.1
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	1	3
<i>Eremaea ectadioclada</i>	0.6	0.1
<i>Eucalyptus todtiana</i>	3	1
<i>Gompholobium tomentosum</i>	0.4	0.1

<i>Goodenia coerulea</i>	0.3	0.1
<i>Hakea psilorrhyncha</i>	2	0.3
<i>Hakea trifurcata</i>	1	0.1
<i>Hibbertia crassifolia</i>	0.3	0.1
<i>Hibbertia hypericoides</i>	0.6	1
<i>Hibbertia subvaginata</i>	0.6	0.1
<i>Hypocalymma hirsutum</i>	0.4	0.1
<i>Jacksonia hakeoides</i>	1	4
<i>Lasiopetalum drummondii</i>	0.6	0.1
<i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i>	0.1	0.1
<i>Leptospermum spinescens</i>	0.6	0.1
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.6	0.1
<i>Leucopogon</i> sp. Northern ciliate (R. Davis 3393)	0.5	0.1
<i>Levenhookia octomaculata</i>	0.05	0.1
<i>Lomandra hastilis</i>	0.6	0.1
<i>Lyginia imberbis</i>	0.3	0.1
<i>Macrozamia fraseri</i>	2	1
<i>Melaleuca leuropoma</i>	0.5	10
<i>Melaleuca</i> aff. <i>leuropoma</i>	1	20
<i>Nuytsia floribunda</i>	0.6	0.1
<i>Patersonia occidentalis</i>	0.3	0.1
<i>Petrophile scabriuscula</i>	1	0.1
<i>Pimelea leucantha</i>	0.6	0.1
<i>Podotrochea gnaphalioides</i>	0.3	0.1
<i>Quoya verbascina</i>	0.4	0.1
<i>Schoenus brevisetis</i>	0.1	0.1
<i>Schoenus curvifolius</i>	0.3	0.1
<i>Scholtzia laxiflora</i>	0.8	1
<i>Stachystemon axillaris</i>	1	0.1
<i>Stenanthemum notiale</i> subsp. <i>notiale</i>	0.4	0.1
<i>Stylidium crossocephalum</i>	0.1	0.1
<i>Stylidium repens</i>	0.1	0.1
<i>Stylidium rigidulum</i>	0.1	0.1
<i>Trachymene pilosa</i>	0.05	0.1
<i>Verticordia laciniata</i>	0.8	0.1

PHOTOS



Site Name: WE050
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 27/10/2011
 GPS Location: GDA94 (Zone 50) 333605E 6744182N
 Community: 13b
 Landform Type: Drainage Line
 Slope Class: Very Gently Inclined (1 degree)
 Aspect: SW
 Soil Type: Sand
 Soil Colour: Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 7 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia dilatata</i>	0.3	0.1
<i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i>	1	0.1
<i>Allocasuarina humilis</i>	1	2
<i>Babingtonia camphorosmae</i>	0.5	2
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.3	0.1
<i>Banksia scabrella</i> (4)	1	20
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	1	15
<i>Calothamnus sanguineus</i>	1	1
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Conostylis aculeata</i> subsp. <i>breviflora</i>	0.3	0.1
<i>Dampiera lindleyi</i>	0.3	2
<i>Daviesia oxyclada</i>	0.3	0.1
<i>Desmocladius asper</i>	0.3	0.1
<i>Drosera</i> ? <i>menziesii</i>	0.1	0.1
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	1	1
<i>Eucalyptus todtiana</i>	2	5
<i>Gompholobium tomentosum</i>	0.8	0.1
<i>Goodenia coerulea</i>	0.3	0.5
<i>Hakea lissocarpha</i>	0.6	3
<i>Hakea trifurcata</i>	1	1
<i>Hibbertia acerosa</i>	0.3	0.1
<i>Hibbertia crassifolia</i>	0.2	0.1

<i>Hypocalymma hirsutum</i>	0.3	0.1
<i>Isotoma hypocrateriformis</i>	0.1	0.1
<i>Lepidosperma tenue</i>	0.4	0.1
<i>Lyginia imberbis</i>	0.2	0.1
<i>Melaleuca aff.leuropoma</i>	1	25
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Petrophile megalostegia</i>	0.4	0.1
<i>Pterochaeta paniculata</i>	0.05	0.1
<i>Ptilotus manglesii</i>	0.1	0.1
<i>Siloxerus filifolius</i>	0.05	0.1
<i>Stylidium androsaceum</i>	0.05	0.1
<i>Stylidium dichotomum</i>	0.1	0.1
<i>Trachymene pilosa</i>	0.05	0.1
<i>Verticordia densiflora</i> var. <i>densiflora</i>	1	0.1
<i>Verticordia pennigera</i>	0.4	1
<i>Xanthorrhoea ?brunonis</i>	0.6	0.1

PHOTOS

Site Name: WE051
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 20/11/2011
 GPS Location: GDA94 (Zone 50) 338243E 6740745N
 Community: 7a
 Landform Type: Mid Slope
 Slope Class: Very Gently Inclined (1 degree)
 Aspect: N
 Soil Type: Clay Loam
 Soil Colour: Grey/Brown
 Rock Outcrop: Granite, No bedrock exposed
 CF Abundance: 20-50%
 Vegetation Condition: 1 - Pristine
 Fire: <5y

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1: *Melaleuca aspalathoides*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia comans</i>	0.3	0.2
<i>Allocasuarina campestris</i>	0.3	0.1
<i>Allocasuarina humilis</i>	0.4	0.1
<i>Allocasuarina microstachya</i>	0.3	1
<i>Amphipogon caricinus</i>	0.2	0.1
<i>Babingtonia camphorosmae</i>	0.2	2
<i>Banksia fraseri</i> var. ? <i>fraseri</i>	0.3	0.5
<i>Banksia shuttleworthiana</i>	0.3	0.5
<i>Boronia cymosa</i>	0.2	0.2
<i>Borya sphaerocephala</i>	0.1	10
<i>Burchardia congesta</i>	0.3	0.1
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Chorizema aciculare</i> subsp. <i>laxum</i>	0.2	0.2
<i>Conostylis androstemma</i>	0.2	0.2
<i>Cryptandra myriantha</i>	0.3	0.2
<i>Dampiera teres</i> (broad-leaf variant)	0.2	0.2
<i>Daviesia daphnoides</i>	0.5	3
<i>Daviesia oxyclada</i>	0.2	0.3
<i>Dodonaea ericoides</i>	0.2	0.3
<i>Ecdeiocolea monostachya</i>	0.4	8

<i>Gastrolobium plicatum</i>	0.3	0.2
<i>Glischrocaryon aureum</i>	0.3	0.3
<i>Goodenia hassallii</i>	0.3	0.3
<i>Goodenia trichophylla</i>	0.2	0.1
<i>Hakea auriculata</i>	0.5	4
<i>Hakea circumalata</i>	0.3	0.2
<i>Hakea incrassata</i>	0.5	3
<i>Hakea lissocarpha</i>	0.4	1
<i>Hibbertia crassifolia</i>	0.3	0.2
<i>Hibbertia hypericoides</i>	0.3	2
<i>Jacksonia restioides</i>	0.3	0.5
<i>Laxmannia omnifertilis</i>	0.1	0.1
<i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A)	0.2	3
<i>Lomandra</i> ? <i>micrantha</i> subsp. <i>micrantha</i>	0.2	0.1
<i>Melaleuca aspalathoides</i>	0.4	30
<i>Melaleuca tinkerii</i>	0.3	0.2
<i>Melaleuca trichophylla</i>	0.2	0.5
<i>Mesomelaena pseudostygia</i>	0.3	0.2
<i>Mirbelia floribunda</i>	0.1	0.1
<i>Neurachne alopecuroidea</i>	0.2	0.2
<i>Opercularia vaginata</i>	0.1	0.1
<i>Patersonia graminea</i>	0.2	0.1
<i>Petrophile brevifolia</i>	0.3	0.2
<i>Petrophile shuttleworthiana</i>	0.5	3
<i>Platysace juncea sens. lat.</i>	0.4	0.1
<i>Schoenus armeria</i>	0.2	0.5
<i>Stylidium drummondianum</i> (3)	0.1	0.1
<i>Synaphea aephynsa</i> (3)	0.2	0.2
<i>Tricoryne humilis</i>	0.1	0.1

PHOTOS



Site Name: WE052
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 20/11/2011
 GPS Location: GDA94 (Zone 50) 338542E 6741186N
 Community: 10
 Landform Type: Lower Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: N
 Soil Type: Sandy Loam
 Soil Colour: Yellow/Brown (other)
 Rock Outcrop: Granite, No bedrock exposed
 Vegetation Condition: 1 - Pristine
 Fire: >5 y

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: *Acacia blakelyi*, *Grevillea biformis* subsp. *biformis*

Lower Stratum 1: *Calothamnus quadrifidus* subsp. *angustifolius*, *Ecdeiocolea monostachya*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia auronitens</i>	0.2	0.2
<i>Acacia blakelyi</i>	2.5	3
<i>Acacia comans</i>	0.3	0.2
<i>Acanthocarpus</i> sp. Ajana (C.A. Gardner 8596)	0.3	0.2
<i>Actinotus leucocephalus</i>	0.1	0.1
<i>Astroloma serratifolium</i>	0.2	0.2
<i>Banksia shuttleworthiana</i>	0.3	2
<i>Boronia coerulescens</i> subsp. <i>spinescens</i>	0.3	0.1
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	1	15
<i>Caustis dioica</i>	0.3	0.2
<i>Conospermum boreale</i> subsp. <i>?ascendens</i>	0.2	0.1
<i>Conostylis dielsii</i> subsp. <i>dielsii</i>	0.1	0.5
<i>Cryptandra pungens</i>	0.4	0.2
<i>Cryptandra spyridioides</i>	0.1	0.1
<i>Dampiera spicigera</i>	0.3	0.2
<i>Darwinia speciosa</i>	0.2	0.1
<i>Daviesia hakeoides</i> subsp. <i>subnuda</i>	0.3	2
<i>Daviesia nudiflora</i>	0.3	0.3
<i>Daviesia pedunculata</i>	0.3	0.2
<i>Ecdeiocolea monostachya</i>	1	10

<i>Eremaea violacea</i> subsp. <i>violacea</i>	0.2	0.4
<i>Geleznovia verrucosa</i>	0.3	0.1
<i>Goodenia coerulea</i>	0.2	0.1
<i>Grevillea biformis</i> subsp. <i>biformis</i>	0.4	0.2
<i>Grevillea shuttleworthiana</i> subsp. <i>canarina</i>	0.4	0.2
<i>Hakea circumalata</i>	0.7	3
<i>Hakea polyanthema</i>	0.5	1
<i>Hibbertia crassifolia</i>	0.3	0.2
<i>Hibbertia hypericoides</i>	0.3	0.5
<i>Isopogon tridens</i>	0.4	0.2
<i>Jacksonia macrocalyx</i>	0.3	0.5
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.4	0.5
<i>Lepidosperma pubisquameum</i>	0.3	0.2
<i>Lobelia rhytidosperma</i>	0.2	0.1
<i>Logania spermacocea</i>	0.2	0.5
<i>Melaleuca leuropoma</i>	0.3	3
<i>Mesomelaena preissii</i>	0.3	0.3
<i>Mesomelaena pseudostygia</i>	0.4	4
<i>Mirbelia trichocalyx</i>	0.3	0.2
<i>Opercularia vaginata</i>	0.2	0.3
<i>Patersonia graminea</i>	0.2	0.1
<i>Pileanthus filifolius</i>	0.3	0.4
<i>Scaevola canescens</i>	0.1	0.1
<i>Schoenus brevisetis</i>	0.3	3
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Scholtzia laxiflora</i>	0.5	5
<i>Stenanthemum</i> aff. <i>notiale</i> subsp. <i>notiale</i>	0.2	0.2
<i>Stylidium adpressum</i>	0.1	0.1
<i>Thysanotus thyrsoideus</i>	0.2	0.1

PHOTOS



Site Name: WE053
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 27/10/2011
 GPS Location: GDA94 (Zone 50) 338317E 6743302N
 Community: 11
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: NW
 Soil Type: Sandy Loam
 Soil Colour: Brown/Yellow (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 5 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Actinotus leucocephalus</i>	0.1	0.1
<i>Allocasuarina campestris</i>	1.5	15
<i>Amphipogon caricinus</i>	0.3	0.1
<i>Austrostipa compressa</i>	0.3	0.1
<i>Baeckea grandiflora</i>	0.3	0.2
<i>Boronia coerulescens</i> subsp. <i>spinescens</i>	0.4	0.3
<i>Boronia cymosa</i>	0.2	0.1
<i>Borya sphaerocephala</i>	0.1	0.1
<i>Burchardia congesta</i>	0.3	0.1
<i>Calothamnus longissimus</i>	0.5	0.5
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	1	8
<i>Dampiera spicigera</i>	0.2	0.1
<i>Daviesia nudiflora</i>	0.4	0.5
<i>Daviesia ?umbonata</i>	0.3	0.2
<i>Ecdeiocolea monostachya</i>	1	4
<i>Eucalyptus conveniens</i>	3	5
<i>Eucalyptus pyriformis</i>	1.5	4
<i>Eucalyptus sp. (unidentified 2)</i>	1.5	5
<i>Gastrolobium spinosum</i>	0.5	1
<i>Grevillea biformis</i> subsp. <i>biformis</i>	0.2	0.1
<i>Hakea circumalata</i>	0.4	0.5
<i>Hyalosperma cotula</i>	0.1	0.1

<i>Isotoma hypocrateriformis</i>	0.2	0.2
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.3
<i>Lobelia rhytidosperma</i>	0.1	0.1
<i>Logania spermacocea</i>	0.3	0.4
<i>Melaleuca leuropoma</i>	0.3	0.3
<i>Melaleuca radula</i>	0.8	1
<i>Mesomelaena pseudostygia</i>	0.3	0.3
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (3)	0.2	0.5
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.1	0.1
<i>Patersonia graminea</i>	0.3	0.1
<i>Ptilotus stirlingii</i>	0.2	0.1
<i>Scaevola canescens</i>	0.1	0.2
<i>Schoenus clandestinus</i>	0.1	0.2
<i>Stenanthemum</i> aff. <i>notiale</i> subsp. <i>notiale</i>	0.1	0.1
<i>Thryptomene ?racemulosa</i>	0.4	0.2
<i>Thysanotus dichotomus</i>	0.3	0.5
<i>Thysanotus patersonii</i>		0.1
<i>Tricoryne humilis</i>	0.2	0.1

PHOTOS

Site Name: WE054
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 20/11/2011
 GPS Location: GDA94 (Zone 50) 338533E 6741392N
 Community: 13a
 Landform Type: Lower Slope
 Slope Class: Very Gently Inclined (1 degree)
 Aspect: S
 Soil Type: Sand
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: <5 y

DOMINANT TAXA IN VEGETATION STRATAUpper Stratum 1: *Eucalyptus todtiana*Lower Stratum 1: *Allocasuarina humilis*, *Calothamnus sanguineus*, *Hakea trifurcata***SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i>	1	5
<i>Acacia stenoptera</i>	0.4	0.1
<i>Actinotus leucocephalus</i>	0.1	0.1
<i>Allocasuarina humilis</i>	1	6
<i>Anigozanthos humilis</i> subsp. <i>humilis</i>	0.2	0.1
<i>Austrostipa hemipogon</i>	1	0.2
<i>Babingtonia camphorosmae</i>	0.2	0.3
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.2	0.5
<i>Banksia scabrella</i> (4)	1	4
<i>Banksia shuttleworthiana</i>	0.3	0.3
<i>Boronia ramosa</i> subsp. <i>anethifolia</i>	0.4	0.2
<i>Burchardia congesta</i>	0.2	0.1
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	1.3	1.5
<i>Calothamnus sanguineus</i>	1.5	12
<i>Calytrix sapphirina</i>	0.4	0.5
<i>Cassytha ?pomiformis</i>		0.3
<i>Caustis dioica</i>	0.2	0.5
<i>Chordifex sinuosus</i>	0.3	0.2
<i>Conostylis aculeata</i> subsp. <i>breviflora</i>	0.2	0.4

<i>Conostylis canteriata</i>	0.2	0.2
<i>Conostylis hiemalis</i>	0.2	0.1
<i>Cryptandra myriantha</i>	0.2	0.2
<i>Daviesia incrassata</i> subsp. <i>teres</i>	0.4	0.4
<i>Daviesia nudiflora</i>	0.3	0.1
<i>Desmocladus parthenicus</i>	0.2	0.1
<i>Desmocladus semiplanus</i>	0.1	0.1
<i>Diplopeltis huegelii</i> subsp. <i>lehmannii</i>	0.4	0.2
<i>Eremaea beaufortoides</i> var. <i>microphylla</i>	0.4	2
<i>Eremaea ectadioclada</i>	0.4	1
<i>Eucalyptus todtiana</i>	2.5	5
<i>Gompholobium tomentosum</i>	0.4	1
<i>Gonocarpus pithyoides</i>		
<i>Goodenia coerulea</i>	0.2	0.1
<i>Hakea prostrata</i>		
<i>Hakea trifurcata</i>	1.2	7
<i>Hibbertia acerosa</i>	0.3	0.2
<i>Hibbertia crassifolia</i>	0.4	0.5
<i>Hibbertia huegelii</i>	0.3	0.2
<i>Hibbertia subvaginata</i>	0.4	0.2
<i>Jacksonia sternbergiana</i>		
<i>Lambertia multiflora</i> var. <i>multiflora</i>	1	2
<i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i>	0.1	0.1
<i>Lechenaultia hirsuta</i>	0.2	0.1
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.3	0.1
<i>Leucopogon</i> sp. Northern ciliate (R. Davis 3393)	0.2	0.2
<i>Lyginia imberbis</i>	0.3	0.2
<i>Melaleuca leuropoma</i>	0.4	4
<i>Mesomelaena pseudostygia</i>	0.3	0.3
<i>Neurachne alopecuroidea</i>	0.3	0.1
<i>Opercularia vaginata</i>	0.1	0.1
<i>Patersonia occidentalis</i>	0.3	0.2
<i>Pimelea leucantha</i>	0.4	0.2
<i>Podotheca gnaphalioides</i>	0.1	0.1
<i>Quoya verbascina</i>	0.3	0.1
<i>Scaevola phlebopetala</i>	0.2	0.1
<i>Scholtzia laxiflora</i>	0.4	4
<i>Stachystemon axillaris</i>	0.4	0.2
<i>Stylidium repens</i>	0.1	0.1
<i>Tricoryne elatior</i>	0.4	0.1
<i>Xanthosia huegelii</i>	0.1	0.1

PHOTOS



Site Name: WE055
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 21/11/2011
 GPS Location: GDA94 (Zone 50) 337740E 6739893N
 Community: 7a
 Landform Type: Upper Slope
 Slope Class: Very Gently Inclined (1 degree)
 Aspect: N
 Soil Type: Clay Loam
 Soil Colour: Pale Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 50-90%
 Vegetation Condition: 1 - Pristine
 Fire: <5 years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: *Allocasuarina campestris*, *Gastrolobium plicatum*

Lower Stratum 1: *Melaleuca aspalathoides*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia comans</i>	0.4	0.4
<i>Allocasuarina campestris</i>	1.5	4
<i>Allocasuarina humilis</i>	0.4	0.2
<i>Allocasuarina microstachya</i>	0.3	0.5
<i>Astroloma microdonta</i>	0.2	0.1
<i>Babingtonia camphorosmae</i>	0.2	2
<i>Banksia fraseri</i> var. ? <i>fraseri</i>	0.3	1
<i>Banksia shuttleworthiana</i>	0.3	0.5
<i>Boronia cymosa</i>	0.3	0.2
<i>Caladenia flava</i>	0.2	0.1
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	0.3	0.1
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Cassytha</i> ? <i>pomiformis</i>		0.2
<i>Caustis dioica</i>	0.2	0.2
<i>Chordifex sinuosus</i>	0.2	0.1
<i>Chorizema aciculare</i> subsp. <i>laxum</i>	0.1	0.2
<i>Conostylis androstemma</i>	0.2	0.1
<i>Cryptandra myriantha</i>	0.3	0.2
<i>Daviesia daphnoides</i>	0.4	3

<i>Daviesia pedunculata</i>	0.2	0.3
<i>Dodonaea ericoides</i>	0.2	0.2
<i>Ecdeiocolea monostachya</i>	0.4	10
<i>Gastrolobium plicatum</i>	1.2	3
<i>Glischrocaryon aureum</i>	0.3	0.5
<i>Goodenia trichophylla</i>	0.2	0.1
<i>Hakea auriculata</i>	1	4
<i>Hakea incrassata</i>	0.4	4
<i>Hakea lissocarpha</i>	0.3	0.3
<i>Hibbertia crassifolia</i>	0.3	0.4
<i>Hibbertia hypericoides</i>	0.3	5
<i>Hypocalymma hirsutum</i>	0.2	0.1
<i>Jacksonia restioides</i>	0.2	0.2
<i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A)	0.2	0.2
<i>Leptomeria empetriformis</i>	0.2	0.1
<i>Melaleuca aspalathoides</i>	0.3	40
<i>Melaleuca trichophylla</i>	0.2	0.2
<i>Mesomelaena pseudostygia</i>	0.3	0.5
<i>Mesomelaena tetragona</i>	0.2	0.1
<i>Neurachne alopecuroidea</i>	0.2	0.1
<i>Opercularia vaginata</i>	0.1	0.1
<i>Paracaleana dixonii</i> (T)	0.1	0.1
<i>Persoonia filiformis</i> (2)	0.2	0.1
<i>Petrophile brevifolia</i>	0.3	0.2
<i>Petrophile chrysantha</i>	0.6	2
<i>Schoenus brevisetis</i>	0.2	0.2
<i>Schoenus clandestinus</i>	0.1	3
<i>Stylidium drummondianum</i> (3)	0.2	0.1
<i>Synaphea aephyrsa</i> (3)	0.1	0.1
<i>Verticordia chrysanthella</i>	0.3	0.2
<i>Verticordia pennigera</i>	0.4	0.2

PHOTOS



Site Name: WE056
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 21/11/2011
 GPS Location: GDA94 (Zone 50) 337715E 6740616N
 Community: 8
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: N
 Soil Type: Clay Loam
 Soil Colour: Pale Brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 50-90%
 Vegetation Condition: 1 - Pristine
 Fire: <5 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: *Eucalyptus conveniens*

Lower Stratum 1: *Gastrolobium plicatum*, *Melaleuca aspalathoides*, *Melaleuca radula*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina campestris</i>	1	4
<i>Allocasuarina grevilleoides</i> (3)	0.3	0.5
<i>Baeckea grandiflora</i>	0.2	0.1
<i>Banksia fraseri</i> var. ? <i>fraseri</i>	0.3	1
<i>Boronia cymosa</i>	0.2	0.1
<i>Calothamnus longissimus</i>	0.3	4
<i>Cassytha glabella</i> forma <i>bicallosa</i>	0.1	0.1
<i>Conostylis androstemma</i>	0.2	0.1
<i>Cryptandra myriantha</i>	0.2	0.4
<i>Cryptandra pungens</i>	0.4	0.3
<i>Dampiera lindleyi</i>	0.2	0.2
<i>Daviesia hakeoides</i> subsp. <i>subnuda</i>	0.4	1
<i>Dodonaea ericoides</i>	0.2	0.3
<i>Ecdeiocolea monostachya</i>	0.4	8
<i>Eucalyptus conveniens</i>	3.5	15
<i>Gastrolobium plicatum</i>	0.5	5
<i>Gastrolobium spinosum</i>	1	0.5
<i>Glischrocaryon aureum</i>	0.3	0.3
<i>Gompholobium marginatum</i>	0.1	0.1

<i>Guichenotia micrantha</i>	0.3	0.1
<i>Hakea auriculata</i>	0.4	3
<i>Hakea circumalata</i>	0.5	4
<i>Hakea lissocarpha</i>	0.4	1
<i>Hibbertia spicata</i> subsp. <i>spicata</i>	0.3	0.2
<i>Lepidosperma</i> sp. A2 Inland Flat (G.J. Keighery 7000)	0.3	0.3
<i>Lepidosperma tenue</i>	0.2	0.2
<i>Melaleuca aspalathoides</i>	0.3	10
<i>Melaleuca radula</i>	1	10
<i>Mesomelaena preissii</i>	0.2	0.4
<i>Neurachne alopecuroidea</i>	0.2	0.1
<i>Opercularia vaginata</i>	0.2	0.1
<i>Patersonia graminea</i>	0.3	0.1
<i>Petrophile chrysantha</i>	0.4	0.2
<i>Petrophile shuttleworthiana</i>	0.4	0.4
<i>Polianthion wichurae</i>	0.4	0.2
<i>Schoenus armeria</i>	0.1	0.5
<i>Schoenus clandestinus</i>	0.1	1
<i>Stylidium drummondianum</i> (3)	0.1	0.1

PHOTOS

Site Name: WE057
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 21/11/2011
 GPS Location: GDA94 (Zone 50) 337724E 6741008N
 Community: 10
 Landform Type: Lower Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: NW
 Soil Type: Sandy Loam
 Soil Colour: Yellow/Brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: < 5 years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: *Grevillea biformis* subsp. *biformis*, *Grevillea eriostachya*
 Lower Stratum 1: *Daviesia divaricata* subsp. *divaricata* ms, *Ecdeiocolea monostachya*,
Melaleuca leuropoma

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia auronitens</i>	0.2	0.2
<i>Acacia comans</i>	0.4	0.3
<i>Acanthocarpus</i> sp. Ajana (C.A. Gardner 8596)	0.2	0.3
? <i>Amphipogon</i> sp.	0.1	0.1
<i>Astroloma serratifolium</i>	0.2	0.2
<i>Banksia shuttleworthiana</i>	0.3	0.5
<i>Boronia cymosa</i>	0.2	0.2
<i>Burchardia congesta</i>	0.2	0.1
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	0.4	1
<i>Cassytha</i> ? <i>pomiformis</i>		0.1
<i>Conospermum boreale</i> subsp. ? <i>ascendens</i>	0.5	0.3
<i>Conostylis dielsii</i> subsp. <i>dielsii</i>	0.1	3
<i>Cryptandra myriantha</i>	0.2	0.1
<i>Cryptandra pungens</i>	0.4	0.1
<i>Cryptandra spyridioides</i>	0.2	0.1
<i>Dampiera spicigera</i>	0.2	0.1
<i>Daviesia divaricata</i> subsp. <i>divaricata</i> ms	0.5	6
<i>Daviesia nudiflora</i>	0.3	0.2

<i>Daviesia pedunculata</i>	0.3	0.5
<i>Ecdeiocolea monostachya</i>	0.5	15
<i>Goodenia coerulea</i>	0.2	0.1
<i>Grevillea biformis</i> subsp. <i>biformis</i>	1.6	0.5
<i>Grevillea eriostachya</i>	1.6	1.5
<i>Hakea circumalata</i>	0.5	3
<i>Hakea polyanthema</i>	0.5	3
<i>Hibbertia crassifolia</i>	0.3	0.2
<i>Hibbertia hypericoides</i>	0.3	1
<i>Isopogon tridens</i>	0.4	0.2
<i>Jacksonia macrocalyx</i>	0.3	0.1
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	2
<i>Leptospermum oligandrum</i>	1.2	5
<i>Leptospermum spinescens</i>	0.2	0.2
<i>Melaleuca leuropoma</i>	0.4	8
<i>Mesomelaena preissii</i>	0.3	0.5
<i>Mesomelaena pseudostygia</i>	0.4	6
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.2	0.5
<i>Patersonia graminea</i>	0.2	0.1
<i>Pileanthus filifolius</i>	0.4	0.5
<i>Pimelea angustifolia</i>	0.3	0.2
<i>Scaevola canescens</i>	0.2	0.3
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Scholtzia laxiflora</i>	0.4	4
<i>Stenanthemum</i> aff. <i>notiale</i> subsp. <i>notiale</i>	0.3	0.2
<i>Stylidium adpressum</i>	0.1	0.1
<i>Stylidium repens</i>	0.1	0.1
<i>Thysanotus dichotomus</i>	0.3	0.2
<i>Tricoryne elatior</i>	0.3	0.2
<i>Verticordia grandis</i>	0.3	0.4

PHOTOS



Site Name: WE058
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 21/11/2011
 GPS Location: GDA94 (Zone 50) 338117E 6741992N
 Community: 7a
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: S
 Soil Type: Clay Loam
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: <5 years

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1: *Melaleuca aspalathoides, Melaleuca tinkeri*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia comans</i>	0.4	2
<i>Allocasuarina campestris</i>	0.4	0.1
<i>Allocasuarina humilis</i>	0.3	0.5
<i>Allocasuarina microstachya</i>	0.3	1
<i>Amphipogon caricinus</i>	0.1	0.1
<i>Babingtonia camphorosmae</i>	0.2	3
<i>Banksia fraseri</i> var. ? <i>fraseri</i>	0.3	0.5
<i>Boronia cymosa</i>	0.3	1
<i>Borya sphaerocephala</i>	0.1	0.3
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Conostylis androstemma</i>	0.2	0.4
<i>Cryptandra myriantha</i>	0.3	0.4
<i>Cryptandra pungens</i>	0.3	0.5
<i>Daviesia daphnoides</i>	0.3	0.5
<i>Daviesia oxyclada</i>	0.3	1
<i>Dodonaea ericoides</i>	0.2	0.3
<i>Ecdeiocolea monostachya</i>	0.4	3
<i>Glischrocaryon aureum</i>	0.4	4
<i>Grevillea umbellulata</i>	0.3	0.2
<i>Guichenotia sarotes</i>	0.4	0.2

<i>Hakea circumalata</i>	0.4	0.5
<i>Hakea incrassata</i>	0.4	4
<i>Hakea lissocarpha</i>	0.3	4
<i>Hakea spathulata</i>	0.3	2
<i>Hibbertia crassifolia</i>	0.3	0.4
<i>Hibbertia hypericoides</i>	0.3	1
<i>Hypocalymma hirsutum</i>	0.2	0.1
<i>Isopogon divergens</i>	0.4	0.5
<i>Jacksonia angulata</i>	0.3	0.5
<i>Jacksonia restioides</i>	0.3	0.2
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.4	0.5
<i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A)	0.2	0.4
<i>Lepidosperma tenue</i>	0.4	0.3
<i>Leucopogon leptanthus</i>	0.3	0.2
<i>Leucopogon</i> sp. Yandanooka (M. Hislop 2507)	0.2	0.5
<i>Melaleuca aspalathoides</i>	0.3	20
<i>Melaleuca radula</i>	0.4	0.3
<i>Melaleuca tinkeri</i>	0.3	0.7
<i>Melaleuca trichophylla</i>	0.2	0.5
<i>Mesomelaena preissii</i>	0.2	0.2
<i>Mirbelia floribunda</i>	0.1	0.2
<i>Neurachne alopecuroidea</i>	0.2	0.1
<i>Opercularia vaginata</i>	0.2	0.2
<i>Petrophile brevifolia</i>	0.3	0.2
<i>Petrophile chrysantha</i>	0.4	0.5
<i>Schoenus brevisetis</i>	0.2	0.2
<i>Schoenus clandestinus</i>	0.1	2
<i>Stylidium dichotomum</i>	0.1	0.1
<i>Verticordia pennigera</i>	0.2	0.2

PHOTOS



Site Name: WE059
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 21/11/2011
 GPS Location: GDA94 (Zone 50) 338107E 6742291N
 Community: 8
 Landform Type: Breakaway (other)
 Slope Class: Steep (23 degrees)
 Aspect: E
 Soil Type: Clay Loam
 Soil Colour: Grey
 Rock Outcrop: Laterite, 10-20% bedrock exposed
 CF Abundance: 50-90%
 Vegetation Condition: 1 - Pristine
 Fire: < 5 years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: *Melaleuca concreta*, *Melaleuca radula*

Lower Stratum 1: *Melaleuca tinkeri*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia acuarria</i>	0.3	0.3
<i>Acacia dilatata</i>	0.2	0.3
<i>Allocasuarina campestris</i>	0.4	0.1
<i>Amphipogon caricinus</i>	0.1	0.1
<i>Banksia fraseri</i> var. ? <i>fraseri</i>	0.4	5
<i>Boronia cymosa</i>	0.2	0.1
<i>Calothamnus longissimus</i>	0.3	1
<i>Cassytha ?pomiformis</i>		1
<i>Conostylis androstemma</i>	0.2	0.1
<i>Cryptandra myriantha</i>	0.3	0.4
<i>Cryptandra pungens</i>	0.3	0.1
<i>Dampiera lindleyi</i>	0.3	0.5
<i>Daviesia hakeoides</i> subsp. <i>subnuda</i>	0.4	0.5
<i>Dodonaea ericoides</i>	0.3	1
<i>Ecdeiocolea monostachya</i>	0.4	5
<i>Gastrolobium plicatum</i>	0.5	5
<i>Glischrocaryon aureum</i>	0.3	0.2
<i>Gompholobium marginatum</i>	0.2	0.1
<i>Grevillea umbellulata</i>	0.3	0.2

<i>Hakea auriculata</i>	0.4	0.4
<i>Hakea lissocarpha</i>	0.3	0.2
<i>Hakea spathulata</i>	0.3	0.4
<i>Hakea trifurcata</i>	0.4	0.5
<i>Hibbertia hypericoides</i>	0.3	2
<i>Lepidosperma</i> sp. A2 Inland Flat (G.J. Keighery 7000)	0.2	0.2
<i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A)	0.2	0.1
<i>Lepidosperma tenue</i>	0.4	2
<i>Melaleuca concreta</i>	1.2	5
<i>Melaleuca radula</i>	1	15
<i>Melaleuca tinkerii</i>	0.3	15
<i>Micromyrtus rogeri</i> (1)	0.3	3
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.2	0.4
<i>Patersonia graminea</i>	0.3	0.5
* <i>Pentameris airoides</i> subsp. <i>airoides</i>	0.1	0.1
<i>Petrophile shuttleworthiana</i>	0.4	0.2
<i>Podotrochea gnaphalioides</i>	0.2	0.1
<i>Schoenus armeria</i>	0.2	0.2
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Stylidium drummondianum</i> (3)	0.2	0.1
<i>Thysanotus</i> sp.	0.1	0.1

PHOTOS



Site Name: WE060
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 21/11/2011
 GPS Location: GDA94 (Zone 50) 338707E 6746507N
 Community: 13a
 Landform Type: Lower Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: E
 Soil Type: Sandy Loam
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 5 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: *Eucalyptus todtiana*

Lower Stratum 1: *Allocasuarina humilis*, *Calothamnus sanguineus*, *Hibbertia hypericoides*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i>	1	1
<i>Acacia stenoptera</i>	0.3	0.2
<i>Allocasuarina humilis</i>	1	8
<i>Amphipogon turbinatus</i>	0.2	0.1
<i>Anigozanthos humilis</i> subsp. <i>humilis</i>	0.1	0.1
<i>Babingtonia camphorosmae</i>	0.2	1
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.2	1
<i>Banksia scabrella</i> (4)	0.5	1
<i>Banksia sessilis</i> var. <i>flabellifolia</i>	1.3	0.5
<i>Beaufortia elegans</i>	0.5	3
<i>Boronia ramosa</i> subsp. <i>anethifolia</i>	0.2	0.1
<i>Calectasia narragara</i>	0.1	0.2
<i>Calothamnus sanguineus</i>	1	8
<i>Calytrix sapphirina</i>	0.5	0.5
<i>Cassytha</i> ? <i>pomiformis</i>		0.3
<i>Caustis dioica</i>	0.3	0.3
<i>Chordifex sinuosus</i>	0.1	0.1
<i>Comesperma acerosum</i>	0.3	0.1
<i>Conostylis aculeata</i> subsp. <i>breviflora</i>	0.1	0.1

<i>Conostylis canteriata</i>	0.1	0.2
<i>Conostylis hiemalis</i>	0.1	0.1
<i>Daviesia incrassata</i> subsp. <i>teres</i>	0.3	0.2
<i>Desmocladius parthenicus</i>	0.3	0.2
<i>Desmocladius semiplanus</i>	0.2	0.1
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	0.4	1
<i>Eremaea ectadioclada</i>	0.3	2
<i>Eucalyptus todtiana</i>	6	8
<i>Gompholobium tomentosum</i>	0.5	0.5
<i>Goodenia coerulea</i>	0.4	0.2
<i>Hakea trifurcata</i>	0.8	2
<i>Hibbertia acerosa</i>	0.1	0.1
<i>Hibbertia crassifolia</i>	0.3	0.2
<i>Hibbertia hypericoides</i>	0.5	10
<i>Hibbertia subvaginata</i>	0.3	0.2
<i>Hovea pungens</i>	0.5	0.2
<i>Lasiopetalum drummondii</i>	0.4	0.5
<i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i>	0.1	0.1
<i>Lechenaultia hirsuta</i>	0.2	0.2
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.5	1
<i>Lomandra hastilis</i>	0.5	0.3
<i>Lyginia imberbis</i>	0.2	0.2
<i>Lysinema pentapetalum</i>	0.5	0.2
<i>Melaleuca leuropoma</i>	0.4	5
<i>Melaleuca</i> aff. <i>leuropoma</i>	0.5	0.3
<i>Mesomelaena pseudostygia</i>	0.4	0.5
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Nuytsia floribunda</i>	1.8	0.5
<i>Opercularia vaginata</i>	0.2	0.3
<i>Patersonia occidentalis</i>	0.4	0.5
<i>Pileanthus filifolius</i>	0.4	0.4
<i>Quoya verbascina</i>	0.5	0.3
<i>Schoenus brevisetis</i>	0.2	0.1
<i>Schoenus insolitus</i>	0.3	0.2
<i>Stenanthemum</i> aff. <i>notiale</i> subsp. <i>notiale</i>	0.3	0.1
<i>Stylidium repens</i>	0.1	0.1
<i>Stylidium rigidulum</i>	0.1	0.1

PHOTOS



Site Name: WE061
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 21/11/2011
 GPS Location: GDA94 (Zone 50) 337389E 6746455N
 Community: 8
 Landform Type: Breakaway slope (other)
 Slope Class: Moderately Inclined (10 degrees)
 Aspect: E
 Soil Type: Clay Loam
 Soil Colour: Pale Brown (other)
 Rock Outcrop: Laterite, >2% bedrock exposed
 CF Abundance: 20-50%
 Vegetation Condition: 1 - Pristine
 Fire: > 5 years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: *Allocasuarina campestris*, *Melaleuca concreta*

Lower Stratum 1: *Melaleuca tinkerii*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina campestris</i>	1.5	6
<i>Amphipogon caricinus</i>	0.1	0.2
<i>Babingtonia camphorosmae</i>	0.1	0.3
<i>Banksia fraseri</i> var. <i>?fraseri</i>	0.2	0.3
<i>Borya sphaerocephala</i>	0.1	0.3
<i>Caladenia flava</i>	0.4	1
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Conostylis androstemma</i>	0.1	0.3
<i>Conostylis dielsii</i> subsp. <i>dielsii</i>	0.1	0.1
<i>Cryptandra myriantha</i>	0.3	0.2
<i>Dampiera lindleyi</i>	0.3	0.2
<i>Dodonaea ericoides</i>	0.3	0.2
<i>Ecdeiocolea monostachya</i>	0.5	5
<i>Gastrolobium plicatum</i>	1	8
<i>Glischrocaryon aureum</i>	0.2	0.4
<i>Hakea auriculata</i>	0.4	0.3
<i>Hakea incrassata</i>	0.4	0.3
<i>Hakea lissocarpha</i>	0.3	0.5
<i>Hibbertia crassifolia</i>	0.3	0.5

<i>Hibbertia hypericoides</i>	0.3	0.3
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.3
<i>Lepidosperma</i> sp. A2 Inland Flat (G.J. Keighery 7000)	0.3	0.4
<i>Lepidosperma tenue</i>	0.4	0.2
<i>Leucopogon</i> sp. Yandanooka (M. Hislop 2507)	0.2	0.3
<i>Melaleuca aspalathoides</i>	0.3	0.5
<i>Melaleuca concreta</i>	1.5	2
<i>Melaleuca marginata</i>	0.4	0.2
<i>Melaleuca tinkerii</i>	0.5	65
<i>Mesomelaena pseudostygia</i>	0.3	0.2
<i>Micromyrtus rogeri</i> (1)	0.5	3
<i>Mirbelia floribunda</i>	0.2	0.1
<i>Neurachne alopecuroidea</i>	0.4	0.2
<i>Patersonia graminea</i>	0.3	0.1
<i>Petrophile chrysantha</i>	1	3
<i>Schoenus armeria</i>	0.1	0.2
<i>Schoenus minutulus</i>	0.1	0.1
<i>Stylidium caricifolium</i>	0.3	0.5
<i>Stylidium drummondianum</i> (3)	0.1	0.1
<i>Tetratheca paucifolia</i>		
<i>Thysanotus</i> sp.	0.1	0.1

PHOTOS

Site Name: WE062
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 21/11/2011
 GPS Location: GDA94 (Zone 50) 337509E 6746771N
 Community: 7b
 Landform Type: Upper Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: N
 Soil Type: Sandy Loam
 Soil Colour: Grey/Brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 5 years

DOMINANT TAXA IN VEGETATION STRATAUpper Stratum 1: *Eucalyptus conveniens*Mid Stratum 1: *Allocasuarina campestris***SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia acuarria</i>	0.5	0.4
<i>Acacia dilatata</i>	0.3	0.2
<i>Allocasuarina campestris</i>	1.8	7
<i>Allocasuarina humilis</i>	0.5	0.4
<i>Amphipogon caricinus</i>	0.2	0.1
? <i>Amphipogon</i> sp.	0.2	0.1
<i>Babingtonia camphorosmae</i>	0.2	0.2
<i>Baeckea grandiflora</i>	0.3	0.2
<i>Banksia fraseri</i> var. ? <i>fraseri</i>	0.4	3
<i>Banksia shuttleworthiana</i>	0.3	0.5
<i>Boronia coerulescens</i> subsp. <i>spinescens</i>	0.2	0.1
<i>Boronia cymosa</i>	0.3	1
<i>Calothamnus longissimus</i>	0.4	0.3
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	0.5	2
<i>Calothamnus sanguineus</i>	0.6	0.5
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Conostylis androstemma</i>	0.2	0.2
<i>Conostylis dielsii</i> subsp. <i>dielsii</i>	0.1	0.2
<i>Cristonia biloba</i>	0.3	0.2

<i>Cryptandra myriantha</i>	0.2	0.1
<i>Cryptandra pungens</i>	0.5	0.2
<i>Daviesia daphnoides</i>	0.5	0.5
<i>Daviesia hakeoides</i> subsp. <i>subnuda</i>	0.4	0.3
<i>Daviesia</i> ? <i>umbonata</i>	0.3	0.2
<i>Ecdeiocolea monostachya</i>	1	20
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	0.3	0.2
<i>Eucalyptus conveniens</i>	5	7
<i>Gastrolobium plicatum</i>	0.3	0.2
<i>Geleznovia verrucosa</i>	0.3	0.1
<i>Goodenia coerulea</i>	0.2	0.1
<i>Hakea circumalata</i>	1.5	3
<i>Hakea incrassata</i>	0.4	0.5
<i>Hakea trifurcata</i>	1	2
<i>Hibbertia crassifolia</i>	0.4	1
<i>Hibbertia hypericoides</i>	0.5	6
<i>Hypocalymma hirsutum</i>	0.2	0.2
<i>Laxmannia omnifertilis</i>	0.1	0.1
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	1
<i>Lepidosperma</i> aff. <i>scabrum</i>	0.3	0.1
<i>Leptospermum oligandrum</i>	1	4
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.4	0.5
<i>Lobelia rhytidosperma</i>	0.2	0.1
<i>Melaleuca aspalathoides</i>	0.4	15
<i>Melaleuca</i> aff. <i>leuropoma</i>	1.6	5
<i>Mesomelaena pseudostygia</i>	0.4	2
<i>Neurachne alopecuroidea</i>	0.2	0.1
<i>Opercularia vaginata</i>	0.2	0.1
<i>Petrophile brevifolia</i>	0.4	0.5
<i>Petrophile chrysantha</i>	0.5	0.4
<i>Petrophile macrostachya</i>	0.4	0.5
<i>Polianthion wichurae</i>	0.4	0.3
<i>Scaevola canescens</i>	0.2	0.3
<i>Schoenus brevisetis</i>	0.2	0.3
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Schoenus unispiculatus</i>	0.2	0.1
<i>Stenanthemum intricatum</i>	0.1	0.1
<i>Stylidium drummondianum</i> (3)	0.1	0.1
<i>Stylidium repens</i>	0.1	0.1
<i>Thryptomene</i> ? <i>racemulosa</i>	0.6	0.3
<i>Verticordia densiflora</i> var. <i>densiflora</i>	0.3	0.2
<i>Verticordia laciniata</i>	0.5	0.2
<i>Verticordia pennigera</i>	0.2	0.3

PHOTOS



Site Name: WE063
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 21/11/2011
 GPS Location: GDA94 (Zone 50) 338049E 6747282N
 Community: 8
 Landform Type: Top of breakaway (other)
 Slope Class: Very Gently Inclined (1 degree)
 Aspect: N
 Soil Type: Clay Loam
 Soil Colour: Pale Brown (other)
 Rock Outcrop: Laterite, >2% bedrock exposed
 CF Abundance: 50-90%
 CF Sizes: 2-6mm, 6-20mm, 20-60mm, 60-200mm, 200-600mm, 600-2000mm
 CF Types: Laterite
 Vegetation Condition: 1 - Pristine
 Fire: >5 years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: *Allocasuarina campestris*
 Lower Stratum 1: *Ecdeiocolea monostachya*, *Hakea auriculata*, *Melaleuca aspalathoides*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia sessilis</i>	0.4	0.5
<i>Acanthocarpus</i> sp. Ajana (C.A. Gardner 8596)	0.2	0.3
<i>Allocasuarina campestris</i>	1.5	30
<i>Banksia fraseri</i> var. ? <i>fraseri</i>	0.3	1
<i>Boronia coerulescens</i> subsp. <i>spinescens</i>	0.3	0.3
<i>Boronia cymosa</i>	0.3	0.4
<i>Borya sphaerocephala</i>	0.1	0.1
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Dampiera oligophylla</i>	0.2	0.1
<i>Dampiera spicigera</i>	0.2	0.2
<i>Daviesia hakeoides</i> subsp. <i>subnuda</i>	0.4	3
<i>Dodonaea ericoides</i>	0.4	0.5
<i>Ecdeiocolea monostachya</i>	0.5	30
<i>Glischrocaryon aureum</i>	0.3	0.3
<i>Goodenia hassallii</i>	0.3	0.3
<i>Haemodorum discolor</i>	0.4	0.1
<i>Hakea auriculata</i>	0.5	8

<i>Hakea lissocarpha</i>	0.3	0.4
<i>Jacksonia foliosa</i>	0.3	0.5
<i>Lepidosperma tenue</i>	0.4	0.3
<i>Melaleuca aspalathoides</i>	0.3	4
<i>Opercularia vaginata</i>	0.1	0.1
<i>Patersonia graminea</i>	0.2	0.1
<i>Petrophile shuttleworthiana</i>	0.4	2
<i>Schoenus armeria</i>	0.1	0.2
<i>Thysanotus</i> sp.	0.1	0.1
<i>Thysanotus sparteus</i>	0.4	0.1

PHOTOS

Site Name: WE064
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 21/11/2011
 GPS Location: GDA94 (Zone 50) 338393E 6747246N
 Community: 11
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: N
 Soil Type: Sandy Loam
 Soil Colour: Yellow/ Brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: >5 years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: *Allocasuarina campestris*, *Grevillea biformis* subsp. *biformis*

Lower Stratum 1: *Ecdeiocolea monostachya*, *Hakea circumalata*, *Hakea polyanthema*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia acuaria</i>	0.4	0.2
<i>Allocasuarina campestris</i>	2	6
<i>Allocasuarina microstachya</i>	0.4	0.5
? <i>Amphipogon</i> sp.	0.1	0.1
<i>Banksia fraseri</i> var. ? <i>fraseri</i>	0.3	0.5
<i>Banksia shuttleworthiana</i>	0.3	0.3
<i>Boronia coerulescens</i> subsp. <i>spinescens</i>	0.2	0.3
<i>Borya sphaerocephala</i>	0.1	0.1
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	1.6	1.5
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Conospermum boreale</i> subsp. ? <i>ascendens</i>	0.3	0.2
<i>Conostylis androstemma</i>	0.2	0.1
<i>Conostylis dielsii</i> subsp. <i>dielsii</i>	0.1	0.1
<i>Dampiera oligophylla</i>	0.1	0.1
<i>Dampiera spicigera</i>	0.3	0.1
<i>Daviesia divaricata</i> subsp. <i>divaricata</i> ms	0.5	1
<i>Daviesia hakeoides</i> subsp. <i>subnuda</i>	0.4	0.5
<i>Ecdeiocolea monostachya</i>	1	20
<i>Eremaea violacea</i> subsp. <i>violacea</i>	0.3	0.2

<i>Gompholobium muticum</i>	0.4	0.2
<i>Grevillea biformis</i> subsp. <i>biformis</i>	4	0.2
<i>Hakea circumalata</i>	1.3	20
<i>Hakea cygna</i> subsp. <i>cygna</i>	1	1.5
<i>Hakea incrassata</i>	0.4	0.2
<i>Hakea polyanthema</i>	1.3	2
<i>Hakea smilacifolia</i>		
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	1
<i>Lepidosperma</i> aff. <i>scabrum</i>	0.4	0.1
<i>Melaleuca leuropoma</i>	0.4	1
<i>Mesomelaena pseudostygia</i>	0.4	3
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (3)	0.2	0.3
<i>Neurachne alopecuroidea</i>	0.2	0.1
<i>Opercularia vaginata</i>	0.2	0.2
<i>Pileanthus filifolius</i>	0.5	1
<i>Scaevola canescens</i>	0.1	0.3
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Scholtzia laxiflora</i>	0.5	3
<i>Stenanthemum notiale</i> subsp. <i>notiale</i>	0.1	0.3
<i>Stylidium dichotomum</i>	0.1	0.1
<i>Thryptomene</i> ? <i>racemulosa</i>	0.4	0.2
<i>Thysanotus sparteus</i>	0.4	0.1
<i>Tricoryne humilis</i>	0.1	0.1

PHOTOS



Site Name: WE065
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 21/11/2011
 GPS Location: GDA94 (Zone 50) 338705E 6747853N
 Community: 8
 Landform Type: Top of breakaway (other)
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Clay Loam
 Soil Colour: Pale brown (other)
 Rock Outcrop: Laterite, >2% bedrock exposed
 CF Abundance: 50-90%
 CF Sizes: 2-6mm, 6-20mm, 20-60mm
 CF Types: Laterite
 Vegetation Condition: 1 - Pristine
 Fire: > 5 years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: *Allocasuarina campestris*
 Lower Stratum 1: *Ecdeiocolea monostachya*, *Hakea auriculata*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia sessilis</i>	0.3	2
<i>Acanthocarpus</i> sp. Ajana (C.A. Gardner 8596)	0.2	0.1
<i>Allocasuarina campestris</i>	1.5	10
<i>Allocasuarina microstachya</i>	0.4	3
? <i>Amphipogon</i> sp.	0.1	0.1
<i>Banksia fraseri</i> var. ? <i>fraseri</i>	0.4	6
<i>Boronia cymosa</i>	0.2	0.5
<i>Borya sphaerocephala</i>	0.1	0.2
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.3
<i>Cassytha</i> ? <i>pomiformis</i>		0.1
<i>Caustis dioica</i>	0.2	0.2
<i>Chorizema aciculare</i> subsp. <i>laxum</i>	0.1	0.1
<i>Cryptandra myriantha</i>	0.3	0.2
<i>Dampiera lindleyi</i>	0.3	0.3
<i>Daviesia hakeoides</i> subsp. <i>subnuda</i>	0.4	4
<i>Daviesia</i> ? <i>umbonata</i>	0.3	0.3
<i>Dodonaea ericoides</i>	0.3	0.5
<i>Ecdeiocolea monostachya</i>	0.5	20

<i>Glischrocaryon aureum</i>	0.4	2
<i>Grevillea biternata</i>	0.5	0.5
<i>Haemodorum discolor</i>	0.3	0.1
<i>Hakea auriculata</i>	0.5	15
<i>Hakea incrassata</i>	0.4	1
<i>Hibbertia hypericoides</i>	0.3	1
<i>Hibbertia spicata</i> subsp. <i>spicata</i>	0.3	0.4
<i>Isopogon divergens</i>	0.5	0.5
<i>Jacksonia foliosa</i>	0.3	0.5
<i>Jacksonia restioides</i>	0.3	0.2
<i>Melaleuca aspalathoides</i>	0.3	1
<i>Melaleuca radula</i>	0.5	0.5
<i>Mesomelaena pseudostygia</i>	0.3	0.3
<i>Neurachne alopecuroidea</i>	0.1	0.3
<i>Opercularia vaginata</i>	0.2	1
<i>Patersonia graminea</i>	0.3	0.1
<i>Petrophile shuttleworthiana</i>	0.4	1
<i>Schoenus armeria</i>	0.1	0.3
<i>Schoenus brevisetis</i>	0.1	0.2
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Stylidium drummondianum</i> (3)	0.1	0.1
<i>Thysanotus</i> sp.	0.1	0.1
<i>Tricoryne humilis</i>	0.2	0.1

PHOTOS



Site Name: WE066
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 21/11/2011
 GPS Location: GDA94 (Zone 50) 338572E 6748746N
 Community: 13b
 Landform Type: Lower Slope
 Slope Class: Very Gently Inclined (1 degree)
 Aspect: N
 Soil Type: Sand
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 CF Sizes: 2-6mm, 6-20mm, 20-60mm
 CF Types: Laterite
 Vegetation Condition: 1 - Pristine
 Fire: >5 years

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia barbinervis</i> subsp. <i>borealis</i>	0.3	0.1
<i>Acacia fagonioides</i>	0.2	0.3
<i>Acacia lasiocarpa</i> var. <i>?bracteolata</i>	0.6	0.3
<i>Acacia stenoptera</i>	0.4	0.2
<i>Allocasuarina humilis</i>	0.5	2
<i>Amphipogon turbinatus</i>	0.3	0.4
<i>Anigozanthos humilis</i> subsp. <i>humilis</i>	0.2	0.2
<i>Babingtonia camphorosmae</i>	0.3	0.4
<i>Banksia carlinoides</i>	0.4	0.5
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.2	0.3
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	0.8	1
<i>Calothamnus sanguineus</i>	1	6
<i>Calytrix sapphirina</i>	0.4	0.2
<i>Cassytha ?pomiformis</i>		0.3
<i>Caustis dioica</i>	0.2	0.3
<i>Chordifex sinuosus</i>	0.3	0.2
<i>Comesperma calymega</i>	0.1	0.1
<i>Conospermum boreale</i> subsp. <i>?ascendens</i>	1	2
<i>Conostylis aculeata</i> subsp. <i>breviflora</i>	0.1	0.5

<i>Conostylis candicans</i>	0.2	0.3
<i>Conostylis canteriata</i>	0.1	0.1
<i>Cristonia biloba</i>	0.3	0.2
<i>Dampiera oligophylla</i>	0.4	0.5
<i>Darwinia speciosa</i>	0.2	0.2
<i>Daviesia nudiflora</i>	0.3	0.2
<i>Desmocladus semiplanus</i>	0.2	0.1
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	0.5	3
<i>Gompholobium tomentosum</i>	0.4	1
<i>Goodenia coerulea</i>	0.3	0.2
<i>Hakea costata</i>	0.8	3
<i>Hakea lissocarpha</i>	0.5	1
<i>Hakea trifurcata</i>	1	2.5
<i>Harperia lateriflora</i>	0.1	0.2
<i>Hibbertia crassifolia</i>	0.2	0.3
<i>Hibbertia hypericoides</i>	0.5	4
<i>Hypocalymma hirsutum</i>	0.2	0.3
<i>Isotropis cuneifolia</i>	0.1	0.1
<i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i>	0.1	0.1
<i>Lyginia imberbis</i>	0.3	0.2
<i>Melaleuca leuropoma</i>	0.5	5
<i>Mesomelaena pseudostygia</i>	0.4	4
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.2	0.2
<i>Petrophile brevifolia</i>	0.3	0.2
<i>Petrophile scabriuscula</i>	1	7
<i>Ptilotus manglesii</i>	0.1	0.2
<i>Scaevola canescens</i>	0.2	0.3
<i>Schoenus brevisetis</i>	0.1	0.1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Schoenus curvifolius</i>	0.3	0.2
<i>Schoenus insolitus</i>	0.3	0.2
<i>Schoenus unispiculatus</i>	0.2	0.1
<i>Scholtzia laxiflora</i>	0.5	8
<i>Stenanthemum notiale</i> subsp. <i>notiale</i>	0.1	0.2
<i>Stylidium crossocephalum</i>	0.1	0.1
<i>Tricoryne elatior</i>	0.3	0.3
<i>Verticordia densiflora</i> var. <i>densiflora</i>	0.2	0.2

PHOTOS



Site Name: WE067
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 21/11/2011
 GPS Location: GDA94 (Zone 50) 334912E 6747280N
 Community: 10
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: S
 Soil Type: Sand
 Soil Colour: Yellow
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: *Allocasuarina campestris*, *Grevillea biformis* subsp. *biformis*

Lower Stratum 1: *Banksia carlinoides*, *Hakea polyanthema*, *Melaleuca leuropoma*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia acuaria</i>	0.6	0.5
<i>Allocasuarina campestris</i>	1.8	2
<i>Allocasuarina humilis</i>	0.3	0.2
<i>Allocasuarina microstachya</i>	0.2	0.1
<i>Astroloma microdonta</i>	0.1	0.1
<i>Astroloma pedicellatum</i> ms	0.3	0.2
<i>Baeckea grandiflora</i>	0.2	0.2
<i>Banksia carlinoides</i>	0.6	5
<i>Banksia fraseri</i> var. <i>?fraseri</i>	0.4	0.5
<i>Banksia shuttleworthiana</i>	0.3	0.5
<i>Calothamnus sanguineus</i>	0.6	0.5
<i>Calytrix strigosa</i>	0.1	0.4
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.2
<i>Caustis dioica</i>	0.3	0.4
<i>Conospermum boreale</i> subsp. <i>?ascendens</i>	0.3	0.1
<i>Conostylis androstemma</i>	0.1	0.1
<i>Dampiera oligophylla</i>	0.1	0.1
<i>Darwinia speciosa</i>	0.2	0.1
<i>Daviesia divaricata</i> subsp. <i>divaricata</i> ms	0.4	1
<i>Daviesia nudiflora</i>	0.3	0.5

<i>Ecdeiocolea monostachya</i>	1	8
<i>Grevillea biformis</i> subsp. <i>biformis</i>	2	1
<i>Hakea circumalata</i>	0.5	3
<i>Hakea cygna</i> subsp. <i>cygna</i>	0.5	0.5
<i>Hakea incrassata</i>	0.4	0.3
<i>Hakea polyanthema</i>	0.6	10
<i>Hibbertia crassifolia</i>	0.3	0.4
<i>Hibbertia hypericoides</i>	0.4	1
<i>Hypocalymma hirsutum</i>	0.2	0.1
<i>Lasiopetalum drummondii</i>	0.2	0.1
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.5
<i>Lepidosperma</i> aff. <i>scabrum</i>	0.3	0.1
<i>Leptospermum oligandrum</i>	0.6	3
<i>Leptospermum spinescens</i>	0.3	0.2
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.4	0.3
<i>Leucopogon</i> sp. Northern ciliate (R. Davis 3393)	0.2	0.1
<i>Lysinema pentapetalum</i>	0.8	0.3
<i>Melaleuca leuropoma</i>	0.5	8
<i>Mesomelaena pseudostygia</i>	0.4	4
<i>Monotaxis bracteata</i>	0.2	0.1
<i>Petrophile macrostachya</i>	0.4	0.2
<i>Petrophile scabriuscula</i>	0.5	0.3
<i>Pileanthus filifolius</i>	0.4	0.5
<i>Scaevola canescens</i>	0.1	0.1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Scholtzia laxiflora</i>	0.3	0.4
<i>Stylidium crossocephalum</i>	0.1	0.1
<i>Stylidium repens</i>	0.1	0.1
<i>Tricoryne elatior</i>	0.3	0.1
<i>Verticordia densiflora</i> var. <i>densiflora</i>	0.4	0.3
<i>Verticordia grandis</i>	1	1

PHOTOS



Site Name: WE068
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 23/11/2011
 GPS Location: GDA94 (Zone 50) 335103E 6747272N
 Community: 8
 Landform Type: Upper Slope
 Slope Class: Very Gently Inclined (1 degree)
 Aspect: S
 Soil Type: Clay Loam
 Soil Colour: Yellow/ Brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: <2%
 CF Sizes: 2-6mm, 6-20mm
 Vegetation Condition: 1 - Pristine
 Fire: > 5 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: *Eucalyptus conveniens*
 Mid Stratum 1: *Allocasuarina campestris*
 Lower Stratum 1: *Ecdeiocolea monostachya*, *Hakea circumalata*, *Melaleuca aspalathoides*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acanthocarpus</i> sp. Ajana (C.A. Gardner 8596)	0.3	0.3
<i>Allocasuarina campestris</i>	2	15
? <i>Amphipogon</i> sp.	0.1	0.1
<i>Astroloma pedicellatum</i> ms	0.5	0.3
<i>Baeckea grandiflora</i>	0.3	0.1
<i>Banksia carlinoides</i>	0.5	0.3
<i>Banksia fraseri</i> var. ? <i>fraseri</i>	0.3	0.5
<i>Banksia shuttleworthiana</i>	0.4	0.5
<i>Boronia coerulescens</i> subsp. <i>spinescens</i>	0.3	0.2
<i>Boronia cymosa</i>	0.1	0.1
<i>Calothamnus longissimus</i>	0.4	0.3
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	1	2
<i>Conospermum boreale</i> subsp. ? <i>ascendens</i>	0.4	0.1
<i>Dampiera oligophylla</i>	0.3	0.1
<i>Dampiera spicigera</i>	0.1	0.1
<i>Daviesia hakeoides</i> subsp. <i>subnuda</i>	0.3	0.4
<i>Dianella revoluta</i>	0.5	0.2

<i>Ecdeiocola monostachya</i>	1	20
<i>Eucalyptus conveniens</i>	3	10
<i>Gompholobium muticum</i>	0.3	0.1
<i>Haemodorum discolor</i>	0.4	0.1
<i>Hakea auriculata</i>	0.4	0.5
<i>Hakea circumalata</i>	1.6	30
<i>Hibbertia hypericoides</i>	0.3	0.5
<i>Jacksonia foliosa</i>	0.3	0.2
<i>Jacksonia macrocalyx</i>	0.3	0.1
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.5
<i>Leucopogon</i> sp. Yandanooka (M. Hislop 2507)	0.2	0.3
<i>Melaleuca aspalathoides</i>	0.3	2
<i>Melaleuca radula</i>	1.6	1
<i>Mesomelaena preissii</i>	0.2	0.1
<i>Mesomelaena pseudostygia</i>	0.3	0.3
<i>Micromyrtus rogeri</i> (1)	0.3	0.4
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Patersonia graminea</i>	0.3	0.1
<i>Petrophile brevifolia</i>	0.3	0.2
<i>Santalum acuminatum</i>	1.8	0.5
<i>Scaevola canescens</i>	0.1	0.1
<i>Schoenus clandestinus</i>	0.1	0.2
<i>Stylidium drummondianum</i> (3)	0.1	0.1

PHOTOS



Site Name: WE069
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 23/11/2011
 GPS Location: GDA94 (Zone 50) 335313E 6747286N
 Community: 8
 Landform Type: Top of breakaway (other)
 Slope Class: Gently Inclined (3 degrees)
 Aspect: S
 Soil Type: Clay Loam
 Soil Colour: Brown
 Rock Outcrop: Laterite, 2-10% bedrock exposed
 CF Abundance: 50-90%
 CF Sizes: 2-6mm, 6-20mm, 20-60mm
 CF Types: Laterite
 Vegetation Condition: 1 - Pristine
 Fire: > 5 years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: *Allocasuarina campestris*
 Lower Stratum 1: *Ecdeiocolea monostachya*, *Melaleuca aspalathoides*, *Petrophile shuttleworthiana*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia acuarina</i>	1	0.5
<i>Acanthocarpus</i> sp. Ajana (C.A. Gardner 8596)	0.2	0.1
<i>Allocasuarina campestris</i>	2	30
<i>Banksia carlinoides</i>	0.5	1
<i>Banksia fraseri</i> var. ? <i>fraseri</i>	0.3	1
<i>Banksia shuttleworthiana</i>	0.4	0.5
<i>Boronia cymosa</i>	0.1	0.1
<i>Cassytha flava</i>		0.1
<i>Dampiera lindleyi</i>	0.3	0.5
<i>Dampiera spicigera</i>	0.1	0.1
<i>Daviesia daphnoides</i>	0.4	0.3
<i>Daviesia hakeoides</i> subsp. <i>subnuda</i>	0.3	0.5
<i>Dodonaea ericoides</i>	0.3	0.1
<i>Ecdeiocolea monostachya</i>	0.5	20
<i>Hakea auriculata</i>	1	4
<i>Hakea circumalata</i>	1	0.5

<i>Hakea incrassata</i>	0.3	0.3
<i>Hakea lissocarpha</i>	0.4	0.3
<i>Hibbertia hypericoides</i>	0.3	0.5
<i>Isopogon divergens</i>	0.4	0.3
<i>Jacksonia foliosa</i>	0.4	0.5
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.2
<i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A)	0.1	0.2
<i>Melaleuca aspalathoides</i>	0.3	10
<i>Mesomelaena preissii</i>	0.3	0.1
<i>Mesomelaena pseudostygia</i>	0.4	0.5
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Patersonia graminea</i>	0.3	0.1
<i>Petrophile brevifolia</i>	0.3	0.2
<i>Petrophile shuttleworthiana</i>	1	6
<i>Pimelea sulphurea</i>	0.4	0.1
<i>Schoenus armeria</i>	0.1	0.2
<i>Stylidium drummondianum</i> (3)	0.1	0.1
<i>Thysanotus sparteus</i>	0.3	0.1
<i>Verticordia chrysanthella</i>	0.3	0.2

PHOTOS

Site Name: WE070
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 22/11/2011
 GPS Location: GDA94 (Zone 50) 335329E 6747424N
 Community: 9
 Landform Type: Breakaway slope (other)
 Slope Class: Moderately Inclined (10 degrees)
 Aspect: N
 Soil Type: Clay Loam
 Soil Colour: Pinky/ Brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: <2%
 CF Sizes: 2-6mm, 6-20mm
 CF Types: Laterite
 Vegetation Condition: 1 - Pristine
 Fire: >5 years

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1: *Allocasuarina campestris*, *Melaleuca tinkerii*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina campestris</i>	1.5	20
<i>Astroloma pedicellatum</i> ms	0.5	0.5
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	0.3	0.3
<i>Conostylis dielsii</i> subsp. <i>dielsii</i>	0.1	0.1
<i>Gastrolobium plicatum</i>	0.6	3
<i>Glischrocaryon aureum</i>	0.3	0.2
<i>Grevillea biternata</i>	0.4	0.5
<i>Guichenotia angustifolia</i>	0.2	0.1
<i>Hakea lissocarpha</i>	0.3	0.2
<i>Hibbertia hypericoides</i>	0.2	0.2
<i>Hibbertia spicata</i> subsp. <i>spicata</i>	0.2	0.1
<i>Jacksonia angulata</i>	0.3	0.4
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.2
<i>Lepidosperma</i> sp. A2 Inland Flat (G.J. Keighery 7000)	0.3	0.3
<i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A)	0.1	0.1
<i>Lepidosperma tenue</i>	0.3	0.3

<i>Leucopogon</i> sp. Burma Road (M. Hislop 2032)	1	0.5
<i>Leucopogon</i> sp. Yandanooka (M. Hislop 2507)	0.2	0.3
<i>Melaleuca aspalathoides</i>	0.3	0.4
<i>Melaleuca concreta</i>	1.5	1
<i>Melaleuca</i> aff. <i>leuropoma</i>	0.5	0.5
<i>Melaleuca marginata</i>	0.4	6
<i>Melaleuca tinkerii</i>	0.4	8
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Thryptomene ?racemulosa</i>	1	10

PHOTOS

Site Name: WE071
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 23/11/2011
 GPS Location: GDA94 (Zone 50) 333609E 6746569N
 Community: 3
 Landform Type: Flat
 Slope Class: Very Gently Inclined (1 degree)
 Aspect: N
 Soil Type: Clay Loam
 Soil Colour: Pink/ Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: >5 years

DOMINANT TAXA IN VEGETATION STRATAUpper Stratum 1: *Eucalyptus accedens*Mid Stratum 1: *Melaleuca concreta, Melaleuca marginata***SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia ericksoniae</i>	0.5	2
<i>Allocasuarina campestris</i>	2	3
<i>Baeckea crispiflora</i> var. <i>tenuior</i>	0.2	0.1
<i>Cassytha ?racemosa</i>		0.1
<i>Comesperma volubile</i>		0.2
<i>Dampiera alata</i>	0.2	0.1
<i>Dichopogon preissii</i>	0.4	0.1
<i>Eucalyptus accedens</i>	12	25
<i>Gastrolobium bennettsianum</i>	0.5	3
<i>Glischrocaryon aureum</i>	0.3	0.2
<i>Lepidosperma</i> sp. A2 Inland Flat (G.J. Keighery 7000)	0.3	0.5
<i>Melaleuca acutifolia</i>	1.3	1
<i>Melaleuca concreta</i>	2	25
<i>Melaleuca marginata</i>	1	20
<i>Melaleuca radula</i>	1.4	1
<i>Olearia ?dampieri</i>	1.2	0.2
<i>Petrophile chrysantha</i>	0.4	0.2
<i>Scaevola virgata</i>	0.1	0.1

<i>Stylidium torticarpum</i> (3)	0.1	0.1
<i>Trichocline spathulata</i>	0.1	0.1

PHOTOS



Site Name: WE072
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 23/11/2011
 GPS Location: GDA94 (Zone 50) 335254E 6748539N
 Community: 11
 Landform Type: Upper Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: N
 Soil Type: Sandy Loam
 Soil Colour: Yellow/Brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: >5 years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: *Allocasuarina campestris*, *Grevillea biformis* subsp. *biformis*
 Lower Stratum 1: *Ecdeiocolea monostachya*, *Melaleuca aspalathoides*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina campestris</i>	1.5	4
<i>Amphipogon carcinus</i>	0.2	0.4
<i>Astroloma pedicellatum</i> ms	0.1	0.1
<i>Boronia cymosa</i>	0.1	0.1
<i>Borya sphaerocephala</i>	0.1	0.5
<i>Conostylis androstemma</i>	0.2	0.2
<i>Dampiera spicigera</i>	0.2	0.1
<i>Daviesia divaricata</i> subsp. <i>divaricata</i> ms	0.4	0.5
<i>Ecdeiocolea monostachya</i>	0.5	10
<i>Goodenia coerulea</i>	0.2	0.1
<i>Grevillea biformis</i> subsp. <i>biformis</i>	1.8	1.5
<i>Haemodorum discolor</i>	0.3	0.3
<i>Hakea circumalata</i>	0.6	0.5
<i>Hakea incrassata</i>	0.4	0.3
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	5
<i>Melaleuca aspalathoides</i>	0.3	20
<i>Mesomelaena preissii</i>	0.3	1
<i>Mesomelaena pseudostygia</i>	0.4	5
<i>Neurachne alopecuroidea</i>	0.1	0.1

<i>Opercularia vaginata</i>	0.2	3
<i>Patersonia graminea</i>	0.3	0.3
<i>Pileanthus filifolius</i>	0.3	0.2
<i>Ptilotus declinatus</i>	0.1	0.1
<i>Scaevola canescens</i>	0.1	0.1
<i>Schoenus clandestinus</i>	0.1	8
<i>Scholtzia laxiflora</i>	0.4	1
<i>Stylidium</i> sp. Kalbarri (A. Carr 145)	0.1	0.1
<i>Tricoryne humilis</i>	0.1	0.1

PHOTOS

Site Name: WE073
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 23/11/2011
 GPS Location: GDA94 (Zone 50) 337474E 6748518N
 Community: 13b
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: S
 Soil Type: Sandy Loam
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: >5 years

DOMINANT TAXA IN VEGETATION STRATAUpper Stratum 1: *Eucalyptus todtiana*Lower Stratum 1: *Allocasuarina humilis*, *Calothamnus sanguineus*, *Scholtzia laxiflora***SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia blakelyi</i>	2.5	2
<i>Acacia dilatata</i>	0.2	1
<i>Allocasuarina humilis</i>	1.5	6
<i>Babingtonia camphorosmae</i>	0.2	1
<i>Banksia bipinnatifida</i> subsp. <i>multifida</i>	0.2	0.3
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.2	0.5
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	1.6	0.2
<i>Calothamnus sanguineus</i>	1.5	10
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.4
<i>Caustis dioica</i>	0.3	0.5
<i>Chordifex sinuosus</i>	0.2	0.4
<i>Conostylis candicans</i>	0.3	1
<i>Conostylis canteriata</i>	0.1	0.1
<i>Desmocladius semiplanus</i>	0.1	0.2
<i>Diplopeltis huegelii</i> subsp. <i>lehmannii</i>	0.3	0.3
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	0.6	6
<i>Eucalyptus todtiana</i>	5	5
<i>Gompholobium tomentosum</i>	0.3	0.2
<i>Hakea lissocarpha</i>	0.6	1

<i>Hakea trifurcata</i>	1	2
<i>Hibbertia hypericoides</i>	1	6
<i>Hypocalymma hirsutum</i>	0.1	0.1
<i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i>	0.1	0.1
<i>Leucopogon</i> sp. Northern ciliate (R. Davis 3393)	0.3	0.2
<i>Lomandra hastilis</i>	1	0.4
<i>Lyginia imberbis</i>	0.3	0.2
<i>Melaleuca leuropoma</i>	0.4	8
<i>Mesomelaena pseudostygia</i>	0.4	0.3
<i>Mesomelaena tetragona</i>	0.2	0.1
<i>Neurachne alopecuroidea</i>	0.2	0.1
<i>Opercularia vaginata</i>	0.2	0.3
<i>Patersonia occidentalis</i>	0.3	0.3
<i>Petrophile brevifolia</i>	0.3	0.2
<i>Scaevola canescens</i>	0.1	0.1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Schoenus curvifolius</i>	0.2	0.1
<i>Scholtzia laxiflora</i>	0.5	6
<i>Stachystemon axillaris</i>	1	0.4
<i>Stenanthemum intricatum</i>	0.1	0.1
<i>Verticordia grandis</i>	1.2	0.2

PHOTOS

Site Name: WE074
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 24/11/2011
 GPS Location: GDA94 (Zone 50) 336539E 6746129N
 Community: 7b
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: S
 Soil Type: Sandy Loam
 Soil Colour: Grey
 Rock Outcrop: Laterite, >2% bedrock exposed
 CF Abundance: 50-90%
 CF Sizes: 2-6mm, 6-20mm
 CF Types: Laterite
 Vegetation Condition: 1 - Pristine
 Fire: >5 years

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1: *Banksia carlinoides*, *Melaleuca aspalathoides*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia acuaria</i>	0.4	0.3
<i>Acacia fagonioides</i>	0.2	0.2
<i>Allocasuarina campestris</i>	0.8	0.5
<i>Allocasuarina humilis</i>	0.4	0.5
<i>Astroloma microdonta</i>	0.1	0.1
<i>Baeckea grandiflora</i>	0.3	0.1
<i>Banksia carlinoides</i>	0.5	20
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.2	0.3
<i>Banksia fraseri</i> var. ? <i>fraseri</i>	0.3	1
<i>Banksia shuttleworthiana</i>	0.4	6
<i>Beaufortia elegans</i>	0.5	0.2
<i>Boronia cymosa</i>	0.1	0.1
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	1	1.5
<i>Calothamnus sanguineus</i>	0.3	0.5
<i>Calytrix flavescens</i>	0.2	0.2
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.2
<i>Cassytha</i> ? <i>pomiformis</i>		0.3
<i>Caustis dioica</i>	0.3	0.2

<i>Chordifex sinuosus</i>	0.3	0.2
<i>Conostylis androstemma</i>	0.2	0.4
<i>Conostylis dielsii</i> subsp. <i>dielsii</i>	0.1	0.1
<i>Cryptandra myriantha</i>	0.4	0.1
<i>Dampiera lindleyi</i>	0.2	0.1
<i>Darwinia speciosa</i>	0.2	0.1
<i>Daviesia daphnoides</i>	0.5	1
<i>Daviesia pedunculata</i>	0.2	0.2
<i>Daviesia ?umbonata</i>	0.2	0.1
<i>Ecdeiocolea monostachya</i>	0.4	10
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	0.4	1
<i>Gastrolobium plicatum</i>	0.3	0.2
<i>Goodenia hassallii</i>	0.2	0.5
<i>Hakea auriculata</i>	0.5	1
<i>Hakea circumalata</i>	0.5	3
<i>Hakea incrassata</i>	0.4	5
<i>Hakea lissocarpha</i>	0.3	0.5
<i>Hakea stenocarpa</i>	0.3	1
<i>Hakea trifurcata</i>	0.5	0.4
<i>Halgania</i> sp. Wongan Hills (K.F. Kenneally 2393)	0.2	0.3
<i>Hibbertia crassifolia</i>	0.3	2
<i>Hibbertia hypericoides</i>	0.3	1
<i>Hypocalymma hirsutum</i>	0.2	0.2
<i>Isopogon divergens</i>	0.4	2
<i>Isotoma hypocrateriformis</i>	0.1	0.1
<i>Jacksonia foliosa</i>	0.3	0.2
<i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A)	0.2	0.2
<i>Leptospermum spinescens</i>	0.3	0.2
<i>Melaleuca aspalathoides</i>	0.3	15
<i>Mesomelaena pseudostygia</i>	0.3	0.2
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Petrophile brevifolia</i>	0.3	0.2
<i>Petrophile shuttleworthiana</i>	0.5	0.5
<i>Pileanthus filifolius</i>	0.3	0.4
<i>Schoenus brevisetis</i>	0.1	0.1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Stylidium crossocephalum</i>	0.1	0.1
<i>Stylidium drummondianum</i> (3)	0.1	0.1
<i>Stylidium stenosepalum</i>	0.1	0.1
<i>Synaphea aephynsa</i> (3)	0.2	0.1
<i>Verticordia pennigera</i>	0.1	0.1

PHOTOS



Site Name: WE075
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 24/11/2011
 GPS Location: GDA94 (Zone 50) 337346E 6744769N
 Community: 13b
 Landform Type: Flat
 Slope Class: Gently Inclined (3 degrees)
 Aspect: N
 Soil Type: Sandy Loam
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 5 years

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1: *Calothamnus quadrifidus* subsp. *angustifolius*, *Jacksonia hakeoides*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia blakelyi</i>	1.8	2
<i>Acacia lasiocarpa</i> var. <i>?bracteolata</i>	1	5
<i>Actinotus leucocephalus</i>	0.1	0.1
<i>Allocasuarina humilis</i>	0.6	0.5
<i>Anigozanthos humilis</i> subsp. <i>humilis</i>	0.1	0.1
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	1.5	10
<i>Calothamnus sanguineus</i>	0.4	0.5
<i>Caustis dioica</i>	0.3	0.4
<i>Conostylis aculeata</i> subsp. <i>breviflora</i>	0.2	0.2
<i>Desmocladus lateriticus</i>	0.2	2
<i>Desmocladus parthenicus</i>	0.2	0.2
<i>Gompholobium tomentosum</i>	0.4	0.2
<i>Hakea polyanthema</i>	1	0.5
<i>Hibbertia hypericoides</i>	0.4	3
<i>Jacksonia hakeoides</i>	1	65
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.4
<i>Lobelia rhytidosperra</i>	0.3	0.1
<i>Mesomelaena pseudostygia</i>	0.3	0.2
<i>Verticordia densiflora</i> var. <i>densiflora</i>	1	2

PHOTOS



Site Name: WE076
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 24/11/2011
 GPS Location: GDA94 (Zone 50) 334635E 6748026N
 Community: 9
 Landform Type: Flat
 Slope Class: Level (0 degrees)
 Soil Type: Clay
 Soil Colour: Grey/White
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 5 years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: *Allocasuarina campestris*, *Melaleuca concreta*

Lower Stratum 1: *Leucopogon* sp. Yandanooka (M. Hislop 2507), *Melaleuca tinkeri*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia ?idiomorpha</i>	0.3	0.3
<i>Allocasuarina campestris</i>	1.2	1
<i>Amphipogon caricinus</i>	0.1	0.1
<i>Astroloma pedicellatum</i> ms	0.4	0.2
<i>Babingtonia camphorosmae</i>	0.2	5
<i>Borya sphaerocephala</i>	0.1	0.2
<i>Calothamnus longissimus</i>	0.2	0.2
<i>Calytrix flavescens</i>	0.2	0.4
<i>Comesperma volubile</i>		0.1
<i>Daviesia hakeoides</i> subsp. <i>subnuda</i>	0.3	0.4
<i>Dodonaea ericoides</i>	0.2	0.2
<i>Glischrocaryon aureum</i>	0.3	0.1
<i>Hakea circumalata</i>	0.3	0.2
<i>Hakea incrassata</i>	0.3	0.5
<i>Hakea spathulata</i>	0.2	2
<i>Hibbertia hypericoides</i>	0.3	0.5
<i>Lepidosperma</i> aff. <i>scabrum</i>	0.1	0.1
<i>Lepidosperma</i> sp. A2 Inland Flat (G.J. Keighery 7000)	0.3	0.2
<i>Lepidosperma tenue</i>	0.4	0.5

<i>Leucopogon</i> sp. Yandanooka (M. Hislop 2507)	0.2	15
<i>Melaleuca aspalathoides</i>	0.2	0.2
<i>Melaleuca concreta</i>	1.6	9
<i>Melaleuca radula</i>	0.4	0.5
<i>Melaleuca tinkerii</i>	0.4	20
<i>Micromyrtus rogeri</i> (1)	0.4	5
<i>Mirbelia floribunda</i>	0.1	0.1
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Petrophile chrysantha</i>	0.5	2
<i>Schoenus unispiculatus</i>	0.1	0.1
<i>Stylidium torticarpum</i> (3)	0.1	0.4

PHOTOS

Site Name: WE077
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 24/11/2011
 GPS Location: GDA94 (Zone 50) 334933E 6748093N
 Community: 7a
 Landform Type: Breakaway - lower slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: S
 Soil Type: Clay Loam
 Soil Colour: Grey/Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 5 years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: *Allocasuarina campestris*
 Lower Stratum 1: *Ecdeiocolea monostachya*, *Melaleuca aspalathoides*, *Melaleuca tinkerii*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina campestris</i>	1.6	50
<i>Allocasuarina microstachya</i>	0.3	0.5
<i>Amphipogon caricinus</i>	0.1	0.3
<i>Astroloma pedicellatum</i> ms	0.3	0.4
<i>Babingtonia camphorosmae</i>	0.2	0.5
<i>Banksia fraseri</i> var. <i>?fraseri</i>	0.4	0.5
<i>Boronia cymosa</i>	0.1	0.2
<i>Borya sphaerocephala</i>	0.1	0.2
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	0.4	0.3
<i>Calytrix depressa</i>	0.2	0.1
<i>Calytrix fraseri</i>	0.2	0.1
<i>Cassytha flava</i>		0.1
<i>Conostylis dielsii</i> subsp. <i>dielsii</i>	0.2	0.1
<i>Dampiera lindleyi</i>	0.2	0.1
<i>Daviesia hakeoides</i> subsp. <i>subnuda</i>	0.4	0.5
<i>Ecdeiocolea monostachya</i>	0.5	5
<i>Eremaea beaufortoides</i> var. <i>microphylla</i>	0.4	0.5
<i>Geleznowia verrucosa</i>	0.2	0.1
<i>Hakea incrassata</i>	0.4	0.5

<i>Hakea lissocarpha</i>	0.2	0.2
<i>Hakea spathulata</i>	0.2	1
<i>Hibbertia crassifolia</i>	0.3	0.5
<i>Hibbertia hypericoides</i>	0.4	4
<i>Hypocalymma hirsutum</i>	0.2	0.1
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.2
<i>Lepidosperma tenue</i>	0.3	0.2
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.5	0.2
<i>Melaleuca aspalathoides</i>	0.3	8
<i>Melaleuca tinkerii</i>	0.4	5
<i>Mesomelaena pseudostygia</i>	0.3	0.1
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Patersonia graminea</i>	0.2	0.1
<i>Petrophile chrysantha</i>	0.5	0.5
<i>Schoenus brevisetis</i>	0.1	0.1
<i>Schoenus clandestinus</i>	0.1	0.2
<i>Schoenus unispiculatus</i>	0.1	0.2
<i>Stylidium dichotomum</i>	0.1	0.1
<i>Stylidium diuroides</i> subsp. <i>paucifoliatum</i>	0.3	0.1
<i>Stylidium drummondianum</i> (3)	0.1	0.1
<i>Thryptomene ?racemulosa</i>	0.3	0.3
<i>Verticordia densiflora</i> var. <i>densiflora</i>	0.5	0.2
<i>Verticordia pennigera</i>	0.1	0.1

PHOTOS



Site Name: WE078
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 24/11/2011
 GPS Location: GDA94 (Zone 50) 334988E 6748323N
 Community: 10
 Landform Type: Upper Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: N
 Soil Type: Sandy Loam
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 5 years

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1: *Ecdeiocolea monostachya, Hakea polyanthema, Melaleuca leuropoma*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina campestris</i>	0.4	0.3
<i>Allocasuarina microstachya</i>	0.4	1
<i>Astroloma microdonta</i>	0.1	0.1
<i>Babingtonia camphorosmae</i>	0.3	0.4
<i>Banksia shuttleworthiana</i>	0.5	3
<i>Calytrix flavescens</i>	0.3	3
<i>Calytrix strigosa</i>	0.1	0.2
<i>Cassytha flava</i>		0.1
<i>Caustis dioica</i>	0.2	0.5
<i>Chordifex sinuosus</i>	0.3	0.2
<i>Chorizema aciculare</i> subsp. <i>laxum</i>	0.2	0.1
<i>Conospermum boreale</i> subsp. <i>?ascendens</i>	0.4	0.5
<i>Dampiera oligophylla</i>	0.4	0.2
<i>Dampiera spicigera</i>	0.3	0.1
<i>Darwinia speciosa</i>	0.1	0.1
<i>Daviesia pedunculata</i>	0.3	0.2
<i>Ecdeiocolea monostachya</i>	0.5	15
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	0.4	3
<i>Gastrolobium plicatum</i>	0.2	0.4
<i>Geleznowia verrucosa</i>	0.1	0.1

<i>Goodenia coerulea</i>	0.2	0.1
<i>Haemodorum spicatum</i>		
<i>Hakea auriculata</i>	0.5	2
<i>Hakea circumalata</i>	0.5	1
<i>Hakea cygna</i> subsp. <i>cygna</i>	0.4	0.3
<i>Hakea incrassata</i>	0.3	0.4
<i>Hakea lissocarpha</i>	0.3	0.2
<i>Hakea polyanthema</i>	0.6	4
<i>Hakea spathulata</i>	0.3	0.3
<i>Hibbertia crassifolia</i>	0.3	0.6
<i>Hibbertia hypericoides</i>	0.4	1
<i>Hypocalymma hirsutum</i>	0.1	0.1
<i>Jacksonia nutans</i>	0.6	1
<i>Leptospermum oligandrum</i>	0.3	0.1
<i>Melaleuca aspalathoides</i>	0.3	0.3
<i>Melaleuca leuropoma</i>	0.4	15
<i>Mesomelaena pseudostygia</i>	0.3	0.5
<i>Mesomelaena tetragona</i>	0.3	0.1
<i>Opercularia vaginata</i>	0.1	0.1
<i>Petrophile brevifolia</i>	0.2	0.2
<i>Pileanthus filifolius</i>	0.3	1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Scholtzia laxiflora</i>	0.5	2.5
<i>Stenanthemum notiale</i> subsp. <i>notiale</i>	0.1	0.1
<i>Stylidium repens</i>	0.1	0.1
<i>Synaphea spinulosa</i> subsp. <i>spinulosa</i>	0.4	0.4
<i>Tricoryne elatior</i>	0.2	0.1

PHOTOS



Site Name: WE079
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 25/11/2011
 GPS Location: GDA94 (Zone 50) 336570E 6748608N
 Community: 10
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: N
 Soil Type: Sandy Loam
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: >5years

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1: *Melaleuca aspalathoides, Melaleuca leuropoma*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia acuaria</i>	0.3	0.3
<i>Acanthocarpus</i> sp. Ajana (C.A. Gardner 8596)	0.2	0.2
<i>Allocasuarina microstachya</i>	0.3	2
<i>Amphipogon caricinus</i>	0.1	0.1
<i>Amphipogon turbinatus</i>	0.2	0.1
<i>Babingtonia camphorosmae</i>	0.2	0.3
<i>Banksia carlinoides</i>	0.4	1
<i>Banksia fraseri</i> var. ? <i>fraseri</i>	0.4	0.5
<i>Banksia shuttleworthiana</i>	0.3	3
<i>Boronia cymosa</i>	0.2	0.2
<i>Calytrix strigosa</i>	0.1	0.1
<i>Cassytha</i> ? <i>pomiformis</i>		0.2
<i>Caustis dioica</i>	0.3	0.3
<i>Conostylis androstemma</i>	0.1	0.3
<i>Dampiera oligophylla</i>	0.4	0.3
<i>Daviesia pedunculata</i>	0.2	0.3
<i>Ecdeiocolea monostachya</i>	0.5	4
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	0.4	1
<i>Gastrolobium plicatum</i>	0.3	0.2
<i>Geleznowia verrucosa</i>	0.2	0.1

<i>Goodenia coerulea</i>	0.2	0.1
<i>Hakea auriculata</i>	0.5	1
<i>Hakea incrassata</i>	0.4	2
<i>Hakea polyanthema</i>	0.6	2
<i>Hakea spathulata</i>	0.3	3
<i>Hakea stenocarpa</i>	0.2	0.1
<i>Hibbertia crassifolia</i>	0.3	0.6
<i>Hibbertia hypericoides</i>	0.4	5
<i>Hypocalymma hirsutum</i>	0.2	0.2
<i>Isopogon divergens</i>	0.3	0.5
<i>Jacksonia restioides</i>	0.3	0.2
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.2
<i>Lepidosperma</i> aff. <i>scabrum</i>	0.2	0.1
<i>Leptospermum oligandrum</i>	0.6	2
<i>Melaleuca aspalathoides</i>	0.3	20
<i>Melaleuca leuropoma</i>	0.4	5
<i>Mesomelaena pseudostygia</i>	0.4	0.5
<i>Monotaxis bracteata</i>	0.2	0.1
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.1	0.2
<i>Paracaleana dixonii</i> (T)		
<i>Patersonia graminea</i>	0.3	0.1
<i>Petrophile brevifolia</i>	0.4	0.3
<i>Pileanthus filifolius</i>	0.2	0.4
<i>Scaevola canescens</i>	0.1	0.1
<i>Schoenus brevisetis</i>	0.2	0.2
<i>Schoenus clandestinus</i>	0.1	0.2
<i>Scholtzia laxiflora</i>	0.5	1
<i>Stenanthemum notiale</i> subsp. <i>notiale</i>	0.1	0.1
<i>Stylidium diuroides</i> subsp. <i>paucifoliatum</i>	0.1	0.1
<i>Stylidium repens</i>	0.1	0.1
<i>Synaphea spinulosa</i> subsp. <i>spinulosa</i>	0.3	0.2
<i>Tricoryne humilis</i>	0.1	0.1
<i>Verticordia pennigera</i>	0.2	0.1

PHOTOS



Site Name: WE080
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 24/11/2011
 GPS Location: GDA94 (Zone 50) 337009E 6748510N
 Community: 11
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: N
 Soil Type: Sandy Loam
 Soil Colour: Yellow
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: >5years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: *Allocasuarina campestris*, *Grevillea biformis* subsp. *biformis*

Lower Stratum 1: *Ecdeiocolea monostachya*, *Melaleuca aspalathoides*, *Mesomelaena preissii*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia acuaria</i>	0.3	0.3
<i>Allocasuarina campestris</i>	1.5	10
<i>Amphipogon turbinatus</i>	0.1	0.1
<i>Boronia coerulescens</i> subsp. <i>spinescens</i>	0.2	0.2
<i>Boronia cymosa</i>	0.2	0.1
<i>Borya sphaerocephala</i>	0.1	0.2
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	0.3	0.2
<i>Dampiera oligophylla</i>	0.4	0.2
<i>Dampiera spicigera</i>	0.1	0.1
<i>Ecdeiocolea monostachya</i>	0.5	20
<i>Gnephosis tenuissima</i>	0.1	3
<i>Grevillea biformis</i> subsp. <i>biformis</i>	1.8	0.5
<i>Grevillea eriostachya</i>	1.5	1
<i>Haemodorum discolor</i>	0.3	0.1
<i>Hakea circumalata</i>	0.6	2
<i>Jacksonia macrocalyx</i>	0.3	0.5
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	5
<i>Melaleuca aspalathoides</i>	0.3	5
<i>Mesomelaena preissii</i>	0.4	6

<i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (3)	0.2	2
<i>Opercularia vaginata</i>	0.2	2
<i>Patersonia graminea</i>	0.2	0.2
<i>Petrophile brevifolia</i>	0.2	0.3
<i>Scaevola canescens</i>	0.1	0.1
<i>Schoenus clandestinus</i>	0.1	3
<i>Thryptomene ?racemulosa</i>	0.2	0.1
<i>Xanthorrhoea drummondii</i>	1.5	2

PHOTOS

Site Name: WE081
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 24/11/2011
 GPS Location: GDA94 (Zone 50) 337861E 6746125N
 Community: 8
 Landform Type: Upper Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: E
 Soil Type: Clay Loam
 Soil Colour: Pale Brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: >90%
 CF Sizes: 2-6mm, 6-20mm
 CF Types: Laterite
 Vegetation Condition: 1 - Pristine
 Fire: > 5 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: *Eucalyptus conveniens*
 Mid Stratum 1: *Allocasuarina campestris*
 Lower Stratum 1: *Calothamnus longissimus*, *Ecdeiocolea monostachya*, *Hakea auriculata*,
Melaleuca aspalathoides, *Petrophile shuttleworthiana*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina campestris</i>	2	2
<i>Allocasuarina humilis</i>	0.4	0.3
? <i>Amphipogon</i> sp.	0.1	0.1
<i>Baeckea grandiflora</i>	0.3	0.1
<i>Banksia fraseri</i> var. ? <i>fraseri</i>	0.4	4
<i>Banksia shuttleworthiana</i>	0.4	0.5
<i>Boronia coerulescens</i> subsp. <i>spinescens</i>	0.3	0.2
<i>Boronia cymosa</i>	0.1	0.1
<i>Calothamnus longissimus</i>	0.5	10
<i>Conostylis androstemma</i>	0.2	0.5
<i>Cryptandra myriantha</i>	0.3	0.1
<i>Dampiera spicigera</i>	0.3	0.1
<i>Daviesia hakeoides</i> subsp. <i>subnuda</i>	0.3	0.4
<i>Diplolaena eneabbensis</i>	0.2	0.2

<i>Ecdeiocola monostachya</i>	0.5	15
<i>Eucalyptus conveniens</i>	4	20
<i>Gastrolobium spinosum</i>	0.5	0.3
<i>Geleznovia verrucosa</i>	0.3	0.1
<i>Glischrocaryon aureum</i>	0.3	0.2
<i>Goodenia hassallii</i>	0.2	0.1
<i>Guichenotia micrantha</i>	0.4	0.1
<i>Haemodorum discolor</i>	0.3	0.1
<i>Hakea auriculata</i>	1	5
<i>Hakea circumalata</i>	0.6	3
<i>Hakea lissocarpha</i>	0.4	0.5
<i>Halgania</i> sp. Wongan Hills (K.F. Kenneally 2393)	0.2	0.5
<i>Hibbertia crassifolia</i>	0.3	0.4
<i>Hibbertia hypericoides</i>	0.4	4
<i>Hibbertia spicata</i> subsp. <i>spicata</i>	0.4	4
<i>Isopogon divergens</i>	0.3	0.5
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	1
<i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A)	0.2	0.1
<i>Lepidosperma tenue</i>	0.3	0.2
<i>Melaleuca aspalathoides</i>	0.3	10
<i>Melaleuca radula</i>	1	3
<i>Mesomelaena pseudostygia</i>	0.3	0.4
<i>Micromyrtus rogeri</i> (1)	0.4	1
<i>Neurachne alopecuroidea</i>	0.3	0.1
<i>Patersonia graminea</i>	0.3	0.1
<i>Petrophile shuttleworthiana</i>	0.6	5
<i>Polianthion wichurae</i>	0.3	0.2
<i>Schoenus armeria</i>	0.1	0.1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Stylidium drummondianum</i> (3)	0.1	0.1
<i>Thysanotus</i> sp.	0.1	0.1
<i>Thysanotus sparteus</i>	0.4	0.1

PHOTOS



Site Name: WE082
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 25/11/2011
 GPS Location: GDA94 (Zone 50) 332409E 6740648N
 Community: 7b
 Landform Type: Upper Slope
 Slope Class: Very Gently Inclined (1 degree)
 Aspect: W
 Soil Type: Clay Loam
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: <2%
 CF Sizes: 2-6mm, 6-20mm
 CF Types: Laterite
 Vegetation Condition: 1 - Pristine
 Fire: <5 years

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1: *Ecdeiocolea monostachya*, *Hakea incrassata*, *Melaleuca aspalathoides*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i>	0.2	0.1
<i>Allocasuarina humilis</i>	0.4	1
<i>Allocasuarina microstachya</i>	0.3	2
<i>Amphipogon turbinatus</i>	0.1	0.1
<i>Astroloma glaucescens</i>	0.3	0.2
<i>Babingtonia camphorosmae</i>	0.2	1
<i>Baeckea grandiflora</i>	0.4	0.3
<i>Banksia carlinoides</i>	0.4	3
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.2	0.2
<i>Banksia shuttleworthiana</i>	0.3	2
<i>Boronia cymosa</i>	0.1	0.1
<i>Calothamnus sanguineus</i>	0.5	3
<i>Caustis dioica</i>	0.2	0.5
<i>Conospermum boreale</i> subsp. <i>?ascendens</i>	0.2	0.2
<i>Conostylis androstemma</i>	0.2	0.3
<i>Conostylis canteriata</i>	0.2	0.2
<i>Cristonia biloba</i>	0.3	0.2
<i>Cryptandra myriantha</i>	0.3	0.2

<i>Dampiera lindleyi</i>	0.2	0.1
<i>Desmocladius semiplanus</i>	0.1	0.1
<i>Ecdeiocolea monostachya</i>	0.5	15
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	0.3	1
<i>Eucalyptus macrocarpa</i> x <i>pyriformis</i> (3)		
<i>Gastrolobium plicatum</i>	0.3	0.5
<i>Geleznovia verrucosa</i>	0.2	0.1
<i>Goodenia coerulea</i>	0.1	0.1
<i>Hakea incrassata</i>	0.4	8
<i>Hakea lissocarpha</i>	0.3	1
<i>Hakea spathulata</i>	0.3	0.5
<i>Hakea stenocarpa</i>	0.3	1
<i>Hibbertia crassifolia</i>	0.4	0.7
<i>Hibbertia hypericoides</i>	0.3	1
<i>Hybanthus floribundus</i> subsp. <i>floribundus</i>	0.2	0.1
<i>Laxmannia omnifertilis</i>	0.1	0.1
<i>Lepidosperma</i> aff. <i>scabrum</i>	0.3	0.2
<i>Leptospermum spinescens</i>	0.3	0.1
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.2	0.1
<i>Melaleuca aspalathoides</i>	0.4	8
<i>Melaleuca leuropoma</i>	0.4	1
<i>Melaleuca trichophylla</i>	0.2	5
<i>Mesomelaena pseudostygia</i>	0.4	3
<i>Mesomelaena tetragona</i>	0.1	0.1
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.2	0.2
<i>Petrophile brevifolia</i>	0.3	0.2
<i>Scaevola canescens</i>	0.1	0.1
<i>Schoenus brevisetis</i>	0.2	0.2
<i>Schoenus clandestinus</i>	0.2	0.5
<i>Stenanthemum</i> aff. <i>notiale</i> subsp. <i>notiale</i>	0.2	0.2
<i>Stylidium diuroides</i> subsp. <i>paucifoliatum</i>	0.2	0.2
<i>Stylidium repens</i>	0.1	0.1
<i>Thysanotus dichotomus</i>	0.3	0.5
<i>Verticordia laciniata</i>	0.3	0.1
<i>Verticordia pennigera</i>	0.2	0.2

PHOTOS



Site Name: WE083
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 25/11/2011
 GPS Location: GDA94 (Zone 50) 332397E 6741673N
 Community: 13a
 Landform Type: Lower Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: W
 Soil Type: Sand
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 Vegetation Condition: 1 - Pristine
 Fire: <5 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: *Eucalyptus todtiana*

Lower Stratum 1: *Calothamnus sanguineus, Lambertia multiflora* var. *multiflora, Melaleuca leuropoma*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia barbinervis</i> subsp. <i>borealis</i>	0.2	0.1
<i>Acacia blakelyi</i>	1	0.5
<i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i>	0.2	0.1
<i>Acacia stenoptera</i>	0.2	0.1
<i>Alexgeorgea nitens</i>	0.1	5
<i>Allocasuarina humilis</i>	0.6	2
<i>Anigozanthos humilis</i> subsp. <i>humilis</i>	0.1	0.2
<i>Anigozanthos pulcherrimus</i>	0.2	0.1
<i>Astroloma xerophyllum</i>	0.3	0.5
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.2	0.3
<i>Banksia leptophylla</i> var. <i>melletica</i>	0.4	1
<i>Banksia scabrella</i> (4)	0.3	0.5
<i>Banksia sessilis</i> var. <i>flabellifolia</i>	0.6	0.1
<i>Beaufortia elegans</i>	0.6	3
<i>Calectasia hispida</i>		
<i>Calothamnus sanguineus</i>	0.8	6
<i>Calytrix fraseri</i>	0.1	0.2
<i>Calytrix sapphirina</i>	0.4	0.5
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.5

<i>Cassytha ?pomiformis</i>		0.1
<i>Caustis dioica</i>	0.3	0.2
<i>Chordifex sinuosus</i>	0.3	0.2
<i>Conostylis canteriata</i>	0.1	0.5
<i>Conostylis hiemalis</i>	0.1	0.1
<i>Daviesia nudiflora</i>	0.3	0.5
<i>Desmocladus semiplanus</i>	0.1	0.2
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	0.3	0.5
<i>Eremaea ectadioclada</i>	0.3	1
<i>Eucalyptus todtiana</i>	3	3
<i>Gompholobium tomentosum</i>	0.3	0.4
<i>Haemodorum spicatum</i>	0.5	0.1
<i>Hibbertia hypericoides</i>	0.6	6
<i>Hibbertia subvaginata</i>	0.1	0.1
<i>Lambertia multiflora</i> var. <i>multiflora</i>	0.8	4
<i>Lasiopetalum drummondii</i>	0.3	0.2
<i>Lasiopetalum ogilvieanum</i> (1)	0.3	0.1
<i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i>	0.1	0.1
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.4	8
<i>Leucopogon</i> sp. Northern ciliate (R. Davis 3393)	0.3	0.4
<i>Lyginia imberbis</i>	0.2	0.1
<i>Lysinema pentapetalum</i>	0.6	1
<i>Melaleuca leuropoma</i>	0.4	5
<i>Melaleuca</i> aff. <i>leuropoma</i>	0.4	0.2
<i>Opercularia vaginata</i>	0.1	0.1
<i>Petrophile drummondii</i>	0.5	0.3
<i>Pimelea leucantha</i>	0.6	0.3
<i>Platysace xerophila</i>		
<i>Quoya verbascina</i>	0.5	0.5
<i>Schoenus curvifolius</i>	0.2	0.1
<i>Stachystemon axillaris</i>	0.4	0.1
<i>Stenanthemum</i> aff. <i>notiale</i> subsp. <i>notiale</i>	0.2	0.3
<i>Stirlingia latifolia</i>	0.1	0.1
<i>Stylidium repens</i>	0.1	0.1
<i>Stylidium</i> sp. Kalbarri (A. Carr 145)	0.1	0.1
<i>Verticordia blepharophylla</i>	0.3	0.1
<i>Verticordia grandis</i>	0.1	0.1
<i>Xanthosia huegelii</i>	0.1	0.1

PHOTOS



Site Name: WE084
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 25/11/2011
 GPS Location: GDA94 (Zone 50) 332628E 6741891N
 Community: 10
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: W
 Soil Type: Sandy Loam
 Soil Colour: Yellow/Brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: <5 years

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1: *Daviesia divaricata* subsp. *divaricata* ms, *Ecdeiocolea monostachya*, *Hakea circumalata*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia acuaria</i>	0.2	0.2
<i>Astroloma serratifolium</i>	0.2	0.1
<i>Boronia coerulescens</i> subsp. <i>spinescens</i>	0.3	0.2
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	0.6	0.5
<i>Conospermum boreale</i> subsp. <i>?ascendens</i>	0.4	0.2
<i>Cryptandra myriantha</i>	0.1	0.1
<i>Dampiera spicigera</i>	0.1	0.2
<i>Daviesia divaricata</i> subsp. <i>divaricata</i> ms	0.5	10
<i>Daviesia pedunculata</i>	0.2	0.2
<i>Ecdeiocolea monostachya</i>	0.5	30
<i>Eremaea violacea</i> subsp. <i>violacea</i>	0.2	0.5
<i>Goodenia coerulea</i>	0.2	0.1
<i>Grevillea eriostachya</i>	0.5	2.5
<i>Hakea circumalata</i>	0.5	5
<i>Hakea cygna</i> subsp. <i>cygna</i>	0.3	0.5
<i>Isopogon tridens</i>	0.4	0.5
<i>Jacksonia nutans</i>	0.4	0.5
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	1
<i>Lepidosperma brunonianum</i> sens. <i>lat.</i>	0.3	1

<i>Leptospermum oligandrum</i>	0.4	0.3
<i>Leucopogon hispidus</i>	0.2	0.1
<i>Melaleuca leuropoma</i>	0.4	5
<i>Mesomelaena pseudostygia</i>	0.4	6
<i>Opercularia vaginata</i>	0.1	0.1
<i>Petrophile megalostegia</i>	0.1	0.1
<i>Pileanthus filifolius</i>	0.3	0.5
<i>Scaevola canescens</i>	0.3	0.5
<i>Schoenus clandestinus</i>	0.1	0.2
<i>Stackhousia dielsii</i>	0.3	0.1
<i>Stenanthemum</i> aff. <i>notiale</i> subsp. <i>notiale</i>	0.2	0.2
<i>Stylidium adpressum</i>	0.1	0.1
<i>Stylidium diuroides</i> subsp. <i>paucifoliatum</i>	0.2	0.1
<i>Stylidium repens</i>	0.1	0.1
<i>Thysanotus dichotomus</i>	0.2	0.4

PHOTOS

Site Name: WE085
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 25/11/2011
 GPS Location: GDA94 (Zone 50) 333155E 6743015N
 Community: 7a
 Landform Type: Wet
 Slope Class: Gently Inclined (3 degrees)
 Aspect: W
 Soil Type: Clay Loam
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: <5 years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: *Melaleuca concreta*

Lower Stratum 1: *Banksia carlinoides*, *Melaleuca tinkeri*, *Melaleuca trichophylla*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia dilatata</i>	0.2	0.3
<i>Allocasuarina microstachya</i>	0.2	0.5
<i>Amphipogon caricinus</i>	0.1	0.1
<i>Andersonia lehmanniana</i>	0.2	0.3
<i>Babingtonia camphorosmae</i>	0.2	2
<i>Banksia carlinoides</i>	0.4	12
<i>Banksia fraseri</i> var. <i>?fraseri</i>	0.2	0.5
<i>Boronia cymosa</i>	0.2	0.1
<i>Calothamnus longissimus</i>	0.2	0.5
<i>Calytrix flavescens</i>	0.1	0.3
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Chorizema aciculare</i> subsp. <i>laxum</i>	0.2	0.1
<i>Conostylis aculeata</i> subsp. <i>breviflora</i>	0.1	0.1
<i>Conostylis androstemma</i>	0.2	0.3
<i>Conostylis canteriata</i>	0.2	0.1
<i>Cristonia biloba</i>	0.2	0.5
<i>Dampiera lindleyi</i>	0.2	0.4
<i>Daviesia oxyclada</i>	0.2	0.3
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	0.3	0.5

<i>Glischrocaryon aureum</i>	0.3	0.3
<i>Goodenia trichophylla</i>	0.1	0.1
<i>Hakea incrassata</i>	0.2	0.5
<i>Hakea lissocarpha</i>	0.3	3
<i>Hakea spathulata</i>	0.2	4
<i>Hakea trifurcata</i>	0.3	0.3
<i>Hibbertia acerosa</i>	0.2	0.1
<i>Hibbertia crassifolia</i>	0.3	2
<i>Hibbertia hypericoides</i>	0.3	3
<i>Hypocalymma hirsutum</i>	0.1	0.1
<i>Jacksonia angulata</i>	0.2	2.5
<i>Laxmannia omnifertilis</i>	0.1	0.1
<i>Lepidosperma aff.scabrum</i>	0.2	0.2
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.2	0.5
<i>Melaleuca concreta</i>	1	1
<i>Melaleuca aff.leuropoma</i>	0.4	0.4
<i>Melaleuca tinkerii</i>	0.3	10
<i>Melaleuca trichophylla</i>	0.2	25
<i>Mirbelia floribunda</i>	0.1	0.2
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.2	0.5
<i>Petrophile chrysantha</i>	0.3	0.2
<i>Schoenus brevisetis</i>	0.1	0.2
<i>Schoenus clandestinus</i>	0.1	5
<i>Stylidium dichotomum</i>	0.1	5
<i>Stylidium diuroides</i> subsp. <i>paucifoliatum</i>	0.2	0.2
<i>Verticordia densiflora</i> var. <i>densiflora</i>	0.3	0.3
<i>Verticordia laciniata</i>	0.3	0.1
<i>Verticordia pennigera</i>	0.2	0.2

PHOTOS



Site Name: WE086
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 25/11/2011
 GPS Location: GDA94 (Zone 50) 332642E 6743025N
 Community: 14
 Landform Type: Flat (other)
 Slope Class: Level (0 degrees)
 Soil Type: Clay Loam
 Soil Colour: Grey/Brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 5years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: *Calothamnus quadrifidus* subsp. *angustifolius*, *Melaleuca radula*

Lower Stratum 1: *Dampiera teres* (broad-leaf variant), *Verticordia densiflora* var. *densiflora*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Amphipogon caricinus</i>	0.1	0.1
<i>Babingtonia camphorosmae</i>	0.1	0.2
<i>Banksia carlinoides</i>	0.4	3
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	0.5	12
<i>Calytrix depressa</i>	0.2	0.2
<i>Conostylis aculeata</i> subsp. <i>breviflora</i>	0.1	0.2
<i>Dampiera teres</i> (broad-leaf variant)	0.3	7
<i>Desmocladius asper</i>	0.2	0.2
<i>Goodenia trichophylla</i>	0.1	0.1
<i>Grevillea umbellulata</i>	0.3	5
<i>Hakea lissocarpha</i>	0.3	0.2
<i>Hakea spathulata</i>	0.2	0.3
<i>Harperia lateriflora</i>	0.1	15
<i>Isotoma hypocrateriformis</i>	0.1	0.1
<i>Jacksonia angulata</i>	0.3	3
<i>Lepidosperma pubisquameum</i>	0.2	0.2
<i>Melaleuca radula</i>	1.6	5
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.2	3
<i>Ptilotus manglesii</i>	0.1	0.1

<i>Schoenus andrewsii</i>	0.1	0.1
<i>Schoenus clandestinus</i>	0.1	0.2
<i>Stirlingia simplex</i>		
<i>Stylidium dichotomum</i>	0.1	0.5
<i>Thryptomene ?racemulosa</i>	0.3	1
<i>Verticordia blepharophylla</i>	0.3	4
<i>Verticordia densiflora</i> var. <i>densiflora</i>	0.4	20

PHOTOS

Site Name: WE087
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 25/11/2011
 GPS Location: GDA94 (Zone 50) 335388E 6745590N
 Community: 7b
 Landform Type: Lower Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: W
 Soil Type: Clay Loam
 Soil Colour: Grey/Brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 5years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: *Allocasuarina campestris*, *Melaleuca aff.leuropoma*

Lower Stratum 1: *Banksia carlinoides*, *Ecdeiocolea monostachya*, *Melaleuca aspalathoides*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia dilatata</i>	0.2	0.1
<i>Allocasuarina campestris</i>	1.6	1.5
<i>Allocasuarina microstachya</i>	0.4	0.5
<i>Amphipogon caricinus</i>	0.1	0.1
<i>Babingtonia camphorosmae</i>	0.3	0.3
<i>Banksia carlinoides</i>	1	10
<i>Calothamnus sanguineus</i>	0.4	0.3
<i>Calytrix flavescens</i>	0.2	0.1
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.2
<i>Cassytha ?pomiformis</i>		0.1
<i>Caustis dioica</i>	0.2	0.2
<i>Chordifex sinuosus</i>	0.3	0.2
<i>Chorizema aciculare</i> subsp. <i>laxum</i>	0.2	0.1
<i>Cristonia biloba</i>	0.4	0.2
<i>Dampiera lindleyi</i>	0.4	2
<i>Darwinia speciosa</i>	0.1	0.1
<i>Ecdeiocolea monostachya</i>	0.5	20
<i>Eremaea beaufortoides</i> var. <i>microphylla</i>	0.3	0.5
<i>Gastrolobium plicatum</i>	0.2	0.2

<i>Goodenia trichophylla</i>	0.1	0.1
<i>Hakea circumalata</i>	0.6	1
<i>Hakea costata</i>	0.5	0.3
<i>Hakea incrassata</i>	0.3	2
<i>Hakea lissocarpha</i>	0.2	0.3
<i>Hakea spathulata</i>	0.3	1
<i>Harperia lateriflora</i>	0.1	0.3
<i>Hibbertia crassifolia</i>	0.3	3
<i>Hibbertia hypericoides</i>	0.4	4
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.2
<i>Lepidosperma brunonianum</i> sens. lat.	0.1	0.1
<i>Lepidosperma</i> aff. <i>scabrum</i>	0.2	0.1
<i>Melaleuca aspalathoides</i>	0.3	12
<i>Melaleuca</i> aff. <i>leuropoma</i>	1.3	2
<i>Mesomelaena pseudostygia</i>	0.3	0.4
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.1	0.3
<i>Patersonia graminea</i>	0.3	0.1
<i>Petrophile brevifolia</i>	0.3	0.1
<i>Ptilotus manglesii</i>	0.1	0.1
<i>Scaevola canescens</i>	0.1	0.1
<i>Schoenus brevisetis</i>	0.1	0.2
<i>Schoenus clandestinus</i>	0.1	0.2
<i>Schoenus unispiculatus</i>	0.1	0.1
<i>Scholtzia laxiflora</i>	0.4	0.5
<i>Stenanthemum intricatum</i>	0.1	0.1
<i>Stylidium</i> sp. Kalbarri (A. Carr 145)	0.1	0.1
<i>Thryptomene ?racemulosa</i>	0.3	0.2
<i>Thysanotus</i> sp.	0.1	0.1
<i>Thysanotus sparteus</i>	0.3	0.1
<i>Verticordia densiflora</i> var. <i>densiflora</i>	0.6	0.5
<i>Verticordia monadelphica</i> var. <i>monadelphica</i>		
<i>Verticordia pennigera</i>	0.2	0.2

PHOTOS



Site Name: WE088
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 25/11/2011
 GPS Location: GDA94 (Zone 50) 333737E 6745264N
 Community: 13b
 Landform Type: Upper Slope
 Slope Class: Very Gently Inclined (1 degree)
 Aspect: N
 Soil Type: Sand
 Soil Colour: Yellow
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 5 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: *Xylomelum angustifolium*
 Mid Stratum 1: *Adenanthos cygnorum* subsp. *cygnorum*, *Banksia prionotes*
 Lower Stratum 1: *Banksia attenuata*, *Banksia leptophylla* var. *melletica*, *Hakea polyanthema*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i>	2.5	4
<i>Banksia attenuata</i>	1.3	4
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.1	0.4
<i>Banksia leptophylla</i> var. <i>melletica</i>	1.2	20
<i>Banksia prionotes</i>	2.5	7
<i>Banksia scabrella</i> (4)	1	1
<i>Beaufortia elegans</i>	1.5	10
<i>Calothamnus sanguineus</i>	1.5	1
<i>Calytrix sapphirina</i>	0.2	0.1
<i>Conospermum boreale</i> subsp. <i>?ascendens</i>	0.5	2
<i>Conostylis canteriata</i>	0.1	0.1
<i>Dampiera spicigera</i>	0.1	0.1
<i>Daviesia divaricata</i> subsp. <i>divaricata</i> ms	0.5	5
<i>Eremaea violacea</i> subsp. <i>violacea</i>	0.3	2
<i>Goodenia coerulea</i>	0.1	0.1
<i>Hakea costata</i>	1	0.3
<i>Hakea cygna</i> subsp. <i>cygna</i>	1.2	1
<i>Hakea polyanthema</i>	1.2	3

<i>Hakea trifurcata</i>	1	2
<i>Hemiphora bartlingii</i>	0.4	0.1
<i>Hibbertia acerosa</i>	0.1	0.1
<i>Hibbertia crassifolia</i>	0.3	0.3
<i>Hibbertia hypericoides</i>	0.5	2
<i>Hypocalymma hirsutum</i>	0.1	0.1
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.2	3
<i>Leucopogon hispidus</i>	0.2	0.3
<i>Lyginia imberbis</i>	0.2	0.1
<i>Melaleuca leuropoma</i>	0.4	1
<i>Mesomelaena pseudostygia</i>	0.4	3
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Petrophile scabriuscula</i>	1.3	0.3
<i>Pileanthus filifolius</i>	0.4	1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Scholtzia laxiflora</i>	0.4	0.5
<i>Stylidium crossocephalum</i>	0.1	0.1
<i>Stylidium repens</i>	0.1	0.1
<i>Verticordia grandis</i>	1.5	0.6
<i>Xylomelum angustifolium</i>	5	15

PHOTOS

Site Name: WE089
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 25/11/2011
 GPS Location: GDA94 (Zone 50) 336088E 6740741N
 Community: 10
 Landform Type: Mid Slope
 Slope Class: Level (0 degrees)
 Soil Type: Sandy Loam
 Soil Colour: Yellow/Brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Fire: > 5years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: *Calothamnus quadrifidus* subsp. *angustifolius*, *Grevillea biformis* subsp. *biformis*
 Lower Stratum 1: *Daviesia divaricata* subsp. *divaricata* ms, *Ecdeiocolea monostachya*, *Melaleuca leuropoma*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia auronitens</i>	0.2	0.3
<i>Acacia comans</i>	0.4	1
<i>Acanthocarpus</i> sp. Ajana (C.A. Gardner 8596)	0.2	0.2
<i>Astroloma serratifolium</i>	0.2	0.2
<i>Banksia shuttleworthiana</i>	0.4	0.5
<i>Boronia coerulescens</i> subsp. <i>spinescens</i>	0.3	0.1
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	1.4	4
<i>Cassytha</i> ? <i>pomiformis</i>		0.1
<i>Conospermum boreale</i> subsp. ? <i>ascendens</i>	0.4	0.5
<i>Conostylis androstemma</i>	0.2	0.1
<i>Conostylis dielsii</i> subsp. <i>dielsii</i>	0.1	0.3
<i>Cryptandra myriantha</i>	0.1	0.1
<i>Cryptandra pungens</i>	0.3	0.1
<i>Cryptandra spyridioides</i>	0.1	0.1
<i>Dampiera oligophylla</i>	0.2	0.1
<i>Dampiera spicigera</i>	0.1	0.1
<i>Daviesia divaricata</i> subsp. <i>divaricata</i> ms	0.5	8
<i>Daviesia pedunculata</i>	0.2	0.4

<i>Ecdeiocola monostachya</i>	0.5	15
<i>Eremaea violacea</i> subsp. <i>violacea</i>	0.3	3
<i>Geleznowia verrucosa</i>	0.1	0.1
<i>Goodenia coerulea</i>	0.2	0.1
<i>Grevillea biformis</i> subsp. <i>biformis</i>	1.6	1
<i>Grevillea shuttleworthiana</i> subsp. <i>canarina</i>	0.5	0.5
<i>Hakea polyanthema</i>	0.5	3
<i>Hibbertia crassifolia</i>	0.3	0.5
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	2
<i>Lepidosperma brunonianum</i> sens. lat.	0.3	0.2
<i>Lepidosperma</i> aff. <i>scabrum</i>	0.3	0.1
<i>Leucopogon hispidus</i>	0.1	0.2
<i>Logania spermacocea</i>	0.1	0.1
<i>Melaleuca leuropoma</i>	0.4	8
<i>Mesomelaena pseudostygia</i>	0.4	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (3)	0.2	3
<i>Opercularia vaginata</i>	0.2	0.3
<i>Pileanthus filifolius</i>	0.6	0.5
<i>Pimelea angustifolia</i>	0.3	0.1
<i>Schoenus clandestinus</i>	0.1	0.4
<i>Scholtzia laxiflora</i>	0.4	3
<i>Stenanthemum</i> aff. <i>notiale</i> subsp. <i>notiale</i>	0.1	0.1
<i>Stylidium adpressum</i>	0.1	0.1
<i>Stylidium diuroides</i> subsp. <i>paucifoliatum</i>	0.1	0.1
<i>Stylidium</i> sp. Kalbarri (A. Carr 145)	0.1	0.1
<i>Thysanotus asper</i>	0.1	0.1
<i>Verticordia densiflora</i> var. <i>densiflora</i>	0.1	0.1

PHOTOS



Site Name: WE090
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 26/11/2011
 GPS Location: GDA94 (Zone 50) 335868E 6740760N
 Community: 7b
 Landform Type: Upper Slope
 Slope Class: Very Gently Inclined (1 degree)
 Aspect: E
 Soil Type: Sandy Loam
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: <2%
 CF Sizes: 2-6mm, 6-20mm
 CF Types: Laterite
 Vegetation Condition: 1 - Pristine
 Fire: > 5years

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1: *Banksia carlinoides, Hibbertia hypericoides, Melaleuca trichophylla*

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia acuaria</i>	0.2	0.1
<i>Acacia fagonioides</i>	0.2	0.1
<i>Allocasuarina humilis</i>	0.5	5
<i>Allocasuarina microstachya</i>	0.2	1
<i>Amphipogon turbinatus</i>	0.1	0.1
<i>Astroloma microdonta</i>	0.1	0.1
<i>Babingtonia camphorosmae</i>	0.2	0.3
<i>Banksia bipinnatifida</i> subsp. <i>multifida</i>	0.1	0.2
<i>Banksia carlinoides</i>	0.4	20
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.1	0.2
<i>Banksia scabrella</i> (4)	0.3	0.2
<i>Banksia shuttleworthiana</i>	0.3	0.4
<i>Boronia cymosa</i>	0.1	0.1
<i>Caladenia flava</i>	0.2	0.1
<i>Calectasia hispida</i>	0.1	0.1
<i>Calothamnus sanguineus</i>	0.5	6
<i>Cassytha glabella</i> forma <i>bicallosa</i>		0.1
<i>Caustis dioica</i>	0.3	0.5

<i>Chordifex sinuosus</i>	0.2	0.1
<i>Conostylis androstemma</i>	0.1	0.3
<i>Conostylis canteriata</i>	0.1	0.2
<i>Cristonia biloba</i>	0.3	0.3
<i>Dampiera oligophylla</i>	0.2	0.1
<i>Daviesia incrassata</i> subsp. <i>teres</i>	0.3	0.3
<i>Daviesia pedunculata</i>	0.2	0.2
<i>Ecdeiocolea monostachya</i>	0.4	0.5
<i>Eremaea beaufortoides</i> var. <i>microphylla</i>	0.3	0.5
<i>Gastrolobium plicatum</i>	0.3	0.3
<i>Geleznovia verrucosa</i>	0.1	0.1
<i>Goodenia coerulea</i>	0.1	0.1
<i>Hakea auriculata</i>	0.4	0.5
<i>Hakea incrassata</i>	0.4	5
<i>Hakea lissocarpha</i>	0.3	0.5
<i>Hakea polyanthema</i>	0.4	2
<i>Hakea stenocarpa</i>	0.3	0.5
<i>Hakea trifurcata</i>	0.3	0.2
<i>Hibbertia crassifolia</i>	0.4	1
<i>Hibbertia hypericoides</i>	0.4	15
<i>Hybanthus floribundus</i> subsp. <i>floribundus</i>	0.2	0.1
<i>Hypocalymma hirsutum</i>	0.2	0.2
<i>Jacksonia restioides</i>	0.3	0.2
<i>Laxmannia omnifertilis</i>	0.1	0.1
<i>Lechenaultia biloba</i>	0.2	0.1
<i>Lepidobolus chaetocephalus</i>	0.3	0.1
<i>Lepidosperma pubisquameum</i>	0.2	0.1
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.4	1
<i>Melaleuca aspalathoides</i>	0.3	2
<i>Melaleuca</i> aff. <i>leuropoma</i>	0.4	0.3
<i>Melaleuca trichophylla</i>	0.2	10
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.1	0.1
<i>Persoonia filiformis</i> (2)	0.1	0.1
<i>Petrophile brevifolia</i>	0.2	0.3
<i>Petrophile scabriuscula</i>	0.4	0.2
<i>Pimelea sulphurea</i>	0.1	0.1
<i>Scaevola canescens</i>	0.1	0.1
<i>Schoenus brevisetis</i>	0.1	0.2
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Stylidium crossocephalum</i>	0.1	0.1
<i>Stylidium diuroides</i> subsp. <i>paucifoliatum</i>	0.1	0.1
<i>Stylidium drummondianum</i> (3)	0.1	0.1

<i>Stylidium repens</i>	0.1	0.1
<i>Verticordia laciniata</i>	0.3	0.5
<i>Verticordia pennigera</i>	0.1	0.1

PHOTOS



Site Name: WE091
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 03/10/2012
 GPS Location: WGS84 (Zone 50) 335121E 6750643N
 Community: 5
 Landform Type: Lower Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: SW
 Soil Type: Sand
 Soil Colour: Brown and Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 3 - Very Good
 Disturbance: Grazing, Exotic Weeds
 Fire: >10 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: *Allocasuarina campestris* (3m, 40%)
 Mid Stratum 2: *Ecdeiocolea monostachya* (0.5m, 8%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acanthocarpus</i> sp. Ajana (C.A. Gardner 8596)	0.3	0.2
<i>Allocasuarina campestris</i>	3	40
* <i>Arctotheca calendula</i>	0.2	0.4
<i>Arthropodium dyeri</i>	0.4	0.1
<i>Austrostipa elegantissima</i>	0.5	0.5
* <i>Avena barbata</i>	0.4	0.4
* <i>Briza maxima</i>	0.4	0.1
<i>Caladenia flava</i>	0.1	0.1
<i>Calandrinia</i> sp. Blackberry (D.M. Porter 171)	0.1	0.1
<i>Chamaescilla versicolor</i>	0.1	0.1
<i>Crassula colorata</i> var. <i>acuminata</i>	0.1	0.1
<i>Ecdeiocolea monostachya</i>	0.5	8
* <i>Ehrharta longiflora</i>	0.4	0.5
* <i>Erodium cicutarium</i>	0.1	0.1
<i>Gnephosis angianthoides</i>	0.1	0.1
<i>Grevillea biternata</i>	1.2	0.5
* <i>Hypochaeris glabra</i>	0.2	0.4
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.2

<i>*Lysimachia arvensis</i>	0.1	0.1
<i>Mesomelaena pseudostygia</i>	0.4	0.3
<i>Neurachne alopecuroidea</i>	0.3	0.1
<i>*Pentameris airoides</i> subsp. <i>airoides</i>	0.1	0.1
<i>Petrophile drummondii</i>	1.5	0.5
<i>Podotheca gnaphalioides</i>	0.1	0.2
<i>Scholtzia laxiflora</i>	1.8	0.3
<i>Sowerbaea laxiflora</i>	0.3	0.1
<i>Trachymene pilosa</i>	0.1	0.1
<i>*Ursinia anthemoides</i>	0.2	0.2
<i>*Vulpia myuros</i>	0.1	1
<i>Waitzia acuminata</i> var. <i>acuminata</i>	0.2	0.1
<i>Waitzia acuminata</i> var. <i>albicans</i>	0.2	0.1

PHOTOS

Site Name: WE092
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 03/10/2012
 GPS Location: WGS84 (Zone 50) 335074E 6750504N
 Community: 4
 Landform Type: Flat
 Slope Class: Level (0 degrees)
 Soil Type: Sandy Loam
 Soil Colour: Brown and Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 3 - Very Good
 Disturbance: Grazing, Exotic Weeds
 Fire: >10 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: Allocasuarina campestris and Melaleuca radula (3m, 12%)
 Mid Stratum 1: Melaleuca concreta and Thryptomene sp. Mingenew (Diels & Pritzel 332) (1.8m, 9%)
 Lower Stratum 1: Ecdeiocolea monostachya and Desmocladius asper (0.4m, 1%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia acuminata</i>		
<i>Acacia neurophylla</i> subsp. <i>neurophylla</i>		
<i>Allocasuarina campestris</i>	3	7
* <i>Arctotheca calendula</i>	0.2	0.1
<i>Arthropodium dyeri</i>	0.4	0.1
* <i>Briza maxima</i>	0.3	0.1
<i>Burchardia congesta</i>	0.2	0.1
<i>Cassytha flava</i>		0.1
<i>Chamaescilla versicolor</i>	0.2	0.1
<i>Conostylis prolifera</i>	0.1	0.1
<i>Desmocladius asper</i>	0.2	0.4
<i>Ecdeiocolea monostachya</i>	0.4	0.5
* <i>Ehrharta longiflora</i>	0.3	0.1
<i>Gnephosis drummondii</i>	0.1	0.1
<i>Grevillea biternata</i>	0.8	0.5
<i>Hakea spathulata</i>	0.5	0.3
* <i>Hypochaeris glabra</i>	0.2	0.4

<i>Lepidosperma tenue</i>	0.4	0.3
* <i>Lysimachia arvensis</i>	0.1	0.1
<i>Melaleuca aspalathoides</i>	0.2	0.1
<i>Melaleuca concreta</i>	1.8	4
<i>Melaleuca radula</i>	3	5
<i>Neurachne alopecuroidea</i>	0.3	0.1
<i>Opercularia vaginata</i>	0.1	0.2
<i>Patersonia graminea</i>	0.2	0.1
<i>Podolepis lessonii</i>	0.1	0.1
<i>Ptilotus manglesii</i>	0.1	0.1
<i>Thryptomene</i> sp. Mingenew (Diels & Pritzel 332) (3)	1.2	5
<i>Thysanotus manglesianus</i>		0.1
<i>Trachymene pilosa</i>	0.1	0.1
* <i>Ursinia anthemoides</i>	0.2	0.2
<i>Verticordia densiflora</i> var. <i>densiflora</i>	0.8	0.2
* <i>Vulpia myuros</i>	0.2	0.5
<i>Waitzia acuminata</i> var. <i>acuminata</i>	0.2	0.1

PHOTOS

Site Name: WE093
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 03/10/2012
 GPS Location: WGS84 (Zone 50) 335144E 6750477N
 Community: 4
 Landform Type: Flat
 Slope Class: Level (0 degrees)
 Soil Type: Sand
 Soil Colour: Brown and Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 3 - Very Good
 Disturbance: Grazing, Exotic Weeds
 Fire: >10 years

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1: Scholtzia laxiflora and Vulpia sp. (1m,10%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i>	0.4	0.1
* <i>Arctotheca calendula</i>	0.3	0.4
<i>Austrostipa elegantissima</i>	0.5	0.4
<i>Austrostipa variabilis</i>	0.4	0.2
<i>Banksia fraseri</i> var. <i>fraseri</i>	0.5	1
* <i>Brassica tournefortii</i>	0.4	0.1
* <i>Bromus diandrus</i>	0.4	0.1
<i>Burchardia congesta</i>	0.1	0.1
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	1	1
<i>Chamaescilla versicolor</i>	0.2	0.1
* <i>Echium plantagineum</i>	0.2	0.1
* <i>Ehrharta longiflora</i>	0.4	0.4
* <i>Erodium cicutarium</i>	0.1	0.1
<i>Grevillea biternata</i>	0.6	0.4
<i>Hakea lissocarpa</i>	0.5	1
* <i>Hypochaeris glabra</i>	0.2	1
<i>Jacksonia hakeoides</i>	0.4	0.2
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.4	0.5
<i>Lepidosperma tenue</i>	0.4	0.1
<i>Leptospermum oligandrum</i>	1.5	0.5

<i>Lomandra micrantha</i> subsp. <i>micrantha</i>	0.1	0.1
<i>Melaleuca aspalathoides</i>	0.3	0.4
<i>Melaleuca leuropoma</i>	0.4	1
<i>Mesomelaena pseudostygia</i>	0.3	0.2
<i>Neurachne alopecuroidea</i>	0.3	0.1
<i>Podotheca gnaphalioides</i>	0.2	0.5
<i>Scholtzia laxiflora</i>	1	5
<i>Thysanotus manglesianus</i>		0.1
* <i>Ursinia anthemoides</i>	0.2	0.1
<i>Verticordia densiflora</i> var. <i>densiflora</i>	0.4	0.2
* <i>Vulpia myuros</i>	0.1	5

PHOTOS

Site Name: WE094
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 03/10/2012
 GPS Location: WGS84 (Zone 50) 335184E 6750800N
 Community: 4
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: W
 Soil Type: Sand
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 3 - Very Good
 Disturbance: Grazing, Exotic Weeds
 Fire: >10 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: Allocasuarina campestris (2.5m,5%)
 Lower Stratum 1: Ecdeiocolea monostachya, Melaleuca leuropoma and Hibbertia hypericoides (0.5m, 10%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia blakelyi</i>		
<i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i>	1.2	0.1
<i>Acacia saligna</i>		
<i>Acanthocarpus</i> sp. Ajana (C.A. Gardner 8596)	0.3	0.2
<i>Allocasuarina campestris</i>	2.5	5
<i>Austrostipa elegantissima</i>	0.5	0.1
<i>Austrostipa macalpinei</i>	0.2	0.1
* <i>Brassica tournefortii</i>	0.1	0.1
* <i>Briza maxima</i>	0.3	0.1
<i>Burchardia congesta</i>	0.1	0.1
<i>Calandrinia</i> sp. Blackberry (D.M. Porter 171)		
<i>Calytrix strigosa</i>	0.2	0.1
<i>Dampiera oligophylla</i>	0.2	0.1
<i>Dampiera spicigera</i>	0.2	0.2
<i>Drosera</i> ? <i>porrecta</i>	0.1	0.1
<i>Ecdeiocolea monostachya</i>	0.5	4
* <i>Ehrharta longiflora</i>	0.3	0.1

<i>Hakea lissocarpa</i>	0.6	0.4
<i>Hakea trifurcata</i>	1.8	2.5
<i>Hibbertia hypericoides</i>	0.5	3
* <i>Hypochaeris glabra</i>	0.2	0.4
<i>Jacksonia sternbergiana</i>		
<i>Lechenaultia linarioides</i>		
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.4	2
<i>Leptospermum oligandrum</i>	1.2	0.3
<i>Lomandra micrantha</i> subsp. <i>micrantha</i>	0.3	0.1
<i>Melaleuca leuropoma</i>	0.5	3
<i>Mesomelaena pseudostygia</i>	0.4	0.2
<i>Neurachne alopecuroidea</i>	0.2	0.1
<i>Opercularia vaginata</i>	0.2	0.1
<i>Patersonia graminea</i>	0.3	0.1
* <i>Pentameris airoides</i> subsp. <i>airoides</i>	0.1	0.1
<i>Podotheca gnaphalioides</i>	0.2	0.1
<i>Ptilotus manglesii</i>	0.2	0.1
<i>Scaevola canescens</i>	0.1	0.1
<i>Scholtzia laxiflora</i>	0.5	0.2
<i>Thryptomene racemulosa</i>	0.5	1
<i>Thryptomene</i> sp. <i>Mingenew</i> (Diels & Pritzel 332) (3)		
<i>Trachymene pilosa</i>	0.2	0.1
<i>Triodia danthonioides</i>		
* <i>Ursinia anthemoides</i>	0.2	0.2
<i>Verticordia densiflora</i> var. <i>densiflora</i>	0.4	0.3
* <i>Vulpia myuros</i>	0.1	0.5
<i>Waitzia acuminata</i> var. <i>acuminata</i>	0.2	0.1
<i>Waitzia acuminata</i> var. <i>albicans</i>	0.2	0.1

PHOTOS



Site Name: WE095
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 03/10/2012
 GPS Location: GDA94 (Zone 50) 338705E 6749639N
 Community: 5
 Landform Type: Drainage Line
 Slope Class: Level (0 degrees)
 Soil Type: Sandy Loam
 Soil Colour: Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 3 - Very Good
 Disturbance: Grazing, Exotic Weeds
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia aciphylla</i>	2	1
<i>Acacia neurophylla</i> subsp. <i>neurophylla</i>	1	0.2
<i>Allocasuarina campestris</i>	3	20
<i>Ecdeiocolea monostachya</i>	0.4	0.2
<i>Lepidosperma tenue</i>	0.4	0.2
<i>Melaleuca radula</i>	1	0.5
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Scholtzia laxiflora</i>		

PHOTOS



Site Name: WE096
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 12/09/2012
 GPS Location: WGS84 (Zone 50) 333380E 6746856N
 Community: 2
 Landform Type: Mid Slope
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sandy Loam
 Soil Colour: Brown and White
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: Eucalyptus accedens (12m,30%)
 Lower Stratum 1: Rhagodia preissii subsp. preissii and mixed herbs (1m,15%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Brachyscome iberidifolia</i>	0.1	0.1
<i>Calandrinia</i> sp. Blackberry (D.M. Porter 171)	0.1	0.1
<i>Eucalyptus accedens</i>	12	30
<i>Hakea lissocarpha</i>		
<i>Muehlenbeckia adpressa</i>	0.2	0.1
<i>Rhagodia preissii</i> subsp. <i>preissii</i>	1	15
<i>Trachymene pilosa</i>	0.1	0.1

PHOTOS



Site Name: WE097
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 12/09/2012
 GPS Location: WGS84 (Zone 50) 333937E 6749011N
 Community: 14
 Landform Type: Flat
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sandy Loam
 Soil Colour: Grey and White
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5 years

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1: Allocasuarina humilis, Hibbertia hypericoides, Allocasuarina microstachya and Melaleuca leuropoma (0.6m,25%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia dilatata</i>	0.3	0.1
<i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i>	0.4	0.1
<i>Allocasuarina campestris</i>	0.6	0.1
<i>Allocasuarina humilis</i>	0.6	2
<i>Allocasuarina microstachya</i>	0.5	5
<i>Anigozanthos humilis</i> subsp. <i>humilis</i>	0.2	0.1
* <i>Arctotheca calendula</i>	0.1	0.1
<i>Babingtonia camphorosmae</i>	0.4	0.1
<i>Burchardia congesta</i>	0.1	0.1
<i>Caladenia flava</i>	0.1	0.1
<i>Chamaescilla versicolor</i>	0.1	0.1
<i>Conostylis candicans</i>	0.1	0.1
<i>Crassula colorata</i> var. <i>acuminata</i>	0.1	0.1
<i>Dampiera lindleyi</i>	0.3	0.1
<i>Drosera menziesii</i> subsp. <i>menziesii</i>	0.1	0.1
<i>Hakea lissocarpa</i>	0.4	1
<i>Harperia lateriflora</i>	0.1	0.1
<i>Hibbertia crassifolia</i>	0.4	0.1
<i>Hibbertia hypericoides</i>	0.5	10

<i>Hyalosperma cotula</i>	0.1	0.1
<i>Hypocalymma hirsutum</i>	0.2	0.1
<i>Isotropis cuneifolia</i>	0.1	0.1
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.2	0.1
<i>Lysinema pentapetalum</i>	0.2	0.1
<i>Melaleuca leuropoma</i>	0.4	5
<i>Melaleuca trichophylla</i>	0.4	0.1
<i>Mesomelaena pseudostygia</i>	0.2	0.1
<i>Opercularia vaginata</i>	0.2	0.1
<i>Petrophile megalostegia</i>	0.3	0.1
<i>Petrophile shuttleworthiana</i>	0.5	0.1
<i>Podotheca gnaphaloides</i>	0.1	0.1
<i>Scaevola canescens</i>	0.2	0.1
<i>Sowerbaea laxiflora</i>	0.2	0.1
<i>Stylidium androsaceum</i>	0.1	0.1
<i>Stylidium rigidulum</i>	0.1	0.1

PHOTOS

Site Name: WE098
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 12/09/2012
 GPS Location: WGS84 (Zone 50) 333466E 6747135N
 Community: 3
 Landform Type: Upper Slope
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sand
 Soil Colour: Grey and White
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5 years

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1: Melaleuca concreta and Melaleuca acutifolia (0.6m, 25%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia ericksoniae</i>	0.3	0.1
<i>Astroloma pedicellatum</i> ms	0.4	1
<i>Baeckea crispiflora</i> var. <i>tenuior</i>	0.3	0.1
<i>Borya sphaerocephala</i>	0.1	0.1
<i>Chamaescilla versicolor</i>	0.2	0.1
<i>Chorizema racemosum</i>	0.2	0.1
<i>Comesperma volubile</i>	0.1	0.1
<i>Cryptandra intermedia</i> (atypical variant)	0.3	0.1
<i>Drosera macrantha</i> subsp. <i>macrantha</i>	0.1	0.1
<i>Glischrocaryon aureum</i>	0.2	0.1
<i>Grevillea umbellulata</i>	0.4	0.1
<i>Hibbertia hypericoides</i>	0.3	0.1
<i>Melaleuca acutifolia</i>	0.6	5
<i>Melaleuca concreta</i>	0.6	22
<i>Melaleuca radula</i>	0.6	0.1
<i>Stylidium petiolare</i>	0.1	0.1
<i>Thysanotus manglesianus</i>		0.1

PHOTOS



Site Name: WE099
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 12/09/2012
 GPS Location: WGS84 (Zone 50) 333266E 6746580N
 Community: 12
 Landform Type: Upper Slope
 Slope Class: Gently Inclined (3 degrees)
 Soil Type: Sandy Loam
 Soil Colour: Grey and White
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: *Grevillea biformis* subsp. *biformis* and *Allocasuarina campestris* (2.5m,22%)
 Lower Stratum 1: *Beaufortia elegans* and mixed shrub species over *Ecdeiocolea monostachya* (1m,17%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acanthocarpus</i> sp. <i>Ajana</i> (C.A. Gardner 8596)	0.3	0.1
<i>Allocasuarina campestris</i>	2.2	2
<i>Banksia shuttleworthiana</i>	0.3	0.1
<i>Beaufortia elegans</i>	1	2
<i>Dampiera oligophylla</i>	0.3	0.1
<i>Daviesia nudiflora</i>	0.3	0.1
<i>Drosera macrantha</i> subsp. <i>macrantha</i>	0.1	0.1
<i>Ecdeiocolea monostachya</i>	0.5	15
<i>Geleznovia verrucosa</i>	0.5	0.1
<i>Grevillea biformis</i> subsp. <i>biformis</i>	2.5	20
<i>Hakea polyanthema</i>	0.5	0.1
<i>Hakea trifurcata</i>	2	5
<i>Hibbertia hypericoides</i>	0.5	1
<i>Leptospermum oligandrum</i>	0.7	0.1
<i>Melaleuca leuropoma</i>	0.4	0.1
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (3)	0.2	0.1
<i>Pimelea angustifolia</i>	0.3	0.1
<i>Pterochaeta paniculata</i>	0.1	0.1

PHOTOS



Site Name: WE100
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 12/09/2012
 GPS Location: WGS84 (Zone 50) 333307E 6747369N
 Community: 2
 Landform Type: Flat
 Slope Class: Level (0 degrees)
 Soil Type: Sandy Loam
 Soil Colour: Brown and Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: Eucalyptus Eucalyptus loxophleba ?subsp. loxophleba (6.5m,30%)
 Mid Stratum 1: Rhagodia preissii subsp. preissii and Melaleuca acutifolia (1.5m,20%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Crassula colorata</i> var. <i>acuminata</i>	0.1	0.1
<i>Eucalyptus loxophleba</i> subsp. <i>loxophleba</i>	6.5	30
<i>Melaleuca acutifolia</i>	1.5	5
<i>Rhagodia preissii</i> subsp. <i>preissii</i>	1.5	15

PHOTOS



Site Name: WE101
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 12/09/2012
 GPS Location: WGS84 (Zone 50) 333658E 6747829N
 Community: 12
 Landform Type: Mid Slope
 Slope Class: Moderately Inclined (10 degrees)
 Soil Type: Sandy Loam
 Soil Colour: Grey and White
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: Eucalyptus todtiana (5m,5%)
 Mid Stratum 1: Hakea trifurcata (1.5m,2%)
 Lower Stratum 1: Beaufortia elegans and Hibbertia hypericoides (0.6m,25%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Anigozanthos humilis</i> subsp. <i>humilis</i>	0.2	0.1
<i>Baeckea grandiflora</i>	0.5	0.1
<i>Beaufortia elegans</i>	0.6	10
<i>Burchardia congesta</i>	0.2	0.1
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	1	0.1
<i>Calothamnus sanguineus</i>	0.5	2
<i>Cassytha</i> sp.		0.1
<i>Conostylis resinosa</i>	0.3	0.1
<i>Crassula colorata</i> var. <i>acuminata</i>	0.1	0.1
<i>Darwinia speciosa</i>	0.1	0.1
<i>Drosera erythrorhiza</i>		0.1
<i>Drosera macrantha</i> subsp. <i>macrantha</i>	0.1	0.1
<i>Eucalyptus todtiana</i>	5	5
<i>Hakea trifurcata</i>	1.5	2
<i>Hibbertia hypericoides</i>	0.6	15
<i>Hyalosperma cotula</i>	0.1	0.1
<i>Jacksonia nutans</i>	0.5	0.1
<i>Lasiopetalum drummondii</i>	0.2	0.1

<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.1
<i>Leptospermum oligandrum</i>	0.3	0.1
<i>Leptospermum spinescens</i>	0.3	0.1
<i>Mesomelaena pseudostygia</i>	0.4	0.1
<i>Pimelea angustifolia</i>	0.2	0.1
<i>Stylidium flagellum</i>	0.1	0.1
<i>Verticordia densiflora</i> var. <i>densiflora</i>	0.4	0.1
<i>Verticordia grandis</i>	0.3	0.1

PHOTOS

Site Name: WE102
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 13/09/2012
 GPS Location: WGS84 (Zone 50) 332615E 6744371N
 Community: 8
 Landform Type: Upper Slope of Hill (other)
 Slope Class: Moderately Inclined (10 degrees)
 Soil Type: Clay Loam
 Soil Colour: Brown
 Rock Outcrop: Laterite, 20-50% bedrock exposed
 CF Abundance: 50-90%
 CF Sizes: 2-6mm, 6-20mm, 20-60mm, 60-200mm
 CF Types: Laterite
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5 years

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1: Melaleuca radula, Hakea spathulata, Allocasuarina humilis, Melaleuca aspalathoides over Ecdeiocolea monostachya (0.5m,30%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina humilis</i>	0.5	10
<i>Banksia fraseri</i> var. <i>fraseri</i>	0.4	5
<i>Boronia cymosa</i>	0.3	0.1
<i>Burchardia congesta</i>	0.2	0.1
<i>Cryptandra myriantha</i>	0.4	0.1
<i>Cryptandra nutans</i>	0.4	0.1
<i>Dampiera lindleyi</i>	0.3	0.1
<i>Daviesia hakeoides</i> subsp. <i>subnuda</i>	0.4	2
<i>Daviesia incrassata</i> subsp. <i>teres</i>	0.4	0.1
<i>Daviesia pedunculata</i>	0.3	0.1
<i>Dodonaea ericoides</i>	0.2	0.1
<i>Drosera macrantha</i> subsp. <i>macrantha</i>	0.1	0.1
<i>Ecdeiocolea monostachya</i>	0.5	5
<i>Hakea incrassata</i>	0.5	0.1
<i>Hakea lissocarpha</i>	0.5	0.1
<i>Hakea spathulata</i>	0.5	5
<i>Hibbertia hypericoides</i>	0.5	0.1

<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.1
<i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A)	0.3	0.1
<i>Melaleuca aspalathoides</i>	0.3	5
<i>Melaleuca radula</i>	0.7	5
<i>Opercularia vaginata</i>	0.2	0.1
<i>Petrophile shuttleworthiana</i>	0.4	0.1
<i>Pimelea sulphurea</i>	0.3	0.1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Thysanotus manglesianus</i>		0.1
<i>Trachymene pilosa</i>	0.1	0.1

PHOTOS

Site Name: WE103
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 13/09/2012
 GPS Location: WGS84 (Zone 50) 332640E 6744965N
 Community: 12
 Landform Type: Upper Slope
 Slope Class: Gently Inclined (3 degrees)
 Soil Type: Sandy Loam
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5 years

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1: Hakea circumalata, Hibbertia hypericoides, Banksia shuttleworthiana and Ecdeiocolea monostachya (0.6m,26%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina microstachya</i>	0.4	0.1
<i>Babingtonia camphorosmae</i>	0.2	0.1
<i>Banksia carlinoides</i>	0.6	2
<i>Banksia shuttleworthiana</i>	0.3	2
<i>Beaufortia elegans</i>	0.5	0.1
<i>Burchardia congesta</i>	0.2	0.1
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	0.7	0.1
<i>Conospermum boreale</i> subsp. <i>?ascendens</i>	0.3	0.1
<i>Conostylis resinosa</i>	0.3	0.1
<i>Daviesia divaricata</i> subsp. <i>divaricata</i> ms	0.3	0.1
<i>Daviesia nudiflora</i>	0.5	0.1
<i>Daviesia pedunculata</i>	0.3	0.1
<i>Drosera ?porrecta</i>	0.1	0.1
<i>Ecdeiocolea monostachya</i>	0.6	10
<i>Geleznovia verrucosa</i>	0.4	0.1
<i>Grevillea shuttleworthiana</i> subsp. <i>canarina</i>	0.6	0.1
<i>Hakea circumalata</i>	0.6	10
<i>Hakea costata</i>	0.5	0.1
<i>Hakea cygna</i> subsp. <i>cygna</i>	0.3	0.1

<i>Hibbertia crassifolia</i>	0.4	0.1
<i>Hibbertia hypericoides</i>	0.5	2
<i>Hypocalymma hirsutum</i>	0.2	0.1
<i>Lasiopetalum drummondii</i>	0.2	0.1
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.2	0.1
<i>Leptospermum oligandrum</i>	0.5	0.1
<i>Mesomelaena pseudostygia</i>	0.3	0.1
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (3)	0.2	0.1
<i>Opercularia vaginata</i>	0.1	0.1
<i>Petrophile macrostachya</i>	0.2	0.1
<i>Petrophile megalostegia</i>	0.4	0.1
<i>Petrophile scabriuscula</i>	0.4	0.1
<i>Scaevola canescens</i>	0.1	0.1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Thysanotus manglesianus</i>	0.1	0.1
<i>Verticordia densiflora</i> var. <i>densiflora</i>	0.3	0.1
<i>Verticordia nobilis</i>	0.6	0.1

PHOTOS

Site Name: WE104
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 12/09/2012
 GPS Location: WGS84 (Zone 50) 332822E 6745628N
 Community: 12
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Soil Type: Sandy Loam
 Soil Colour: Grey and White
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: Banksia sessilis var. flabellifolia (3m,15%)
 Mid Stratum 1: Banksia scabrella (2m,2%)
 Lower Stratum 1: Beaufortia elegans and mixed shrubs (1m,10%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina humilis</i>	1	0.1
<i>Baeckea grandiflora</i>	0.6	1
<i>Banksia attenuata</i>	1	0.1
<i>Banksia scabrella</i> (4)	2	2
<i>Banksia sessilis</i> var. <i>flabellifolia</i>	3	15
<i>Beaufortia elegans</i>	1	10
<i>Calytrix sapphirina</i>	0.3	0.1
<i>Cassytha</i> sp.		0.1
<i>Conospermum boreale</i> subsp. <i>?ascendens</i>	0.4	0.1
<i>Conostylis aculeata</i> subsp. <i>breviflora</i>	0.1	0.1
<i>Drosera erythrorhiza</i>		0.1
<i>Drosera ?porrecta</i>	0.1	0.1
<i>Ecdeiocolea monostachya</i>	0.2	0.1
<i>Geleznovia verrucosa</i>	0.3	0.1
<i>Hibbertia crassifolia</i>	0.5	0.1
<i>Hibbertia hypericoides</i>	0.3	0.1
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.2	0.1
<i>Leptospermum oligandrum</i>	0.5	0.1

<i>Leucopogon hispidus</i>	0.3	0.1
<i>Mesomelaena pseudostygia</i>	0.2	0.1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Stylidium flagellum</i>	0.1	0.1
<i>Verticordia nobilis</i>	0.3	0.1
<i>Xylomelum angustifolium</i>	1	0.1

PHOTOS

Site Name: WE105
 Site Type: QUADRAT
 Dimensions: m x m
 Survey Date: 12/09/2012
 GPS Location: WGS84 (Zone 50) 333005E 6746470N
 Community: 8
 Landform Type: Upper slope of Ridge
 Slope Class: Moderately Inclined (10 degrees)
 Soil Type: Sandy Loam
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 10-20%
 CF Sizes: 2-6mm, 6-20mm, 20-60mm
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: Allocasuarina campestris (2m,80%)

Lower Stratum 1: Ecdeiocolea monostachya and sparse shrubs and herbs (0.5m,5%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia ?fagonioides</i>	0.5	0.1
<i>Allocasuarina campestris</i>	2	80
<i>Astroloma pedicellatum</i> ms	0.4	0.1
<i>Banksia sessilis</i> var. <i>flabellifolia</i>		
<i>Conostylis dielsii</i> subsp. <i>dielsii</i>	0.1	0.1
<i>Ecdeiocolea monostachya</i>	0.5	5
<i>Gastrolobium plicatum</i>	0.2	0.1

PHOTOS



Site Name: WE106
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 12/09/2012
 GPS Location: WGS84 (Zone 50) 333804E 6748131N
 Community: 12
 Landform Type: Upper Slope
 Slope Class: Gently Inclined (3 degrees)
 Soil Type: Sandy Loam
 Soil Colour: Grey and White
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5 years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: Allocasuarina campestris, Hibbertia hypericoides, Beaufortia elegans and Hakea circumalata (1.5m,20%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina campestris</i>	1.5	5
<i>Allocasuarina microstachya</i>	0.4	0.1
<i>Babingtonia camphorosmae</i>	0.3	0.1
<i>Baeckea grandiflora</i>	0.5	1
<i>Banksia shuttleworthiana</i>	0.3	0.1
<i>Beaufortia elegans</i>	0.7	2
<i>Conospermum boreale</i> subsp. <i>?ascendens</i>	0.4	0.1
<i>Conostylis aculeata</i> subsp. <i>breviflora</i>	0.1	0.1
<i>Darwinia speciosa</i>	0.2	0.1
<i>Daviesia divaricata</i> subsp. <i>divaricata</i> ms	0.3	0.1
<i>Daviesia nudiflora</i>	0.3	0.1
<i>Drosera erythrorhiza</i>	0.1	0.1
<i>Eremaea ectadioclada</i>	0.3	0.1
<i>Hakea circumalata</i>	0.8	2
<i>Hakea incrassata</i>	0.5	0.1
<i>Hibbertia crassifolia</i>	0.4	0.1
<i>Hibbertia hypericoides</i>	0.5	10
<i>Lasiopetalum drummondii</i>	0.1	0.1
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.1

<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.3	0.1
<i>Melaleuca aspalathoides</i>	0.3	0.1
<i>Melaleuca trichophylla</i>	0.6	0.1
<i>Mesomelaena pseudostygia</i>	0.4	0.1
<i>Petrophile megalostegia</i>	0.4	0.1
<i>Scaevola canescens</i>	0.2	0.1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Stylidium</i> sp. Kalbarri (A. Carr 145)	0.2	0.1

PHOTOS

Site Name: WE107
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 11/09/2012
 GPS Location: WGS84 (Zone 50) 332711E 6739502N
 Community: 13a
 Landform Type: Plain
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sandy Loam
 Soil Colour: Grey and White
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >4 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: Eucalyptus todtiana (8m,5%)
 Lower Stratum 1: Hibbertia hypericoides, Acacia ?fagonioides, Banksia carlinoides and Hakea polyanthema (0.6m,15%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia ?fagonioides</i>	0.5	2
<i>Alexgeorgea nitens</i>	0.1	0.1
<i>Anigozanthos humilis</i> subsp. <i>humilis</i>	0.2	0.1
<i>Banksia carlinoides</i>	0.4	2
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.3	0.1
<i>Beaufortia elegans</i>	0.4	0.1
<i>Calytrix sapphirina</i>	0.5	1
<i>Conospermum boreale</i> subsp. <i>?ascendens</i>	0.5	0.1
<i>Conostylis aculeata</i> subsp. <i>breviflora</i>	0.1	0.1
<i>Conostylis crassinervia</i> subsp. <i>absens</i>	0.1	0.1
<i>Conostylis hiemalis</i>	0.1	0.1
<i>Cristonia biloba</i>	0.3	0.1
<i>Daviesia pedunculata</i>	0.3	0.1
<i>Drosera macrantha</i> subsp. <i>macrantha</i>	0.1	0.1
<i>Eucalyptus todtiana</i>	8	5
<i>Gompholobium tomentosum</i>	0.3	0.1
<i>Hakea costata</i>	0.5	0.1
<i>Hakea polyanthema</i>	0.6	10

<i>Hypocalymma xanthopetalum</i>	0.2	0.1
<i>Isotropis cuneifolia</i>	0.2	0.1
<i>Lambertia multiflora</i> var. <i>multiflora</i>	1	0.1
<i>Lasiopetalum drummondii</i>	0.2	0.1
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.3	0.1
<i>Lysinema pentapetalum</i>	0.3	0.1
<i>Opercularia vaginata</i>	0.2	0.1
<i>Patersonia occidentalis</i>	0.4	0.1
<i>Petrophile scabriuscula</i>	0.4	0.1
<i>Stenanthemum notiale</i> subsp. <i>notiale</i>	0.4	0.1

PHOTOS

Site Name: WE108
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 11/09/2012
 GPS Location: WGS84 (Zone 50) 333162E 6739767N
 Community: 13a
 Landform Type: Upper Slope
 Slope Class: Moderately Inclined (10 degrees)
 Soil Type: Sandy Loam
 Soil Colour: Grey and White (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: Eucalyptus todtiana (6m,5%)
 Mid Stratum 1: Banksia sessilis var. flabellifolia (2m,5%)
 Lower Stratum 1: Melaleuca leuropoma, Allocasuarina humilis and Banksia scabrella (0.6m,20%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia ?fagonioides</i>	0.3	0.1
<i>Alexgeorgea nitens</i>	0.1	0.1
<i>Allocasuarina humilis</i>	0.6	2
<i>Anigozanthos humilis</i> subsp. <i>humilis</i>	0.2	0.1
<i>Baeckea grandiflora</i>	0.4	1
<i>Banksia dallanneyi</i> subsp. <i>media</i>	0.2	0.1
<i>Banksia leptophylla</i> var. <i>melletica</i>	0.4	1
<i>Banksia scabrella</i> (4)	0.5	2
<i>Banksia sessilis</i> var. <i>flabellifolia</i>	2	5
<i>Bossiaea eriocarpa</i>	0.4	0.1
<i>Calothamnus sanguineus</i>	0.4	1
<i>Calytrix sapphirina</i>	0.6	1
<i>Conostylis canteriata</i>	0.2	0.1
<i>Conostylis hiemalis</i>	0.2	0.1
<i>Daviesia incrassata</i> subsp. <i>teres</i>	0.6	0.1
<i>Diplolaena eneabbensis</i>	0.3	0.1
<i>Drosera macrantha</i> subsp. <i>macrantha</i>	0.1	0.1

<i>Drosera ?porrecta</i>	0.1	0.1
<i>Eremaea ectadioclada</i>	0.5	0.1
<i>Eucalyptus todiana</i>	6	5
<i>Hakea psilorrhyncha</i>	1.5	0.1
<i>Hibbertia crassifolia</i>	0.4	0.1
<i>Isotropis cuneifolia</i>	0.1	0.1
<i>Jacksonia hakeoides</i>	0.3	0.1
<i>Johnsonia pubescens</i> subsp. <i>pubescens</i>	0.1	0.1
<i>Lasiopetalum drummondii</i>	0.4	0.1
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.4	0.1
<i>Melaleuca</i> aff. <i>leuropoma</i>	0.5	15
<i>Petrophile scabriuscula</i>	0.4	0.1
<i>Quoya verbascina</i>	0.3	0.1
<i>Schoenus curvifolius</i>		
<i>Schoenus</i> sp. A3 Ciliate Sheaths (K.R. Newbey 9402)	0.3	0.1
<i>Verticordia densiflora</i> var. <i>densiflora</i>	0.3	0.1
<i>Xanthosia huegelii</i>	0.1	0.1

PHOTOS

Site Name: WE109
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 10/09/2012
 GPS Location: WGS84 (Zone 50) 332821E 6738983N
 Community: 14
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Soil Type: Sand
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5 years

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1: Banksia carlinoides, Hibbertia hypericoides and Ecdeiocolea monostachya (0.5m,8%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia dilatata</i>	0.3	0.1
<i>Allocasuarina humilis</i>	0.5	0.1
<i>Astroloma glaucescens</i>	0.2	1
<i>Babingtonia camphorosmae</i>	0.3	1
<i>Banksia carlinoides</i>	0.5	5
<i>Banksia shuttleworthiana</i>	0.4	1
<i>Boronia cymosa</i>		
<i>Bossiaea eriocarpa</i>	0.3	0.1
<i>Burchardia congesta</i>	0.3	0.1
<i>Caladenia flava</i>	0.1	0.1
<i>Calytrix sapphirina</i>	0.5	1
<i>Chorizema aciculare</i> subsp. <i>laxum</i>	0.2	0.1
<i>Conostylis canteriata</i>	0.2	0.1
<i>Conostylis dielsii</i> subsp. <i>dielsii</i>	0.1	0.1
<i>Dampiera juncea</i>	0.2	0.1
<i>Darwinia speciosa</i>	0.1	0.1
<i>Desmocladius semiplanus</i>	0.1	0.1
<i>Diplolaena eneabbensis</i>		
<i>Drosera erythrorhiza</i>	0.1	0.1

<i>Drosera ?porrecta</i>	0.1	0.1
<i>Ecdeiocolea monostachya</i>	0.5	2
<i>Eremaea beaufortioides</i> var. <i>microphylla</i>	0.5	1
<i>Gompholobium tomentosum</i>	0.4	1
<i>Hakea costata</i>	0.4	1
<i>Hakea incrassata</i>	0.4	1
<i>Hakea spathulata</i>	0.4	0.1
<i>Hakea stenocarpa</i>	0.4	0.1
<i>Hibbertia hypericoides</i>	0.4	1
<i>Hypocalymma xanthopetalum</i>	0.3	0.1
<i>Jacksonia hakeoides</i>		
<i>Lambertia multiflora</i> var. <i>multiflora</i>		
<i>Lasiopetalum drummondii</i>	0.2	0.1
<i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i>	0.1	0.1
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)	0.4	1
<i>Leucopogon</i> sp. Northern ciliate (R. Davis 3393)	0.3	0.1
<i>Melaleuca</i> aff. <i>leuropoma</i>	0.5	1
<i>Melaleuca trichophylla</i>	0.5	1
<i>Mesomelaena pseudostygia</i>	0.4	1
<i>Mesomelaena tetragona</i>	0.5	1
<i>Monotaxis bracteata</i>	0.1	0.1
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.1	0.1
<i>Petrophile megalostegia</i>	0.4	1
<i>Podotheca gnaphalioides</i>		
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Schoenus pleiostemoneus</i>	0.1	0.1
<i>Stenanthemum notiale</i> subsp. <i>notiale</i>	0.3	1
<i>Stylidium flagellum</i>	0.1	0.1
<i>Stylidium rigidulum</i>	0.1	0.1
<i>Thysanotus</i> sp.	0.1	0.1

PHOTOS



Site Name: WE110
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 11/09/2012
 GPS Location: WGS84 (Zone 50) 334529E 6739371N
 Community: 14
 Landform Type: Plain
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sandy Loam
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >3 years

DOMINANT TAXA IN VEGETATION STRATA

Lower Stratum 1: Banksia carlinoides, Allocasuarina microstachya and Melaleuca trichophylla (0.5m,15%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina humilis</i>	0.4	0.1
<i>Allocasuarina microstachya</i>	0.4	2
<i>Babingtonia camphorosmae</i>	0.2	1
<i>Banksia carlinoides</i>	0.5	10
<i>Borya sphaerocephala</i>	0.1	0.1
<i>Burchardia congesta</i>	0.2	0.1
<i>Chorizema aciculare</i> subsp. <i>laxum</i>	0.3	0.1
<i>Conostylis aculeata</i> subsp. <i>breviflora</i>	0.2	0.1
<i>Dampiera lindleyi</i>	0.3	0.1
<i>Drosera macrantha</i> subsp. <i>macrantha</i>	0.1	0.1
<i>Elythranthera brunonis</i>	0.1	0.1
<i>Hakea incrassata</i>	0.5	1
<i>Hakea lissocarpha</i>	0.4	0.1
<i>Hakea polyanthema</i>	0.4	0.1
<i>Hakea spathulata</i>	0.4	0.1
<i>Harperia lateriflora</i>	0.1	0.1
<i>Hibbertia hypericoides</i>	0.4	0.1
<i>Hypocalymma xanthopetalum</i>	0.2	0.1
<i>Jacksonia angulata</i>	0.3	0.1

<i>Leucopogon</i> sp. Northern ciliate (R. Davis 3393)	0.2	0.1
<i>Melaleuca trichophylla</i>	0.3	2
<i>Neurachne alopecuroidea</i>	0.1	0.1
<i>Opercularia vaginata</i>	0.2	0.1
<i>Petrophile megalostegia</i>	0.3	0.1
<i>Schoenus armeria</i>	0.2	0.1
<i>Schoenus clandestinus</i>	0.1	0.1

PHOTOS

Site Name: WE111
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 GPS Location: WGS84 (Zone 50) 337054E 6738921N
 Community: 8
 Landform Type: Ridge
 Slope Class: Gently Inclined (3 degrees)
 Soil Type: Sandy Loam
 Soil Colour: Brown and Grey (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >4 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: Eucalyptus accedens (2.5m,10%)
 Lower Stratum 1: Petrophile shuttleworthiana, Hakea spathulata, Melaleuca aspalathoides and Ecdeiocolea monostachya (1m,32%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia comans</i>	0.4	0.1
<i>Allocasuarina campestris</i>	2.2	0.1
<i>Allocasuarina humilis</i>	0.3	0.1
<i>Baeckea crispiflora</i> var. <i>tenuior</i>	0.2	0.1
<i>Baeckea grandiflora</i>	0.4	0.1
<i>Banksia fraseri</i> var. <i>fraseri</i>	0.3	0.1
<i>Boronia cymosa</i>	0.2	0.1
<i>Chamaescilla versicolor</i>	0.1	0.1
<i>Dampiera lindleyi</i>	0.3	0.1
<i>Drosera macrantha</i> subsp. <i>macrantha</i>	0.2	0.1
<i>Ecdeiocolea monostachya</i>	0.5	10
<i>Eucalyptus conveniens</i>	2.5	10
<i>Gastrolobium spinosum</i>	0.4	0.1
<i>Guichenotia micrantha</i>	0.4	0.1
<i>Guichenotia sarotes</i>	0.3	0.1
<i>Hakea lissocarpha</i>	0.5	0.1
<i>Hakea spathulata</i>	1	2
<i>Hibbertia hypericoides</i>	0.4	0.1
<i>Lambertia multiflora</i> var. <i>multiflora</i>	0.5	0.1

<i>Melaleuca aspalathoides</i>	0.3	5
<i>Petrophile shuttleworthiana</i>	1	15
<i>Schoenus armeria</i>	0.2	0.1

PHOTOS

Site Name: WE112
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 GPS Location: WGS84 (Zone 50) 338243E 6739383N
 Community: 1a
 Landform Type: Flat Plain (other)
 Slope Class: Level (0 degrees)
 Soil Type: Sand
 Soil Colour: Grey and White (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 2 - Excellent
 Disturbance: Exotic Weeds
 Fire: >5 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: Eucalyptus accedens (8m,10%)
 Mid Stratum 1: Macrozamia fraseri (1.7m,5%)
 Lower Stratum 1: Anthocercis genistoides (0.5m,15%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i>	0.4	0.1
<i>Anthocercis genistoides</i>	0.5	15
* <i>Arctotheca calendula</i>	0.1	0.1
<i>Conostylis aculeata</i> subsp. <i>breviflora</i>	0.1	1
<i>Desmocladius asper</i>	0.1	0.1
* <i>Ehrharta brevifolia</i>	0.1	0.1
<i>Eucalyptus accedens</i>	8	10
<i>Gastrolobium spinosum</i>	0.4	1
<i>Gompholobium pungens</i>	0.2	0.1
<i>Jacksonia hakeoides</i>	0.3	0.1
<i>Macrozamia fraseri</i>	1.7	5
<i>Millotia myosotidifolia</i>	0.1	2
<i>Olearia rudis</i>	0.5	1
* <i>Pentameris airoides</i> subsp. <i>airoides</i>	0.1	0.1
<i>Podotheca gnaphalioides</i>	0.1	0.1
<i>Rhagodia preissii</i> subsp. <i>preissii</i>	0.3	0.1
<i>Senecio pinnatifolius</i> var. <i>latilobus</i>	0.1	0.1
<i>Thysanotus patersonii</i>	0.1	0.1
<i>Trachymene pilosa</i>	0.1	0.1

* <i>Ursinia anthemoides</i>	0.1	0.1
------------------------------	-----	-----

PHOTOS



Site Name: WE113
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 11/09/2012
 GPS Location: WGS84 (Zone 50) 338278E 6739687N
 Community: 8
 Landform Type: Plain
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sand
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >5 years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: Eucalyptus conveniens (2m,10%)
 Lower Stratum 1: Melaleuca aspalathoides, Hibbertia hypericoides and Daviesia daphnoides (0.4m,24%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina humilis</i>	0.4	1
<i>Allocasuarina microstachya</i>		
<i>Astroloma glaucescens</i>	0.3	0.1
<i>Baeckea grandiflora</i>	0.2	0.1
<i>Banksia carlinoides</i>	0.5	0.1
<i>Banksia fraseri</i> var. <i>fraseri</i>	0.4	1
<i>Beaufortia elegans</i>	0.3	0.1
<i>Burchardia congesta</i>	0.3	0.1
<i>Calectasia narragara</i>	0.3	0.1
<i>Calothamnus longissimus</i>	0.4	1
<i>Calothamnus sanguineus</i>		
<i>Conostylis dielsii</i> subsp. <i>dielsii</i>	0.1	0.1
<i>Dampiera teres</i>	0.3	0.1
<i>Daviesia daphnoides</i>	0.4	5
<i>Drosera pilos</i>		
<i>Ecdeiocolea monostachya</i>	0.5	1
<i>Elythranthera brunonis</i>		
<i>Eucalyptus conveniens</i>	2	10

<i>Glischrocaryon aureum</i>	0.2	0.1
<i>Hakea incrassata</i>		
<i>Hakea spathulata</i>	0.4	1
<i>Hibbertia crassifolia</i>	0.5	0.1
<i>Hibbertia hypericoides</i>	0.4	4
<i>Hypocalymma hirsutum</i>	0.2	0.1
<i>Isopogon divergens</i>	0.4	1
<i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A)	0.2	0.1
<i>Melaleuca aspalathoides</i>	0.2	15
<i>Mesomelaena pseudostygia</i>	0.4	0.1
<i>Petrophile megalostegia</i>	0.3	1
<i>Petrophile shuttleworthiana</i>	0.5	1
<i>Pimelea sulphurea</i>	0.4	0.1
<i>Pterostylis vittata</i>		
<i>Scaevola canescens</i>	0.2	0.1
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Sphaerolobium pulchellum</i>	0.2	0.1
<i>Stylidium drummondianum</i> (3)	0.1	0.1
<i>Synaphea aephyrsa</i> (3)		

PHOTOS

Site Name: WE117
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 05/10/2012
 GPS Location: GDA94 (Zone 50) 341260E 6748366N
 Community: 5
 Landform Type: Drainage Line
 Slope Class: Level (0 degrees)
 Soil Type: Clay Loam
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 3 - Very Good
 Disturbance: Exotic Weeds
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia aciphylla</i>	2	0.5
<i>Acacia isoneura</i> subsp. <i>isoneura</i> (3)	2.5	0.5
<i>Acacia neurophylla</i> subsp. <i>neurophylla</i>	3.5	1
<i>Allocasuarina campestris</i>	2	85
<i>Ecdeiocolea monostachya</i>	0.5	0.4
* <i>Ehrharta longiflora</i>	0.4	3
* <i>Hypochaeris glabra</i>	0.1	1
<i>Melaleuca viminea</i> subsp. <i>viminea</i>		
<i>Thryptomene racemulosa</i>	1.5	1
<i>Thysanotus manglesianus</i>		0.1
* <i>Ursinia anthemoides</i>	0.2	2
<i>Verticordia densiflora</i> var. <i>densiflora</i>	1	0.5

PHOTOS



Site Name: WE119
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 03/10/2012
 GPS Location: WGS84 (Zone 50) 340154E 6748470N
 Community: 7a
 Landform Type: Lower Slope
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Clay Loam
 Soil Colour: Brown and Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: <2%
 CF Sizes: 2-6mm, 6-20mm, 20-60mm
 CF Types: Laterite
 Vegetation Condition: 1 - Pristine
 Disturbance: None
 Fire: >10 years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: Allocasuarina campestris and Calothamnus quadrifidus (1.6m,2%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina campestris</i>	1.6	1
<i>Amphipogon caricinus</i> var. <i>caricinus</i>	0.2	2
<i>Astroloma pedicellatum</i> ms	0.3	0.5
<i>Austrostipa elegantissima</i>	0.5	1
<i>Babingtonia camphorosmae</i>	0.2	0.1
<i>Boronia cymosa</i>	0.3	0.2
<i>Borya sphaerocephala</i>	0.1	0.1
<i>Burchardia congesta</i>	0.2	0.1
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	1.5	1
<i>Calytrix oldfieldii</i>	0.4	0.2
<i>Caustis dioica</i>	0.4	0.1
<i>Chamaescilla versicolor</i>	0.1	0.1
<i>Chorizema aciculare</i> subsp. <i>laxum</i>	0.3	0.2
<i>Conostylis dielsii</i> subsp. <i>dielsii</i>	0.1	0.1
<i>Dampiera lavandulacea</i>	0.2	0.1
<i>Daviesia hakeoides</i> subsp. <i>subnuda</i>	0.4	0.2
<i>Drosera spilos</i>	0.1	0.1
<i>Ecdeiocolea monostachya</i>	0.5	4

<i>*Ehrharta longiflora</i>	0.5	0.1
<i>Glischrocaryon aureum</i>	0.5	0.2
<i>Gnephosis drummondii</i>	0.1	0.1
<i>Goodenia coerulea</i>	0.2	0.1
<i>Guichenotia sarotes</i>	0.3	0.1
<i>Hakea circumalata</i>	1.2	0.5
<i>Jacksonia foliosa</i>	0.4	0.2
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>	0.3	0.1
<i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A)	0.2	0.1
<i>Lepidosperma tenue</i>	0.4	0.2
<i>Mesomelaena pseudostygia</i>	0.3	0.2
<i>Neurachne alopecuroidea</i>	0.2	0.2
<i>Opercularia vaginata</i>	0.1	0.2
<i>Patersonia graminea</i>	0.3	0.1
<i>Podolepis capillaris</i>	0.2	0.2
<i>Schoenus clandestinus</i>	0.1	0.1
<i>Schoenus unispiculatus</i>	0.2	0.1
<i>Stylidium androsaceum</i>	0.1	0.1
<i>Stylidium dichotomum</i>	0.2	0.1
<i>Thryptomene racemulosa</i>	0.2	0.1
<i>Trachymene cyanopetala</i>	0.2	0.1
<i>Trachymene ornata</i>	0.1	0.1
<i>Trachymene pilosa</i>	0.1	0.1
<i>*Ursinia anthemoides</i>	0.2	0.1
<i>Verticordia densiflora</i> var. <i>densiflora</i>	0.5	0.1

PHOTOS



Site Name: WE120
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 04/10/2012
 GPS Location: WGS84 (Zone 50) 340671E 6747304N
 Community: 4
 Landform Type: Upper Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: SW
 Soil Type: Clay Loam
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 2-10%
 CF Sizes: 2-6mm, 6-20mm, 20-60mm
 CF Types: Laterite, Ironstone
 Vegetation Condition: 1 - Pristine
 Disturbance: Exotic Weeds
 Fire: >10 years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: Allocasuarina campestris (2m,85%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina campestris</i>	2	85
<i>Amphipogon caricinus</i> var. <i>caricinus</i>	0.3	0.1
<i>Austrostipa variabilis</i>	0.3	0.1
<i>Borya sphaerocephala</i>	0.1	0.2
<i>Burchardia congesta</i>	0.3	0.1
<i>Caladenia flava</i>	0.1	0.1
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	1	0.2
<i>Ecdeiocolea monostachya</i>	0.4	0.5
<i>Hakea orthorrhyncha</i> var. <i>filiformis</i>	1.2	0.5
<i>Homalosciadium homalocarpum</i>	0.1	0.1
* <i>Hypochaeris glabra</i>	0.1	0.1
<i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i>	0.1	0.2
<i>Lepidosperma tenue</i>	0.4	0.2
<i>Neurachne alopecuroidea</i>	0.3	0.1
<i>Opercularia vaginata</i>	0.2	0.2
* <i>Pentameris airoides</i> subsp. <i>airoides</i>	0.1	0.1
<i>Santalum acuminatum</i>	2.5	1

<i>Stylidium androsaceum</i>	0.1	0.1
<i>Stylidium torticarpum</i> (3)		
<i>Thryptomene racemulosa</i>	0.3	0.2
<i>Thysanotus manglesianus</i>		0.1
<i>Trachymene ornata</i>	0.1	0.1
<i>Trachymene pilosa</i>	0.1	0.1
* <i>Ursinia anthemoides</i>	0.2	0.1
<i>Verticordia chrysanthella</i>	0.5	0.4
* <i>Vulpia myuros</i>	0.3	0.1
<i>Waitzia acuminata</i> var. <i>acuminata</i>	0.2	0.1

PHOTOS

Site Name: WE121
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 04/10/2012
 GPS Location: WGS84 (Zone 50) 340699E 6747127N
 Community: 4
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: SW
 Soil Type: Clay Loam
 Soil Colour: Pale Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 2-10%
 CF Sizes: 2-6mm, 6-20mm, 20-60mm
 CF Types: Granite, Ironstone
 Vegetation Condition: 2 - Excellent
 Disturbance: Exotic Weeds
 Fire: >10 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: *Acacia neurophylla* subsp. *erugata* (3.5m,20%)
 Lower Stratum 1: **Pentameris airoides* and *Opercularia vaginata* (0.2m,9%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia neurophylla</i> subsp. <i>neurophylla</i>	3.5	20
<i>Astroloma pedicellatum</i> ms	0.5	0.5
<i>Austrostipa elegantissima</i>	0.4	0.3
<i>Austrostipa variabilis</i>	0.4	0.2
<i>Blennospora drummondii</i>	0.1	0.1
* <i>Briza maxima</i>	0.2	0.1
<i>Burchardia congesta</i>	0.4	0.2
<i>Chamaescilla versicolor</i>	0.2	0.1
<i>Cryptandra myriantha</i>	0.4	0.1
* <i>Cuscuta epithymum</i>		0.1
<i>Dampiera altissima</i>	0.3	0.1
<i>Glischrocaryon aureum</i>	0.3	0.2
<i>Gnephosis drummondii</i>	0.1	0.2
<i>Gonocarpus nodulosus</i>	0.1	0.1
<i>Hakea orthorrhyncha</i> var. <i>filiformis</i>	0.8	0.2

<i>Hemigenia drummondii</i>	0.4	0.8
<i>Homalosciadium homalocarpum</i>	0.1	0.1
<i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i>	0.2	0.1
<i>Melaleuca radula</i>	0.8	0.2
<i>Neurachne alopecuroidea</i>	0.3	0.2
<i>Olearia ?dampieri</i>	1.5	0.5
<i>Opercularia vaginata</i>	0.2	4
* <i>Parentucellia latifolia</i>	0.1	0.1
* <i>Pentameris airoides</i> subsp. <i>airoides</i>	0.2	5
<i>Podolepis lessonii</i>	0.2	0.4
<i>Rhodanthe manglesii</i>	0.2	0.1
<i>Rytidosperma acerosum</i>	0.3	0.2
<i>Stylidium torticarpum</i> (3)	0.2	0.4
<i>Thryptomene</i> sp. <i>Mingenew</i> (Diels & Pritzel 332) (3)		
<i>Thysanotus manglesianus</i>		0.1
<i>Waitzia acuminata</i> var. <i>acuminata</i>	0.2	0.2

PHOTOS

Site Name: WE122
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 04/10/2012
 GPS Location: WGS84 (Zone 50) 340783E 6747271N
 Community: 6
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Aspect: W
 Soil Type: Light Clay
 Soil Colour: Brown and Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 2-10%
 CF Sizes: 2-6mm, 6-20mm
 CF Types: Ironstone
 Vegetation Condition: 1 - Pristine
 Disturbance: Exotic Weeds
 Fire: >10 years

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1: Eucalyptus loxophleba subsp. loxophleba (4m, 6%)
 Mid Stratum 2: Melaleuca marginata (2m ,75%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina campestris</i>	2.5	0.5
<i>Clematicissus angustissima</i>		0.1
* <i>Erodium cicutarium</i>	0.1	0.1
<i>Eucalyptus loxophleba</i> subsp. <i>loxophleba</i>	4	6
* <i>Hypochoeris glabra</i>	0.1	0.1
* <i>Lysimachia arvensis</i>	0.2	0.1
<i>Melaleuca marginata</i>	2	75
* <i>Pentameris airoides</i> subsp. <i>airoides</i>	0.3	0.2
<i>Rhodanthe polycephala</i>	0.1	0.1
<i>Thysanotus pyramidalis</i>		
* <i>Trifolium campestre</i> var. <i>campestre</i>	0.1	0.1
* <i>Vulpia myuros</i>	0.2	0.2

PHOTOS



Site Name: WE127
 Site Type: QUADRAT
 Dimensions: 10m x 10m
 Survey Date: 04/10/2012
 GPS Location: WGS84 (Zone 50) 340992E 6747350N
 Community: 4
 Landform Type: Crest
 Slope Class: Level (0 degrees)
 Soil Type: Clay Loam
 Soil Colour: Pale Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 10-20%
 CF Sizes: 2-6mm, 6-20mm
 CF Types: Granite, Laterised Ironstone
 Vegetation Condition: 1 - Pristine
 Disturbance: Exotic Weeds
 Fire: >10 years

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1: Allocasuarina campestris (2.5m,5%)
 Lower Stratum 1: Melaleuca concreta and Calothamnus quadrifidus subsp. angustifolius (1.5m,8%)
 Lower Stratum 2: Borya sphaerocephala (0.1m,5%)

SPECIES LIST

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina campestris</i>	2.5	5
<i>Amphipogon caricinus</i> var. <i>caricinus</i>	0.3	0.2
<i>Astroloma pedicellatum</i> ms	0.4	0.5
<i>Austrostipa elegantissima</i>	0.7	0.2
<i>Borya sphaerocephala</i>	0.1	5
<i>Burchardia congesta</i>	0.3	0.2
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	1.5	1
<i>Chamaescilla versicolor</i>	0.1	0.1
<i>Cheilanthes adiantoides</i>	0.1	0.1
<i>Cryptandra myriantha</i>	0.3	0.1
<i>Dampiera teres</i>	0.4	0.2
<i>Gastrolobium callistachys</i>	0.6	0.2
<i>Glischrocaryon aureum</i>	0.4	0.2
<i>Grevillea biternata</i>	0.4	0.3

<i>Hemigenia drummondii</i>	0.4	0.2
* <i>Hypochaeris glabra</i>	0.1	0.1
<i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i>	0.1	0.2
<i>Lepidosperma tenue</i>	0.4	0.4
<i>Melaleuca concreta</i>	1.5	7
<i>Melaleuca radula</i>	1	0.2
<i>Neurachne alopecuroidea</i>	0.2	0.1
<i>Opercularia vaginata</i>	0.1	0.1
<i>Podolepis lessonii</i>	0.1	0.1
<i>Sowerbaea laxiflora</i>	0.4	0.2
<i>Stylidium torticarpum</i> (3)	0.1	0.2
<i>Thryptomene racemulosa</i>	0.4	2
<i>Thryptomene</i> sp. <i>Mingenew</i> (Diels & Pritzel 332) (3)	0.4	0.5
<i>Thysanotus manglesianus</i>		0.1
<i>Trachymene pilosa</i>	0.1	0.1

PHOTOS

Site Name: SITE01
 Site Type: AREA
 Dimensions: m x m
 Survey Date: 02/10/2012
 GPS Location: GDA94 (Zone 50) 334653E 6750841N
 Community: 4D
 Landform Type: Flat
 Slope Class: Level (0 degrees)
 Soil Type: Sandy Loam
 Soil Colour: Grey-brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 5 - Degraded
 Disturbance: Grazing, Exotic Weeds, Pig/Animal Disturbance
 Fire: Unknown

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia acuminata</i>		
<i>Acacia saligna</i>		
* <i>Arctotheca calendula</i>		
* <i>Avena barbata</i>		
* <i>Bromus diandrus</i>		
* <i>Echium plantagineum</i>		
* <i>Erodium cicutarium</i>		
* <i>Monoculus monstrosus</i>		
* <i>Parentucellia latifolia</i>		
* <i>Petrorhagia dubia</i>		
<i>Podotheca gnaphalioides</i>		
* <i>Vulpia myuros</i>		

Site Name: SITE02
 Site Type: AREA
 Dimensions: m x m
 Survey Date: 03/10/2012
 GPS Location: GDA94 (Zone 50) 334701E 6750526N
 Community: PC1D
 Landform Type: Flat
 Slope Class: Level (0 degrees)
 Soil Type: Clay Loam
 Soil Colour: Grey-brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 4 - Good
 Disturbance: Grazing, Limited Clearing, Exotic Weeds
 Fire: Unknown

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia acuminata</i>		
<i>Arthropodium dyeri</i>		
* <i>Echium plantagineum</i>		
<i>Ptilotus manglesii</i>		

Site Name: SITE03
 Site Type: AREA
 Dimensions: m x m
 Survey Date: 03/10/2012
 GPS Location: GDA94 (Zone 50) 337718E 6750570N
 Community: 5
 Landform Type: Flat
 Soil Type: Clay Loam
 Soil Colour: grey-brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 4 - Good
 Disturbance: Grazing, Exotic Weeds
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Acacia aciphylla</i>		
<i>Acacia tetragonophylla</i>		
<i>Allocasuarina campestris</i>		
<i>Baeckea decipiens</i> (1)		
<i>Grevillea biternata</i>		
<i>Tetraria microcarpa</i>		
<i>Thryptomene</i> sp. Mingenew (Diels & Pritzel 332) (3)		

Site Name: SITE04
 Site Type: AREA
 Dimensions: m x m
 Survey Date: 03/10/2012
 GPS Location: GDA94 (Zone 50) 341135E 6750890N
 Community: 4
 Landform Type: Lower Slope
 Slope Class: Gently Inclined (3 degrees)
 Soil Type: Clay Loam
 Soil Colour: Brown
 Rock Outcrop: No bedrock exposed
 CF Abundance: 2-10%
 CF Sizes: 6-20mm
 CF Types: Granite, ?Sandstone (other)
 Vegetation Condition: 3 - Very Good
 Disturbance: Grazing, Exotic Weeds
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina campestris</i>		
<i>Amphipogon caricinus</i> var. <i>caricinus</i>		
<i>Ecdeiocolea monostachya</i>		
<i>Hakea orthorrhyncha</i> var. <i>filiformis</i>		
<i>Melaleuca concreta</i>		
<i>Melaleuca marginata</i>		
<i>Stylidium torticarpum</i> (3)		
<i>Thryptomene</i> sp. <i>Mingenew</i> (Diels & Pritzel 332) (3)		
<i>Trachymene ornata</i>		

Site Name: SITE05
 Site Type: AREA
 Dimensions: m x m
 Survey Date: 04/10/2012
 GPS Location: GDA94 (Zone 50) 341088E 6745813N
 Community: 11
 Landform Type: Mid Slope
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sandy Loam
 Soil Colour: yellow-brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 2 - Excellent
 Disturbance: Grazing, Exotic Weeds
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina campestris</i>		
<i>Daviesia divaricata</i> subsp. <i>divaricata</i> ms		
<i>Ecdeiocolea monostachya</i>		
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>		
<i>Melaleuca leuropoma</i>		
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i> (3)		
<i>Scholtzia laxiflora</i>		

Site Name: SITE06
 Site Type: AREA
 Dimensions: m x m
 Survey Date: 04/10/2012
 GPS Location: GDA94 (Zone 50) 339550E 6744313N
 Community: 1a
 Landform Type: Mid Slope
 Slope Class: Gently Inclined (3 degrees)
 Soil Type: Clay Loam
 Soil Colour: grey-brown (other)
 Rock Outcrop: Laterite, >2% bedrock exposed
 CF Abundance: 20-50%
 CF Sizes: 20-60mm
 CF Types: Laterite
 Vegetation Condition: 2 - Excellent
 Disturbance: Exotic Weeds
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina campestris</i>		
<i>Banksia fraseri</i> var. <i>fraseri</i>		
<i>Calothamnus longissimus</i>		
<i>Ecdeiocolea monostachya</i>		
<i>Eucalyptus conveniens</i>		
<i>Hakea auriculata</i>		
<i>Melaleuca radula</i>		
<i>Stylidium drummondianum</i> (3)		

Site Name: SITE07
 Site Type: AREA
 Dimensions: m x m
 Survey Date: 04/10/2012
 GPS Location: GDA94 (Zone 50) 339476E 6744289N
 Community: 1a
 Landform Type: Mid Slope
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sandy Loam
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 2 - Excellent
 Disturbance: Exotic Weeds
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>		
<i>Eucalyptus accedens</i>		
<i>Gompholobium laxum</i>		
<i>Hakea lissocarpa</i>		

Site Name: SITE08
 Site Type: AREA
 Dimensions: m x m
 Survey Date: 04/10/2012
 GPS Location: GDA94 (Zone 50) 339477E 6742796N
 Community: 1a
 Landform Type: Upper Slope
 Slope Class: Very Gently Inclined (1 degree)
 Soil Type: Sand
 Soil Colour: Grey
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 2 - Excellent
 Disturbance: Exotic Weeds
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Eucalyptus accedens</i>		
<i>Hakea lissocarpa</i>		
<i>Olearia rudis</i>		
<i>Rhagodia preissii</i> subsp. <i>preissii</i>		

Site Name: SITE09
 Site Type: AREA
 Dimensions: m x m
 Survey Date: 04/10/2012
 GPS Location: GDA94 (Zone 50) 339564E 6742912N
 Community: 8
 Landform Type: Upper Slope
 Slope Class: Gently Inclined (3 degrees)
 Soil Type: Clay Loam
 Soil Colour: Grey-brown (other)
 Rock Outcrop: Laterite, 2-10% bedrock exposed
 CF Abundance: 20-50%
 CF Sizes: 20-60mm
 CF Types: Laterite
 Vegetation Condition: 1 - Pristine
 Fire: >10

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina campestris</i>		
<i>Banksia carlinoides</i>		
<i>Eucalyptus conveniens</i>		
<i>Gastrolobium spinosum</i>		
<i>Hakea auriculata</i>		
<i>Hakea stenocarpa</i>		
<i>Melaleuca aspalathoides</i>		
<i>Petrophile shuttleworthiana</i>		
<i>Stylidium drummondianum</i> (3)		

Site Name: SITE10
 Site Type: AREA
 Dimensions: m x m
 Survey Date: 05/10/2012
 GPS Location: GDA94 (Zone 50) 341469E 6748497N
 Community: 11
 Landform Type: Lower Slope
 Slope Class: Gently Inclined (3 degrees)
 Soil Type: Sandy Loam
 Soil Colour: Yellow-brown (other)
 Rock Outcrop: No bedrock exposed
 CF Abundance: 0%
 Vegetation Condition: 3 - Very Good
 Disturbance: Exotic Weeds
 Fire: >5

DOMINANT TAXA IN VEGETATION STRATA**SPECIES LIST**

Taxon Name	Avg. Height	% Cover Alive
<i>Allocasuarina campestris</i>		
<i>Ecdeiocolea monostachya</i>		
<i>Hakea circumalata</i>		
<i>Melaleuca leuropoma</i>		
<i>Scholtzia laxiflora</i>		
* <i>Vulpia myuros</i>		

Appendix I: Location Details of Conservation Significant Flora and Introduced Flora Recorded within the West Erregulla Study Area

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Acacia ?idiomorpha</i>	-	334635	6748026	WE076		24/11/2011	9
<i>Acacia isoneura</i> subsp. <i>isoneura</i>	3	341260	6748366	WE117		5/10/12	5
<i>Allocasuarina grevilleoides</i>	3	337271	6739728		2	14/11/12	7a
<i>Allocasuarina grevilleoides</i>	3	337417	6740155		200	14/11/12	7a
<i>Allocasuarina grevilleoides</i>	3	337541	6740162		200	14/11/12	7a
<i>Allocasuarina grevilleoides</i>	3	337832	6740614		200	21/11/11	8
<i>Allocasuarina grevilleoides</i>	3	337715	6740616	WE056		21/11/11	8
<i>Allocasuarina grevilleoides</i>	3	337710	6740764		200	21/11/11	7a
<i>Allocasuarina grevilleoides</i>	3	338163	6742253		100	22/11/11	8
<i>Allocasuarina grevilleoides</i>	3	337660	6742287		100	23/10/12	8
<i>Allocasuarina grevilleoides</i>	3	337087	6742279		80	8/11/12	13a
<i>Allocasuarina grevilleoides</i>	3	336728	6740968		10	15/11/12	7a
<i>Allocasuarina grevilleoides</i>	3	336394	6740971		20	15/11/12	13a
<i>Allocasuarina grevilleoides</i>	3	336493	6740997		2	15/11/12	7a
<i>Allocasuarina grevilleoides</i>	3	336396	6740998		20	15/11/12	7a
<i>Allocasuarina grevilleoides</i>	3	336386	6741024		10	15/11/12	7a
<i>Allocasuarina grevilleoides</i>	3	337732	6742129		50	23/10/12	8
<i>Allocasuarina grevilleoides</i>	3	337678	6742180		30	23/10/12	7b
<i>Allocasuarina grevilleoides</i>	3	337071	6742281		10	8/11/12	13a
<i>Allocasuarina grevilleoides</i>	3	337775	6742349		50	23/10/12	7a
<i>Allocasuarina grevilleoides</i>	3	337683	6742353		50	23/10/12	7b
<i>Allocasuarina grevilleoides</i>	3	336986	6742359		5	8/11/12	13a
<i>Allocasuarina grevilleoides</i>	3	338114	6742376		50	9/10/12	8
<i>Allocasuarina grevilleoides</i>	3	338112	6742406		5	9/10/12	7a
<i>Allocasuarina grevilleoides</i>	3	336942	6742401		15	8/11/12	13a
<i>Allocasuarina grevilleoides</i>	3	336940	6742403		100	8/11/12	13a
<i>Allocasuarina grevilleoides</i>	3	338219	6742439		20	13/11/12	7a
<i>Allocasuarina grevilleoides</i>	3	337728	6742455		150	8/11/12	7b
<i>Allocasuarina grevilleoides</i>	3	338115	6742488		20	9/10/12	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Allocasuarina grevilleoides</i>	3	337680	6742482		20	8/11/12	7b
<i>Allocasuarina grevilleoides</i>	3	337679	6742499		1	8/11/12	7b
<i>Allocasuarina grevilleoides</i>	3	338141	6742575		20	9/10/12	8
<i>Allocasuarina grevilleoides</i>	3	337319	6742625		2	8/11/12	13a
<i>Allocasuarina grevilleoides</i>	3	336543	6742633		150	14/11/12	7b
<i>Allocasuarina grevilleoides</i>	3	338240	6742793		3	9/10/12	8
<i>Allocasuarina grevilleoides</i>	3	338218	6742793		50	9/10/12	8
<i>Allocasuarina grevilleoides</i>	3	338216	6742844		30	9/10/12	8
<i>Allocasuarina grevilleoides</i>	3	338262	6742862		1	9/10/12	8
<i>Allocasuarina grevilleoides</i>	3	338215	6742891		20	9/10/12	8
<i>Banksia fraseri</i> var. ? <i>crebra</i>	3	336290	6743745				7b
<i>Banksia scabrella</i>	4	332241	6742470		55	16/11/2012	13a
<i>Banksia scabrella</i>	4	332265	6742502		10	16/11/2012	13a
<i>Banksia scabrella</i>	4	332397	6741673	WE083		25/11/2011	13a
<i>Banksia scabrella</i>	4	332403	6742508		10	16/11/2012	13a
<i>Banksia scabrella</i>	4	332540	6742501		10	16/11/2012	13a
<i>Banksia scabrella</i>	4	332606	6742133		30	16/11/2012	10
<i>Banksia scabrella</i>	4	332655	6742499		5	16/11/2012	13a
<i>Banksia scabrella</i>	4	332668	6742048		10	16/11/2012	10
<i>Banksia scabrella</i>	4	332672	6741732		5	16/11/2012	13a
<i>Banksia scabrella</i>	4	332688	6744110		1	7/11/2012	13a
<i>Banksia scabrella</i>	4	332692	6741673		5	16/11/2012	13a
<i>Banksia scabrella</i>	4	332712	6741776		40	16/11/2012	10
<i>Banksia scabrella</i>	4	332761	6744106		3	7/11/2012	13a
<i>Banksia scabrella</i>	4	332770	6744289		1	7/11/2012	13a
<i>Banksia scabrella</i>	4	332779	6741665		5	16/11/2012	13a
<i>Banksia scabrella</i>	4	332803	6742470		40	16/11/2012	13a
<i>Banksia scabrella</i>	4	332811	6740837		1	8/11/2012	13a
<i>Banksia scabrella</i>	4	332822	6745628	WE104		12/09/2012	12
<i>Banksia scabrella</i>	4	332870	6741670		1	16/11/2012	10
<i>Banksia scabrella</i>	4	332874	6742497		5	16/11/2012	13a

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Banksia scabrella</i>	4	332884	6740762		2	8/11/2012	13a
<i>Banksia scabrella</i>	4	332890	6740943		4	8/11/2012	7b
<i>Banksia scabrella</i>	4	332904	6742274		80	16/11/2012	13a
<i>Banksia scabrella</i>	4	332916	6744492		1	7/11/2012	10
<i>Banksia scabrella</i>	4	332931	6741851		5	16/11/2012	10
<i>Banksia scabrella</i>	4	332931	6742399		5	16/11/2012	7a
<i>Banksia scabrella</i>	4	332932	6742116		20	16/11/2012	13a
<i>Banksia scabrella</i>	4	332937	6741732		10	16/11/2012	10
<i>Banksia scabrella</i>	4	332938	6742282		10	16/11/2012	13a
<i>Banksia scabrella</i>	4	332965	6741109		100	8/11/2012	13a
<i>Banksia scabrella</i>	4	332966	6744452		1	7/11/2012	13a
<i>Banksia scabrella</i>	4	332972	6746024		100	11/10/2012	12
<i>Banksia scabrella</i>	4	332983	6740768		1	8/11/2012	13a
<i>Banksia scabrella</i>	4	333056	6744643		1	7/11/2012	10
<i>Banksia scabrella</i>	4	333065	6740783		1	8/11/2012	7b
<i>Banksia scabrella</i>	4	333115	6741074		50	8/11/2012	13a
<i>Banksia scabrella</i>	4	333123	6740808		50	8/11/2012	13a
<i>Banksia scabrella</i>	4	333140	6744939		2	7/11/2012	10
<i>Banksia scabrella</i>	4	333148	6744874		1	7/11/2012	10
<i>Banksia scabrella</i>	4	333153	6744836		2	7/11/2012	10
<i>Banksia scabrella</i>	4	333158	6741056		1	8/11/2012	13a
<i>Banksia scabrella</i>	4	333162	6739767	WE108		11/09/2012	13a
<i>Banksia scabrella</i>	4	333164	6740803		3	8/11/2012	13a
<i>Banksia scabrella</i>	4	333189	6744821		100	7/11/2012	10
<i>Banksia scabrella</i>	4	333274	6744400	WE049		26/10/2011	13a
<i>Banksia scabrella</i>	4	333290	6741147		1	8/11/2012	13a
<i>Banksia scabrella</i>	4	333312	6746031		20	11/10/2012	12
<i>Banksia scabrella</i>	4	333322	6740835		50	8/11/2012	13a
<i>Banksia scabrella</i>	4	333366	6740823		2	8/11/2012	13a
<i>Banksia scabrella</i>	4	333369	6745085		5	7/11/2012	10
<i>Banksia scabrella</i>	4	333459	6744897		3	11/10/2012	10

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Banksia scabrella</i>	4	333470	6745582	WE027		25/10/2011	10
<i>Banksia scabrella</i>	4	333471	6744871		1	7/11/2012	10
<i>Banksia scabrella</i>	4	333480	6745081		2	7/11/2012	10
<i>Banksia scabrella</i>	4	333489	6744860		1	11/10/2012	10
<i>Banksia scabrella</i>	4	333540	6744933		7		10
<i>Banksia scabrella</i>	4	333542	6740845		3	8/11/2012	13a
<i>Banksia scabrella</i>	4	333551	6741816		100	9/11/2012	7a
<i>Banksia scabrella</i>	4	333562	6744858		1	7/11/2012	10
<i>Banksia scabrella</i>	4	333583	6741945		2	9/11/2012	7a
<i>Banksia scabrella</i>	4	333591	6740851		80	8/11/2012	13a
<i>Banksia scabrella</i>	4	333605	6744182	WE050		27/10/2011	13b
<i>Banksia scabrella</i>	4	333622	6741839		1	9/11/2012	13a
<i>Banksia scabrella</i>	4	333624	6745724		20	6/11/2012	12
<i>Banksia scabrella</i>	4	333626	6740835		1	8/11/2012	13a
<i>Banksia scabrella</i>	4	333633	6744852		6		10
<i>Banksia scabrella</i>	4	333667	6744832		2	7/11/2012	10
<i>Banksia scabrella</i>	4	333684	6745070		3	7/11/2012	13a
<i>Banksia scabrella</i>	4	333697	6745038		30	7/11/2012	13a
<i>Banksia scabrella</i>	4	333737	6745264	WE088		25/11/2011	13b
<i>Banksia scabrella</i>	4	333747	6742076		1	9/11/2012	7a
<i>Banksia scabrella</i>	4	333752	6745040		3	7/11/2012	10
<i>Banksia scabrella</i>	4	333762	6741206		3	8/11/2012	13a
<i>Banksia scabrella</i>	4	333836	6740783		1	8/11/2012	13a
<i>Banksia scabrella</i>	4	333888	6741192		1	8/11/2012	13a
<i>Banksia scabrella</i>	4	333927	6740753		1	8/11/2012	13a
<i>Banksia scabrella</i>	4	333951	6742786		40	11/10/2012	7a
<i>Banksia scabrella</i>	4	333952	6741924		5	11/10/2012	7b
<i>Banksia scabrella</i>	4	333953	6741186		2	8/11/2012	13a
<i>Banksia scabrella</i>	4	333989	6742799		5	11/10/2012	7a
<i>Banksia scabrella</i>	4	334008	6741991		5	11/10/2012	8
<i>Banksia scabrella</i>	4	334012	6741700		3	11/10/2012	7b

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Banksia scabrella</i>	4	334089	6745129		2	7/11/2012	13a
<i>Banksia scabrella</i>	4	334094	6740741		20	8/11/2012	7a
<i>Banksia scabrella</i>	4	334094	6741631		1	11/10/2012	7b
<i>Banksia scabrella</i>	4	334127	6741857		2	9/11/2012	7b
<i>Banksia scabrella</i>	4	334130	6741864		50	9/11/2012	7b
<i>Banksia scabrella</i>	4	334131	6741107		3	8/11/2012	13a
<i>Banksia scabrella</i>	4	334135	6741623	WE012		28/09/2011	7b
<i>Banksia scabrella</i>	4	334136	6741451	WE010		28/09/2011	7a
<i>Banksia scabrella</i>	4	334159	6742291		5	16/11/2012	7a
<i>Banksia scabrella</i>	4	334172	6741851		1	9/11/2012	7b
<i>Banksia scabrella</i>	4	334172	6742399		10	16/11/2012	7b
<i>Banksia scabrella</i>	4	334200	6740742		4	8/11/2012	7a
<i>Banksia scabrella</i>	4	334229	6745142		4	7/11/2012	13a
<i>Banksia scabrella</i>	4	334241	6742154		20	16/11/2012	10
<i>Banksia scabrella</i>	4	334282	6741549		1	10/10/2012	7b
<i>Banksia scabrella</i>	4	334284	6741724	WE013		29/09/2011	7b
<i>Banksia scabrella</i>	4	334293	6745128		2	7/11/2012	13a
<i>Banksia scabrella</i>	4	334301	6744041		2	11/10/2012	13a
<i>Banksia scabrella</i>	4	334304	6742071		2	9/11/2012	10
<i>Banksia scabrella</i>	4	334313	6742082		20	9/11/2012	10
<i>Banksia scabrella</i>	4	334325	6744381		3	8/11/2012	13a
<i>Banksia scabrella</i>	4	334334	6744528		1	8/11/2012	13a
<i>Banksia scabrella</i>	4	334340	6742389		5	16/11/2012	10
<i>Banksia scabrella</i>	4	334348	6741865		2	9/11/2012	13a
<i>Banksia scabrella</i>	4	334358	6742350		35	16/11/2012	10
<i>Banksia scabrella</i>	4	334359	6745333		2	9/11/2012	13a
<i>Banksia scabrella</i>	4	334366	6744609		1	8/11/2012	13a
<i>Banksia scabrella</i>	4	334373	6744661		20	8/11/2012	13a
<i>Banksia scabrella</i>	4	334388	6739849		10	14/11/2012	13a
<i>Banksia scabrella</i>	4	334395	6739878		40	14/11/2012	13a
<i>Banksia scabrella</i>	4	334395	6744989		2	7/11/2012	13a

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Banksia scabrella</i>	4	334396	6744662		1	8/11/2012	13a
<i>Banksia scabrella</i>	4	334411	6745162		1	9/11/2012	13a
<i>Banksia scabrella</i>	4	334429	6743978		3		13a
<i>Banksia scabrella</i>	4	334433	6743998		1	11/10/2012	13a
<i>Banksia scabrella</i>	4	334433	6745364		100	9/11/2012	13a
<i>Banksia scabrella</i>	4	334458	6745347		3	9/11/2012	13a
<i>Banksia scabrella</i>	4	334460	6743942		2	11/10/2012	13a
<i>Banksia scabrella</i>	4	334460	6743977		2	11/10/2012	13a
<i>Banksia scabrella</i>	4	334461	6744383		2	8/11/2012	13a
<i>Banksia scabrella</i>	4	334483	6742383		10	16/11/2012	10
<i>Banksia scabrella</i>	4	334493	6745101		2	9/11/2012	13a
<i>Banksia scabrella</i>	4	334498	6740034	WE006		27/09/2011	13a
<i>Banksia scabrella</i>	4	334498	6744735		1	8/11/2012	13a
<i>Banksia scabrella</i>	4	334506	6743977		2	11/10/2012	13a
<i>Banksia scabrella</i>	4	334518	6739851		15	14/11/2012	13a
<i>Banksia scabrella</i>	4	334524	6740223		5	14/11/2012	13a
<i>Banksia scabrella</i>	4	334536	6743882		2		13a
<i>Banksia scabrella</i>	4	334536	6743942		4	11/10/2012	13a
<i>Banksia scabrella</i>	4	334536	6744424		1	8/11/2012	13a
<i>Banksia scabrella</i>	4	334555	6743918		5	11/10/2012	13a
<i>Banksia scabrella</i>	4	334558	6745096		2	9/11/2012	13a
<i>Banksia scabrella</i>	4	334563	6743932		1		13a
<i>Banksia scabrella</i>	4	334566	6743953		1	11/10/2012	13a
<i>Banksia scabrella</i>	4	334582	6740050		25	14/11/2012	13a
<i>Banksia scabrella</i>	4	334585	6741890		180	15/11/2012	13a
<i>Banksia scabrella</i>	4	334594	6745337		3	9/11/2012	13a
<i>Banksia scabrella</i>	4	334595	6744886		2	8/11/2012	13a
<i>Banksia scabrella</i>	4	334603	6743899		1	11/10/2012	13a
<i>Banksia scabrella</i>	4	334614	6745323		75	9/11/2012	13a
<i>Banksia scabrella</i>	4	334615	6742149		30	15/11/2012	10
<i>Banksia scabrella</i>	4	334624	6744436		50	8/11/2012	13a

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Banksia scabrella</i>	4	334649	6740218		5	14/11/2012	13a
<i>Banksia scabrella</i>	4	334650	6745014		2	8/11/2012	13a
<i>Banksia scabrella</i>	4	334651	6740181		75	14/11/2012	13a
<i>Banksia scabrella</i>	4	334656	6741857		20	15/11/2012	13a
<i>Banksia scabrella</i>	4	334656	6744989		1	8/11/2012	13a
<i>Banksia scabrella</i>	4	334670	6745202		3	9/11/2012	13a
<i>Banksia scabrella</i>	4	334675	6745055		1	9/11/2012	10
<i>Banksia scabrella</i>	4	334683	6745055		16	9/11/2012	10
<i>Banksia scabrella</i>	4	334684	6744810		2	8/11/2012	10
<i>Banksia scabrella</i>	4	334684	6744842		2	8/11/2012	10
<i>Banksia scabrella</i>	4	334687	6739846		5	14/11/2012	13a
<i>Banksia scabrella</i>	4	334687	6744480		2	8/11/2012	13a
<i>Banksia scabrella</i>	4	334687	6744713		1	8/11/2012	13a
<i>Banksia scabrella</i>	4	334692	6740868		1		13a
<i>Banksia scabrella</i>	4	334692	6745127		1	9/11/2012	10
<i>Banksia scabrella</i>	4	334693	6739948		10	14/11/2012	13a
<i>Banksia scabrella</i>	4	334698	6741864		10	15/11/2012	13a
<i>Banksia scabrella</i>	4	334702	6740123		5	14/11/2012	13a
<i>Banksia scabrella</i>	4	334703	6743855		3	11/10/2012	13a
<i>Banksia scabrella</i>	4	334707	6744609		1	8/11/2012	10
<i>Banksia scabrella</i>	4	334716	6743862		2	11/10/2012	13a
<i>Banksia scabrella</i>	4	334721	6744788		20	8/11/2012	10
<i>Banksia scabrella</i>	4	334733	6742161		20	15/11/2012	7a
<i>Banksia scabrella</i>	4	334748	6743791		2		13a
<i>Banksia scabrella</i>	4	334793	6747581		20	5/11/2012	8
<i>Banksia scabrella</i>	4	334798	6742130		85	15/11/2012	7a
<i>Banksia scabrella</i>	4	334810	6742798		10	14/11/2012	13a
<i>Banksia scabrella</i>	4	334853	6741859		10	15/11/2012	13a
<i>Banksia scabrella</i>	4	334879	6741786	WE018		30/09/2011	13a
<i>Banksia scabrella</i>	4	334909	6747473		2	6/11/2012	8
<i>Banksia scabrella</i>	4	334912	6742162		10	15/11/2012	13a

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Banksia scabrella</i>	4	334954	6747475		1	6/11/2012	8
<i>Banksia scabrella</i>	4	334972	6740835		1		7a
<i>Banksia scabrella</i>	4	335038	6742796		5	14/11/2012	10
<i>Banksia scabrella</i>	4	335052	6743930		55	15/11/2012	13a
<i>Banksia scabrella</i>	4	335068	6741888		80	15/11/2012	13a
<i>Banksia scabrella</i>	4	335123	6743900		10	15/11/2012	10
<i>Banksia scabrella</i>	4	335123	6744172		12	15/11/2012	10
<i>Banksia scabrella</i>	4	335138	6741867		5	15/11/2012	13a
<i>Banksia scabrella</i>	4	335156	6739107				13a
<i>Banksia scabrella</i>	4	335163	6744200		5	15/11/2012	10
<i>Banksia scabrella</i>	4	335209	6743589	WE017		29/09/2011	7b
<i>Banksia scabrella</i>	4	335225	6743906		10	15/11/2012	7b
<i>Banksia scabrella</i>	4	335238	6741862		5	15/11/2012	13a
<i>Banksia scabrella</i>	4	335249	6743933		40	15/11/2012	7b
<i>Banksia scabrella</i>	4	335290	6742163		5	15/11/2012	10
<i>Banksia scabrella</i>	4	335294	6741860		5	15/11/2012	13a
<i>Banksia scabrella</i>	4	335294	6742598		5	14/11/2012	13a
<i>Banksia scabrella</i>	4	335319	6741890		75	15/11/2012	13a
<i>Banksia scabrella</i>	4	335365	6742800		5	14/11/2012	13a
<i>Banksia scabrella</i>	4	335366	6747972		1		13b
<i>Banksia scabrella</i>	4	335369	6747994		2	11/10/2012	13b
<i>Banksia scabrella</i>	4	335376	6747956		4	11/10/2012	13b
<i>Banksia scabrella</i>	4	335391	6742129		50	15/11/2012	13a
<i>Banksia scabrella</i>	4	335396	6747886		2	11/10/2012	13b
<i>Banksia scabrella</i>	4	335401	6741862		5	15/11/2012	13a
<i>Banksia scabrella</i>	4	335414	6747807		20	11/10/2012	13b
<i>Banksia scabrella</i>	4	335418	6747815		4	11/10/2012	13b
<i>Banksia scabrella</i>	4	335422	6747749		2	11/10/2012	13b
<i>Banksia scabrella</i>	4	335436	6747710		5	11/10/2012	8
<i>Banksia scabrella</i>	4	335441	6742770		20	14/11/2012	13a
<i>Banksia scabrella</i>	4	335457	6742159		5	15/11/2012	13a

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Banksia scabrella</i>	4	335459	6747652		3	11/10/2012	8
<i>Banksia scabrella</i>	4	335488	6747601		2	11/10/2012	8
<i>Banksia scabrella</i>	4	335518	6745229		2	7/11/2012	7b
<i>Banksia scabrella</i>	4	335518	6745254		1	7/11/2012	7b
<i>Banksia scabrella</i>	4	335522	6745301		1	7/11/2012	7b
<i>Banksia scabrella</i>	4	335522	6745334		1	7/11/2012	7b
<i>Banksia scabrella</i>	4	335523	6745386		1	7/11/2012	13b
<i>Banksia scabrella</i>	4	335523	6745454		2	7/11/2012	7b
<i>Banksia scabrella</i>	4	335523	6745569		1	7/11/2012	7b
<i>Banksia scabrella</i>	4	335550	6742162		5	15/11/2012	13a
<i>Banksia scabrella</i>	4	335551	6745377		20	7/11/2012	13b
<i>Banksia scabrella</i>	4	335562	6741864		10	15/11/2012	13a
<i>Banksia scabrella</i>	4	335570	6747338		1	11/10/2012	8
<i>Banksia scabrella</i>	4	335590	6742126		50	15/11/2012	13a
<i>Banksia scabrella</i>	4	335591	6741890		80	15/11/2012	13a
<i>Banksia scabrella</i>	4	335608	6744974		3	7/11/2012	7b
<i>Banksia scabrella</i>	4	335656	6745711		1	7/11/2012	11
<i>Banksia scabrella</i>	4	335667	6741863		5	15/11/2012	13a
<i>Banksia scabrella</i>	4	335674	6740066		2	11/10/2012	7a
<i>Banksia scabrella</i>	4	335717	6742159		2	15/11/2012	10
<i>Banksia scabrella</i>	4	335730	6744980		2	7/11/2012	7b
<i>Banksia scabrella</i>	4	335740	6744199		10	15/11/2012	7b
<i>Banksia scabrella</i>	4	335807	6744992		2	7/11/2012	14
<i>Banksia scabrella</i>	4	335830	6740069		3	11/10/2012	7a
<i>Banksia scabrella</i>	4	335835	6744170		25	15/11/2012	7b
<i>Banksia scabrella</i>	4	335868	6740760	WE090		26/11/2011	7b
<i>Banksia scabrella</i>	4	335891	6744202		20	15/11/2012	7b
<i>Banksia scabrella</i>	4	335891	6745775		2	7/11/2012	13b
<i>Banksia scabrella</i>	4	335938	6747299		100	22/10/2012	7b
<i>Banksia scabrella</i>	4	335957	6744978		1	7/11/2012	11
<i>Banksia scabrella</i>	4	335992	6745828		100	7/11/2012	13b

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Banksia scabrella</i>	4	335995	6745846		3	7/11/2012	13b
<i>Banksia scabrella</i>	4	336010	6745887		4	7/11/2012	13b
<i>Banksia scabrella</i>	4	336016	6742159		1	15/11/2012	10
<i>Banksia scabrella</i>	4	336045	6745963		8	7/11/2012	13b
<i>Banksia scabrella</i>	4	336055	6742128		50	15/11/2012	10
<i>Banksia scabrella</i>	4	336084	6746071		1	7/11/2012	11
<i>Banksia scabrella</i>	4	336085	6742600		20	14/11/2012	13a
<i>Banksia scabrella</i>	4	336097	6742628		60	14/11/2012	13a
<i>Banksia scabrella</i>	4	336130	6741895		50	15/11/2012	10
<i>Banksia scabrella</i>	4	336146	6742798		5	14/11/2012	7b
<i>Banksia scabrella</i>	4	336187	6744984		2	7/11/2012	11
<i>Banksia scabrella</i>	4	336215	6742610		50	14/11/2012	13a
<i>Banksia scabrella</i>	4	336230	6747335		1	6/11/2012	7b
<i>Banksia scabrella</i>	4	336269	6747474		10	5/11/2012	11
<i>Banksia scabrella</i>	4	336280	6743771				7b
<i>Banksia scabrella</i>	4	336299	6747451		1	6/11/2012	11
<i>Banksia scabrella</i>	4	336300	6746887		2	6/11/2012	11
<i>Banksia scabrella</i>	4	336313	6742599		20	14/11/2012	13a
<i>Banksia scabrella</i>	4	336332	6747479		1	6/11/2012	11
<i>Banksia scabrella</i>	4	336375	6741185		10	15/11/2012	13a
<i>Banksia scabrella</i>	4	336383	6746063		2	7/11/2012	11
<i>Banksia scabrella</i>	4	336386	6742799		10	14/11/2012	13a
<i>Banksia scabrella</i>	4	336402	6745548	WE041		25/10/2011	7b
<i>Banksia scabrella</i>	4	336413	6742600		50	14/11/2012	13a
<i>Banksia scabrella</i>	4	336442	6745263		2	7/11/2012	13b
<i>Banksia scabrella</i>	4	336467	6741196		10	15/11/2012	13a
<i>Banksia scabrella</i>	4	336468	6740974		60	15/11/2012	7a
<i>Banksia scabrella</i>	4	336477	6745875		1	7/11/2012	11
<i>Banksia scabrella</i>	4	336493	6740997		5	15/11/2012	7a
<i>Banksia scabrella</i>	4	336493	6745839		6	7/11/2012	11
<i>Banksia scabrella</i>	4	336495	6747788		20	12/11/2012	11

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Banksia scabrella</i>	4	336500	6745384		6	7/11/2012	13b
<i>Banksia scabrella</i>	4	336509	6741964		20	15/11/2012	13a
<i>Banksia scabrella</i>	4	336511	6747820		15	12/11/2012	13b
<i>Banksia scabrella</i>	4	336512	6745444		2	7/11/2012	13b
<i>Banksia scabrella</i>	4	336528	6745505		3	7/11/2012	13b
<i>Banksia scabrella</i>	4	336532	6741926		5	15/11/2012	13a
<i>Banksia scabrella</i>	4	336569	6747863		50	5/11/2012	11
<i>Banksia scabrella</i>	4	336573	6741203		5	15/11/2012	7a
<i>Banksia scabrella</i>	4	336595	6740999		5	15/11/2012	7a
<i>Banksia scabrella</i>	4	336645	6739534		1		7a
<i>Banksia scabrella</i>	4	336681	6741196		10	15/11/2012	7a
<i>Banksia scabrella</i>	4	336685	6740924		80	15/11/2012	7a
<i>Banksia scabrella</i>	4	336694	6741001		10	15/11/2012	7a
<i>Banksia scabrella</i>	4	336702	6741170		80	15/11/2012	7a
<i>Banksia scabrella</i>	4	336713	6739261		1	11/10/2012	7a
<i>Banksia scabrella</i>	4	336775	6739265		3		7a
<i>Banksia scabrella</i>	4	336828	6741207		10	15/11/2012	13a
<i>Banksia scabrella</i>	4	336837	6741012		10	15/11/2012	13a
<i>Banksia scabrella</i>	4	336848	6747716		1	6/11/2012	11
<i>Banksia scabrella</i>	4	336873	6747746		30	5/11/2012	11
<i>Banksia scabrella</i>	4	336922	6741203		5	15/11/2012	13a
<i>Banksia scabrella</i>	4	336942	6741175		25	15/11/2012	10
<i>Banksia scabrella</i>	4	336963	6741004		5	15/11/2012	13a
<i>Banksia scabrella</i>	4	336978	6746572		50	23/10/2012	11
<i>Banksia scabrella</i>	4	336986	6742359		20	8/11/2012	13a
<i>Banksia scabrella</i>	4	337036	6747636		20	12/11/2012	7b
<i>Banksia scabrella</i>	4	337065	6742525		2	8/11/2012	13a
<i>Banksia scabrella</i>	4	337066	6740970		60	15/11/2012	13a
<i>Banksia scabrella</i>	4	337071	6744189		1		8
<i>Banksia scabrella</i>	4	337087	6740999		5	15/11/2012	10
<i>Banksia scabrella</i>	4	337128	6744723		1		7a

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Banksia scabrella</i>	4	337135	6742545		7	8/11/2012	13a
<i>Banksia scabrella</i>	4	337159	6742571		2	8/11/2012	7b
<i>Banksia scabrella</i>	4	337171	6742571		300	8/11/2012	7b
<i>Banksia scabrella</i>	4	337248	6746383		200	23/10/2012	7b
<i>Banksia scabrella</i>	4	337260	6744514		3	10/10/2012	13b
<i>Banksia scabrella</i>	4	337268	6740153		80	14/11/2012	7a
<i>Banksia scabrella</i>	4	337269	6739399		30	14/11/2012	13a
<i>Banksia scabrella</i>	4	337280	6744512		11	10/10/2012	13b
<i>Banksia scabrella</i>	4	337280	6744642		6	10/10/2012	13b
<i>Banksia scabrella</i>	4	337288	6740161		20	14/11/2012	7a
<i>Banksia scabrella</i>	4	337299	6739201		10	14/11/2012	13a
<i>Banksia scabrella</i>	4	337299	6739885		5	14/11/2012	7a
<i>Banksia scabrella</i>	4	337300	6739405		5	14/11/2012	13a
<i>Banksia scabrella</i>	4	337301	6740040		5	14/11/2012	7a
<i>Banksia scabrella</i>	4	337304	6739000		10	14/11/2012	10
<i>Banksia scabrella</i>	4	337316	6744598		50	9/10/2012	13b
<i>Banksia scabrella</i>	4	337321	6744436		10	9/10/2012	7a
<i>Banksia scabrella</i>	4	337331	6742038		1	8/11/2012	13a
<i>Banksia scabrella</i>	4	337332	6740971		80	15/11/2012	10
<i>Banksia scabrella</i>	4	337358	6744348		1		7a
<i>Banksia scabrella</i>	4	337363	6744876	WE038		25/10/2011	13b
<i>Banksia scabrella</i>	4	337391	6741931		2	8/11/2012	10
<i>Banksia scabrella</i>	4	337428	6742809		1	13/11/2012	7b
<i>Banksia scabrella</i>	4	337504	6741003		5	15/11/2012	10
<i>Banksia scabrella</i>	4	337545	6742591		3	8/11/2012	7b
<i>Banksia scabrella</i>	4	337564	6741170		2	15/11/2012	13a
<i>Banksia scabrella</i>	4	337570	6742905		50	13/11/2012	7b
<i>Banksia scabrella</i>	4	337571	6738985		40	14/11/2012	13a
<i>Banksia scabrella</i>	4	337572	6739993		30	14/11/2012	7a
<i>Banksia scabrella</i>	4	337574	6739550		60	14/11/2012	7a
<i>Banksia scabrella</i>	4	337577	6741204		1	15/11/2012	10

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Banksia scabrella</i>	4	337582	6747820		2	12/10/2012	7b
<i>Banksia scabrella</i>	4	337592	6742538		4	8/11/2012	7b
<i>Banksia scabrella</i>	4	337599	6739723		10	14/11/2012	7a
<i>Banksia scabrella</i>	4	337599	6739852		5	14/11/2012	7a
<i>Banksia scabrella</i>	4	337600	6740129		5	14/11/2012	7a
<i>Banksia scabrella</i>	4	337601	6739617		15	14/11/2012	7a
<i>Banksia scabrella</i>	4	337601	6744671		10	10/10/2012	13b
<i>Banksia scabrella</i>	4	337602	6738956		15	14/11/2012	13a
<i>Banksia scabrella</i>	4	337602	6739321		10	14/11/2012	7a
<i>Banksia scabrella</i>	4	337605	6739985		10	14/11/2012	7a
<i>Banksia scabrella</i>	4	337634	6744526		3	10/10/2012	13b
<i>Banksia scabrella</i>	4	337663	6744543		3		7a
<i>Banksia scabrella</i>	4	337665	6744487		1		7a
<i>Banksia scabrella</i>	4	337670	6742793		50	13/11/2012	7b
<i>Banksia scabrella</i>	4	337676	6742932		10	13/11/2012	7b
<i>Banksia scabrella</i>	4	337690	6747865		2	12/10/2012	8
<i>Banksia scabrella</i>	4	337691	6744316		2	10/10/2012	7a
<i>Banksia scabrella</i>	4	337714	6747677		4	12/10/2012	7b
<i>Banksia scabrella</i>	4	337717	6741883		1	8/11/2012	13a
<i>Banksia scabrella</i>	4	337718	6746999		50	13/11/2012	7b
<i>Banksia scabrella</i>	4	337736	6747679		2		7b
<i>Banksia scabrella</i>	4	337737	6747652		6	12/10/2012	13b
<i>Banksia scabrella</i>	4	337764	6747650		12	12/10/2012	13b
<i>Banksia scabrella</i>	4	337767	6747676		30	12/10/2012	7b
<i>Banksia scabrella</i>	4	337780	6747117		20	13/11/2012	13b
<i>Banksia scabrella</i>	4	337795	6746919		200	23/10/2012	13b
<i>Banksia scabrella</i>	4	337800	6746911		20	13/11/2012	7b
<i>Banksia scabrella</i>	4	337804	6747605		5	12/10/2012	13b
<i>Banksia scabrella</i>	4	337826	6747002		30	13/11/2012	13b
<i>Banksia scabrella</i>	4	337833	6747622		15	12/10/2012	13b
<i>Banksia scabrella</i>	4	337855	6747578		3		13b

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Banksia scabrella</i>	4	337871	6747546		1	12/10/2012	7b
<i>Banksia scabrella</i>	4	337880	6742754		50	13/11/2012	8
<i>Banksia scabrella</i>	4	337910	6746915		50	13/11/2012	13b
<i>Banksia scabrella</i>	4	337923	6747001		30	13/11/2012	13b
<i>Banksia scabrella</i>	4	337929	6742151		2	8/11/2012	7a
<i>Banksia scabrella</i>	4	337950	6742650		150	13/11/2012	8
<i>Banksia scabrella</i>	4	337970	6742599		5	13/11/2012	7b
<i>Banksia scabrella</i>	4	338000	6740690		10	12/12/2012	7a
<i>Banksia scabrella</i>	4	338000	6740720		20	12/10/2012	7a
<i>Banksia scabrella</i>	4	338000	6740870		60	12/10/2012	7a
<i>Banksia scabrella</i>	4	338010	6741850		3	8/11/2012	7a
<i>Banksia scabrella</i>	4	338028	6740662		20	12/10/2012	7a
<i>Banksia scabrella</i>	4	338043	6742569		30	13/11/2012	8
<i>Banksia scabrella</i>	4	338062	6747001		20	13/11/2012	11
<i>Banksia scabrella</i>	4	338073	6746733		50	23/10/2012	7b
<i>Banksia scabrella</i>	4	338090	6742632		50	13/11/2012	8
<i>Banksia scabrella</i>	4	338118	6741170		1	15/11/2012	10
<i>Banksia scabrella</i>	4	338125	6746712		50	23/10/2012	13a
<i>Banksia scabrella</i>	4	338126	6740666		10	12/10/2012	7a
<i>Banksia scabrella</i>	4	338130	6746952		40	13/11/2012	11
<i>Banksia scabrella</i>	4	338135	6747160		30	13/11/2012	11
<i>Banksia scabrella</i>	4	338142	6740117		10	13/11/2012	7a
<i>Banksia scabrella</i>	4	338169	6740002		5	13/11/2012	7a
<i>Banksia scabrella</i>	4	338170	6746999		50	13/11/2012	11
<i>Banksia scabrella</i>	4	338175	6740017		50	13/11/2012	7a
<i>Banksia scabrella</i>	4	338176	6747874		10	12/10/2012	13b
<i>Banksia scabrella</i>	4	338196	6741716		1	8/11/2012	7a
<i>Banksia scabrella</i>	4	338197	6747886		1	12/10/2012	13b
<i>Banksia scabrella</i>	4	338202	6747350		1		7b
<i>Banksia scabrella</i>	4	338210	6742504		250	13/11/2012	8
<i>Banksia scabrella</i>	4	338260	6747889		4	12/10/2012	13b

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Banksia scabrella</i>	4	338278	6747373		2	12/10/2012	11
<i>Banksia scabrella</i>	4	338288	6740306		10	13/11/2012	7a
<i>Banksia scabrella</i>	4	338336	6747432		1	12/10/2012	13b
<i>Banksia scabrella</i>	4	338348	6740008		50	13/11/2012	7a
<i>Banksia scabrella</i>	4	338350	6747897		1	12/10/2012	13b
<i>Banksia scabrella</i>	4	338380	6742133		2	8/11/2012	13a
<i>Banksia scabrella</i>	4	338381	6742117		10	8/11/2012	13a
<i>Banksia scabrella</i>	4	338383	6747505		5	12/10/2012	13b
<i>Banksia scabrella</i>	4	338386	6742344		10	13/11/2012	13a
<i>Banksia scabrella</i>	4	338390	6743792		1		8
<i>Banksia scabrella</i>	4	338394	6743250		1	9/10/2012	11
<i>Banksia scabrella</i>	4	338422	6747885		10	12/10/2012	13b
<i>Banksia scabrella</i>	4	338440	6742406		20	13/11/2012	13a
<i>Banksia scabrella</i>	4	338441	6741911		1	8/11/2012	7a
<i>Banksia scabrella</i>	4	338454	6747508		1	12/10/2012	13b
<i>Banksia scabrella</i>	4	338459	6744951				8
<i>Banksia scabrella</i>	4	338474	6741944		2	8/11/2012	13a
<i>Banksia scabrella</i>	4	338480	6743248		4		8
<i>Banksia scabrella</i>	4	338480	6743267		2		8
<i>Banksia scabrella</i>	4	338480	6747550		10	12/10/2012	11
<i>Banksia scabrella</i>	4	338485	6744883		10	9/10/2012	8
<i>Banksia scabrella</i>	4	338500	6742448		2	13/11/2012	7a
<i>Banksia scabrella</i>	4	338505	6742152		20	8/11/2012	13a
<i>Banksia scabrella</i>	4	338526	6742022		2	8/11/2012	13a
<i>Banksia scabrella</i>	4	338532	6743902		20	9/10/2012	8
<i>Banksia scabrella</i>	4	338533	6741392	WE054		20/11/2011	13a
<i>Banksia scabrella</i>	4	338543	6748729				13b
<i>Banksia scabrella</i>	4	338551	6748250				13b
<i>Banksia scabrella</i>	4	338563	6742142		50	8/11/2012	13a
<i>Banksia scabrella</i>	4	338568	6743780		2		8
<i>Banksia scabrella</i>	4	338571	6741202		5	15/11/2012	10

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Banksia scabrella</i>	4	338576	6746810				13a
<i>Banksia scabrella</i>	4	338582	6742096		2	8/11/2012	13a
<i>Banksia scabrella</i>	4	338592	6745850				11
<i>Banksia scabrella</i>	4	338601	6745358				13a
<i>Banksia scabrella</i>	4	338604	6742228		5	13/11/2012	13a
<i>Banksia scabrella</i>	4	338616	6742131		1	8/11/2012	13a
<i>Banksia scabrella</i>	4	338620	6747002		8	13/11/2012	13a
<i>Banksia scabrella</i>	4	338648	6743658		1	9/10/2012	8
<i>Banksia scabrella</i>	4	338650	6742479				7a
<i>Banksia scabrella</i>	4	338651	6743765		1	9/10/2012	8
<i>Banksia scabrella</i>	4	338658	6741002		20	15/11/2012	10
<i>Banksia scabrella</i>	4	338658	6742019				13a
<i>Banksia scabrella</i>	4	338668	6742386		10	13/11/2012	7a
<i>Banksia scabrella</i>	4	338679	6740971		25	15/11/2012	10
<i>Banksia scabrella</i>	4	338700	6741212		20	15/11/2012	10
<i>Banksia scabrella</i>	4	338701	6740807		5	12/10/2012	7a
<i>Banksia scabrella</i>	4	338707	6746507	WE060		21/11/2011	13a
<i>Banksia scabrella</i>	4	338725	6740990		10	12/10/2012	10
<i>Banksia scabrella</i>	4	338739	6740925		6		10
<i>Banksia scabrella</i>	4	338740	6740960		3	12/10/2012	10
<i>Banksia scabrella</i>	4	338750	6747003		2	13/11/2012	11
<i>Banksia scabrella</i>	4	338757	6742160		20	13/11/2012	7a
<i>Banksia scabrella</i>	4	338770	6741001		10	15/11/2012	10
<i>Banksia scabrella</i>	4	338782	6740899		80	12/10/2012	10
<i>Banksia scabrella</i>	4	338791	6740839		20	12/10/2012	10
<i>Banksia scabrella</i>	4	338800	6742284		50	13/11/2012	7a
<i>Banksia scabrella</i>	4	338813	6741206		5	15/11/2012	10
<i>Banksia scabrella</i>	4	338815	6740963		5	12/10/2012	10
<i>Banksia scabrella</i>	4	338828	6742311		20	13/11/2012	7a
<i>Banksia scabrella</i>	4	338838	6740761		2	12/10/2012	10
<i>Banksia scabrella</i>	4	338838	6740900		20	12/10/2012	10

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Banksia scabrella</i>	4	338849	6740990		5	12/10/2012	10
<i>Banksia scabrella</i>	4	338851	6741168		80	15/11/2012	10
<i>Banksia scabrella</i>	4	338857	6741007		20	15/11/2012	10
<i>Banksia scabrella</i>	4	338861	6740930		3		10
<i>Banksia scabrella</i>	4	338865	6740267		10	13/11/2012	7a
<i>Banksia scabrella</i>	4	339775	6747438		10	4/10/2012	13a
<i>Banksia scabrella</i>	4	339875	6748412				C
<i>Banksia scabrella</i>	4	341137	6745502		1	9/11/2012	13b
<i>Banksia scabrella</i>	4	341165	6745580		1	9/11/2012	13b
<i>Beyeria gardneri</i>	3	333307	6746004		2	5/11/12	12
<i>Calytrix chrysantha</i>	4	331905	6742013			25/11/11	7a
<i>Cryptandra intermedia</i> (atypical variant)		333740	6742099		50	9/11/12	7a
<i>Cryptandra intermedia</i> (atypical variant)		333616	6746045		20	6/11/12	3
<i>Cryptandra intermedia</i> (atypical variant)		333623	6746053		50	6/11/12	3
<i>Cryptandra intermedia</i> (atypical variant)		333466	6747135	WEC098		12/09/12	3
<i>Cryptandra intermedia</i> (atypical variant)		333369	6747183		10	5/11/12	12
<i>Cryptandra intermedia</i> (atypical variant)		334152	6748498		50	5/11/12	14
<i>Eucalyptus abdita</i>	2	338859	6742985		1	10/10/12	8
<i>Eucalyptus abdita</i>	2	338336	6742847				8
<i>Eucalyptus abdita</i>	2	338836	6743142		5	4/10/12	8
<i>Eucalyptus abdita</i>	2	338860	6743712		2	22/11/11	8
<i>Eucalyptus abdita</i>	2	338845	6743919		1	5/10/12	1b
<i>Eucalyptus abdita</i>	2	338309	6744695				8
<i>Eucalyptus abdita</i>	2	338309	6744695				8
<i>Eucalyptus ?abdita</i>		337895	6744480		1		11

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Eucalyptus crispata</i>	T	334077	6742226		1	24/10/11	8
<i>Eucalyptus crispata</i>	T	337912	6744075		1	10/10/12	8
<i>Eucalyptus crispata</i>	T	334226	6748255		15	26/10/11	10
<i>Eucalyptus ?crispata</i>	T	337309	6744257		1	10/10/12	8
<i>Eucalyptus leprophloia</i>	T	338309	6744695				8
<i>Eucalyptus leprophloia</i>	T	340423	6746186				C
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	332362	6740575		10	25/11/2011	13a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	332965	6741109		5	8/11/2012	13a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	333124	6745108		4	7/11/2012	12
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	333335	6745894		10	5/11/2012	12
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	333363	6745852		10	5/11/2012	7b
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	333372	6745922		8	11/10/2012	7b
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	333376	6745840		10	6/11/2012	12
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	333415	6745907		20	11/10/2012	3
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	333418	6745989		10	11/10/2012	7b
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	333441	6744879		3	11/10/2012	8
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	333458	6744624				13a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	333473	6745892		5	11/10/2012	3

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	333493	6745788		10	11/10/2012	3
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	333512	6744784		3		8
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	333514	6745751		2	6/11/2012	7b
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	333518	6744808		5	11/10/2012	8
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	333524	6744806		5	11/10/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	333545	6745787		20	26/10/2011	3
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	333584	6744778		1	11/10/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	333657	6745780		3	11/10/2012	12
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	333923	6741894		7	11/10/2012	8
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	333928	6742762		5	11/10/2012	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	333945	6741795		20	11/10/2012	8
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	333959	6742880		4	11/10/2012	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	333962	6741706		10	11/10/2012	8
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	334080	6742216		3	16/11/2012	8
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	334100	6742220		5	11/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	334167	6741608		3	11/10/2012	7b
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	334269	6744898		10	7/11/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	334286	6742600		3	16/11/2012	7b
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	334288	6741370		20	26/09/2011	7b
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	334293	6741409		10	10/10/2012	7b
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	334309	6741456		5	10/10/2012	7b
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	334384	6744021		1	11/10/2012	13a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	334435	6740810		1	14/11/2012	13a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	334436	6743954		2	11/10/2012	13a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	334437	6740950		3	14/11/2012	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	334468	6741570		1	14/11/2012	13a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	334510	6741630		3	14/11/2012	13a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	334511	6740856		1	26/11/2011	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	334980	6741903		15	9/11/2012	13a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	335516	6740171		10	11/10/2012	7a

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	335935	6740065		1	11/10/2012	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	336025	6747132		2	22/10/2012	8
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	336066	6747124		7	22/10/2012	8
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	336129	6740065		10	11/10/2012	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	336145	6740057		3		7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	336315	6739856		14		7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	336380	6739829		5		7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	336386	6739885		100	11/10/2012	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	336459	6739828		30	11/10/2012	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	336550	6739537		20	11/10/2012	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	336566	6739525		4	11/10/2012	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	336692	6739168		10	11/10/2012	13a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	336855	6748185		3	12/11/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	336905	6747323		3	5/11/2012	11
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	337016	6747074		2	23/10/2012	7b

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	337020	6747002		7	13/11/2012	8
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	337050	6746929		15	13/11/2012	7b
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	337066	6747006		2	13/11/2012	7b
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	337087	6742279		15	8/11/2012	13a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	337115	6742217		1	8/11/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	337116	6746997		1	13/11/2012	11
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	337120	6746938		3	13/11/2012	11
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	337136	6738956		12	12/10/2012	8
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	337137	6742212		6	8/11/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	337306	6746453		1	22/11/2011	7b
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	337568	6742067		20	23/10/2012	7b
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	337762	6746101		2	12/12/2012	8
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	337841	6742643		1	13/11/2012	7b
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338036	6741170		6	15/11/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338068	6741204		5	15/11/2012	10

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338073	6746733		1	23/10/2012	7b
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338125	6746712		3	23/10/2012	13a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338154	6741203		25	15/11/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338195	6741167		25	15/11/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338258	6741201		10	15/11/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338260	6741173		8	15/11/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338269	6740896		5	12/10/2012	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338275	6741949		50	22/11/2011	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338277	6740970		10	15/11/2012	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338341	6740967		25	15/11/2012	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338349	6740957		2	12/10/2012	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338350	6740872		22	12/12/2012	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338354	6740902		8	12/10/2012	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338355	6741003		40	15/11/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338369	6741204		25	15/11/2012	10

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338371	6741174		18	15/11/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338380	6740930		23		7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338381	6740956		10	12/10/2012	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338384	6740718		5	21/11/2011	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338387	6740720		1	12/10/2012	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338426	6740962		4	12/10/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338447	6741172		15	15/11/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338460	6740963		5	12/10/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338468	6740693		6	12/12/2012	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338469	6740988		15	12/10/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338473	6740900		15	12/10/2012	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338473	6741205		40	15/11/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338475	6741005		50	15/11/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338482	6740840		5	12/10/2012	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338484	6740955		1	12/10/2012	10

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338492	6740971		15	15/11/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338510	6740876		15	12/12/2012	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338516	6740957		1	12/10/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338527	6741171		20	15/11/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338530	6740693		2	12/12/2012	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338534	6740882		20	12/10/2012	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338556	6740952		1	12/10/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338570	6740865		7	12/12/2012	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338585	6741002		30	15/11/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338589	6740970		19	15/11/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338595	6740816		30	12/10/2012	7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338599	6740962		5	12/10/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338611	6740991		20	12/10/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338614	6740929		9		10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338622	6740967		10	12/10/2012	10

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338645	6740841		20	12/10/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338665	6740811				7a
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338667	6740882		10	12/12/2012	10
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	4	338678	6740938		5		10
<i>Eucalyptus macrocarpa</i> x <i>pyriformis</i>	3	332409	6740648	WEC082	1	25/11/11	7b
<i>Eucalyptus macrocarpa</i> x <i>pyriformis</i>	3	334115	6742439		12	16/11/12	8
<i>Eucalyptus macrocarpa</i> x <i>pyriformis</i>	3	333542	6745040		6	7/11/12	10
<i>Eucalyptus</i> sp. (unidentified 2)		338317	6743302	WEC053		27/10/11	11
<i>Eucalyptus</i> sp. (unidentified 2)		338315	6743313			26/10/11	11
<i>Guichenotia impudica</i>	3	338102	6744760		6		11
<i>Haemodorum loratum</i>	3	332442	6742092		1	16/11/12	10
<i>Haemodorum loratum</i>	3	332644	6742101		1	16/11/12	10
<i>Haemodorum loratum</i>	3	332799	6740838		2	8/11/12	13a
<i>Haemodorum loratum</i>	3	332939	6741771		1	16/11/12	10
<i>Haemodorum loratum</i>	3	333029	6744586		1	7/11/12	10
<i>Haemodorum loratum</i>	3	333040	6744613		1	7/11/12	10
<i>Haemodorum loratum</i>	3	333323	6745916		1	5/11/12	12
<i>Haemodorum loratum</i>	3	333324	6745235		1	7/11/12	12
<i>Haemodorum loratum</i>	3	333342	6745883		1	5/11/12	7b
<i>Haemodorum loratum</i>	3	333349	6745889		1	6/11/12	7b
<i>Haemodorum loratum</i>	3	333376	6745840		1	6/11/12	12
<i>Haemodorum loratum</i>	3	333378	6745874		2	6/11/12	7b
<i>Haemodorum loratum</i>	3	333393	6745914		1	6/11/12	3
<i>Haemodorum loratum</i>	3	333412	6745853		1	6/11/12	7b

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Haemodorum loratum</i>	3	333436	6745822		4	6/11/12	12
<i>Haemodorum loratum</i>	3	333524	6745759		1	6/11/12	7b
<i>Haemodorum loratum</i>	3	334059	6741878		1	9/11/12	7b
<i>Haemodorum loratum</i>	3	334186	6742336		1	16/11/12	10
<i>Haemodorum loratum</i>	3	334240	6743947		1		9
<i>Haemodorum loratum</i>	3	334321	6742054		1	9/11/12	10
<i>Haemodorum loratum</i>	3	335157	6742802		1	14/11/12	10
<i>Haemodorum loratum</i>	3	335384	6741853		3	15/11/12	13a
<i>Haemodorum loratum</i>	3	335471	6744200		1	15/11/12	10
<i>Haemodorum loratum</i>	3	335536	6742164		1	15/11/12	13a
<i>Haemodorum loratum</i>	3	335590	6744197		1	15/11/12	7b
<i>Haemodorum loratum</i>	3	335922	6741889		2	15/11/12	10
<i>Haemodorum loratum</i>	3	336055	6742128		1	15/11/12	10
<i>Haemodorum loratum</i>	3	336369	6739323		2	21/11/11	7a
<i>Haemodorum loratum</i>	3	336646	6739502		1		7a
<i>Haemodorum loratum</i>	3	336906	6741205		1	15/11/12	13a
<i>Haemodorum loratum</i>	3	337016	6741004		1	15/11/12	10
<i>Haemodorum loratum</i>	3	337029	6741205		1	15/11/12	10
<i>Haemodorum loratum</i>	3	337133	6741007		2	15/11/12	10
<i>Haemodorum loratum</i>	3	337185	6741169		1	15/11/12	10
<i>Haemodorum loratum</i>	3	337198	6741205		4	15/11/12	10
<i>Haemodorum loratum</i>	3	337264	6741203		1	15/11/12	10
<i>Haemodorum loratum</i>	3	337272	6739251		1	14/11/12	13a
<i>Haemodorum loratum</i>	3	337301	6739424		1	14/11/12	10
<i>Haemodorum loratum</i>	3	337322	6741204		1	15/11/12	10
<i>Haemodorum loratum</i>	3	337510	6739786		1	14/11/12	7a
<i>Haemodorum loratum</i>	3	337600	6738951		2	14/11/12	13a
<i>Haemodorum loratum</i>	3	337730	6741210		2	15/11/12	10
<i>Haemodorum loratum</i>	3	337813	6739147		3	21/11/11	7a
<i>Haemodorum loratum</i>	3	338025	6740779		1	12/10/12	7a
<i>Haemodorum loratum</i>	3	338065	6740820		1		7a

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Haemodorum loratum</i>	3	338147	6740091		2	13/11/12	7a
<i>Haemodorum loratum</i>	3	338355	6740811		3	12/10/12	7a
<i>Haemodorum loratum</i>	3	338370	6740786		3		7a
<i>Haemodorum loratum</i>	3	338719	6740844		3	12/10/12	10
<i>Haemodorum loratum</i>	3	338724	6740777		2	12/10/12	7a
<i>Haemodorum loratum</i>	3	338753	6740653		5	12/10/12	7a
<i>Haemodorum loratum</i>	3	338760	6740690		1	12/12/12	7a
<i>Haemodorum loratum</i>	3	338760	6740752		3		7a
<i>Haemodorum loratum</i>	3	338781	6740779		1	12/10/12	10
<i>Haemodorum loratum</i>	3	338786	6743473		1	8/10/12	8
<i>Haemodorum loratum</i>	3	338791	6740839		2	12/10/12	10
<i>Haemodorum loratum</i>	3	341172	6745537		2	9/11/12	13b
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	3	337818	6739137		1	21/11/11	7a
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	3	337302	6739685		1	14/11/12	7a
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	3	337605	6739695		2	14/11/12	7a
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	3	337707	6739791		5	21/11/11	7a
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	3	334450	6739852		1	14/11/12	13a
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	3	338327	6739973		2	13/11/12	7a
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	3	338340	6740003		2	13/11/12	7a
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	3	337572	6739993		2	14/11/12	7a
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	3	338162	6740030		1	13/11/12	7a

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	3	338146	6740193		1	13/11/12	7a
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	3	338242	6740299		1	13/11/12	7a
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	3	333322	6740835		1	8/11/12	13a
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	3	336649	6741005		1	15/11/12	7a
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	3	336372	6741182		1	15/11/12	13a
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	3	333525	6741830		1	9/11/12	7a
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	3	333638	6741832		1	9/11/12	13a
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	3	335124	6741864		1	15/11/12	13a
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	3	336520	6745292		1	24/11/11	13b
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	3	334725	6744884		1	8/11/12	13a
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	3	334655	6745047		1	9/11/12	10
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	3	335551	6745377		1	7/11/12	13b
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	3	336004	6745846		1	7/11/12	13b
<i>Lasiopetalum ogilvieanum</i>	1	332278	6742813		1	25/11/11	7a
<i>Lasiopetalum ogilvieanum</i>	1	332397	6741673	WEC083		25/11/11	13a
<i>Lasiopetalum ogilvieanum</i>	1	332411	6741706		5	25/11/11	13a
<i>Lasiopetalum ogilvieanum</i>	1	332474	6741756		1	25/11/11	13a
<i>Lasiopetalum ogilvieanum</i>	1	332898	6742493		6	16/11/12	7a

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Lasiopetalum ogilvianum</i>	1	332956	6741078		4	8/11/12	7b
<i>Lasiopetalum ogilvianum</i>	1	332960	6741089		2	8/11/12	13a
<i>Lasiopetalum ogilvianum</i>	1	332972	6740778		8	8/11/12	13a
<i>Lasiopetalum ogilvianum</i>	1	332974	6741112		5	8/11/12	13a
<i>Lasiopetalum ogilvianum</i>	1	332976	6740771		3	8/11/12	13a
<i>Lasiopetalum ogilvianum</i>	1	332989	6741071		2	8/11/12	13a
<i>Lasiopetalum ogilvianum</i>	1	333053	6741055		6	8/11/12	13a
<i>Lasiopetalum ogilvianum</i>	1	333092	6741074		5	8/11/12	13a
<i>Lasiopetalum ogilvianum</i>	1	333115	6741074		5	8/11/12	13a
<i>Lasiopetalum ogilvianum</i>	1	333394	6745252		1	25/11/11	13a
<i>Lasiopetalum ogilvianum</i>	1	333423	6745239				13a
<i>Lasiopetalum ogilvianum</i>	1	334019	6741701		6	11/10/12	7b
<i>Lasiopetalum ogilvianum</i>	1	334026	6741675		10	11/10/12	8
<i>Lasiopetalum ogilvianum</i>	1	334028	6741678		10	11/10/12	7b
<i>Lasiopetalum ogilvianum</i>	1	334043	6741670		10	11/10/12	8
<i>Lasiopetalum ogilvianum</i>	1	334052	6741676		5	11/10/12	7b
<i>Lasiopetalum ogilvianum</i>	1	334055	6741665		4	11/10/12	8
<i>Lasiopetalum ogilvianum</i>	1	334078	6741655		5	11/10/12	7b
<i>Lasiopetalum ogilvianum</i>	1	334179	6745066				8
<i>Lasiopetalum ogilvianum</i>	1	334318	6745205				13a
<i>Lasiopetalum ogilvianum</i>	1	334753	6741818		5	26/11/11	13a
<i>Leucopogon</i> sp.		333716	6745914		50	6/11/12	3
<i>Malleostemon decipiens</i>	1	337718	6750570		200	3/10/12	5
<i>Malleostemon decipiens</i>	1	335261	6750535	SITE03	100	3/10/12	4
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	332600	6744526		30	11/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	332640	6744965	WE103		13/09/2012	12
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	332643	6742132		10	16/11/2012	10

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	332775	6744405	WE048		27/10/2011	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	332874	6744475		20	7/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	332916	6744492		10	7/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333004	6744547		20	7/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333029	6744586		3	7/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333130	6746009		50	11/10/2012	12
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333157	6744785		5	7/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333162	6745083		5	7/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333196	6745067		1	11/10/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333197	6746005		20	11/10/2012	12
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333212	6745060		23	11/10/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333217	6744997		3	11/10/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333231	6745048		20	7/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333231	6745982		1000	11/10/2012	12
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333240	6745004		3		10

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333266	6746580	WE099		12/09/2012	12
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333281	6746586		10	6/11/2012	12
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333293	6744985		8	7/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333300	6744954		10	11/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333309	6744927		4	11/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333312	6746031		20	11/10/2012	12
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333314	6746652		20	6/11/2012	12
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333323	6745916		200	5/11/2012	12
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333323	6745998		40	6/11/2012	12
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333340	6745934		20	6/11/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333358	6744843		100	7/11/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333358	6746137		50	6/11/2012	12
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333360	6746194		500	5/11/2012	12
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333364	6745852		300	6/11/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333369	6744942		12	7/11/2012	10

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333372	6745922		40	11/10/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333379	6745995		100	11/10/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333388	6744906		20	11/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333403	6746280		15	6/11/2012	12
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333404	6746623		10	6/11/2012	12
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333412	6745853		8	6/11/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333413	6746357		2	6/11/2012	12
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333418	6745989		50	11/10/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333456	6745801		2	6/11/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333470	6745582	WE027		25/10/2011	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333493	6745788		50	11/10/2012	3
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333582	6745743		6	6/11/2012	12
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333657	6745780		20	11/10/2012	12
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333698	6745795		100+	11/10/2012	12
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333725	6745067		20	7/11/2012	13a

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333747	6745791		5	6/11/2012	12
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333767	6745839		50	11/10/2012	12
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333786	6745045		50	7/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333795	6745048		50	7/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333843	6745032		30	7/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333877	6744744		2	7/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333921	6744947		20	11/10/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	333921	6745009		30	11/10/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	334010	6745062		1000	11/10/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	334013	6745001		1000	11/10/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	334043	6745025		50	11/10/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	334070	6744707		5	11/10/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	334095	6748049	WE032		26/10/2011	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	334254	6743945		3	11/10/2012	9
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	334279	6743993		20		7a

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	334289	6744906		8	7/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	334297	6744725		4	7/11/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	334406	6742152		10	16/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	334410	6743965		3	11/10/2012	7a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	334412	6743983		7		13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	334417	6744006		2	11/10/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	334428	6743965		40	11/10/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	334463	6742350		15	16/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	334715	6747379		7	6/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	334746	6742630		250	14/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	334751	6742599		100	14/11/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	334896	6742799		200	14/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	334908	6742631		200	14/11/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	334937	6742605		200	14/11/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	334964	6742773		90	14/11/2012	10

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	334995	6742802		50	14/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335029	6742596		200	14/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335070	6742158		10	15/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335134	6742128		60	15/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335172	6742250	WE019		30/09/2011	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335232	6742598		50	14/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335262	6742161		50	15/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335278	6744815	WE016	50	29/09/2011	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335504	6742633		250	14/11/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335507	6742802		50	14/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335508	6748428		50	5/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335539	6742598		200	14/11/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335545	6742771		100	14/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335548	6748221		4	5/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335548	6748448		3	5/11/2012	11

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335653	6742799		50	14/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335658	6747183		2	11/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335661	6742587		200	14/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335702	6747203		6		8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335719	6747218		10	11/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335729	6742159		20	15/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335774	6742602		100	14/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335787	6742772		100	14/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335813	6742159		100	15/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335836	6742802		100	14/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335852	6741890		15	15/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335873	6742630		250	14/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335883	6742130		150	15/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335890	6742598		100	14/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335910	6744169		50	15/11/2012	10

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335927	6742164		10	15/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335963	6742800		100	14/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335967	6744199		100	15/11/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335980	6744021		55	15/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	335998	6742599		200	14/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336000	6740093		10	11/10/2012	7a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336024	6744985		3	7/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336080	6742773		170	14/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336081	6742800		50	14/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336088	6740741	WE089		25/11/2011	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336115	6747142		10	22/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336134	6742161		10	15/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336153	6747236		20	5/11/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336187	6744984		30	7/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336190	6747203		3	6/11/2012	7b

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336237	6742773		20	14/11/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336250	6745040		300	7/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336321	6745026		30	7/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336321	6748551		100	5/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336333	6748576		15	6/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336373	6745176		200	7/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336387	6748694		6	5/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336389	6745125		40	7/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336411	6745192		20	7/11/2012	13b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336420	6746678		10	13/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336429	6748464		20	12/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336439	6748584		40	6/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336444	6748351		5	12/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336455	6748503		30	12/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336467	6746580		10	13/11/2012	7b

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336467	6748739		20	5/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336482	6748698		8	5/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336522	6742153		20	15/11/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336557	6748377		10	6/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336572	6746792		3	6/11/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336590	6746778		20	13/11/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336604	6748355		20	5/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336606	6739491		4	11/10/2012	7a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336639	6748074		8	6/11/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336653	6748195		6	6/11/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336690	6746687		50	13/11/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336729	6746650		20	13/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336755	6744014		2		13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336757	6748201		20	6/11/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336790	6747113		20	13/11/2012	7b

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336830	6746662		20	13/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336830	6746718		50	13/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336830	6747097		4	6/11/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336843	6747123		20	13/11/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336861	6747186		8	6/11/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336870	6747477		6	6/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336882	6744083		5		13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336888	6748140		40	12/11/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336905	6747323		100	5/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336922	6748087		50	12/11/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336931	6748133		200	12/11/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336948	6747431		10	12/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336980	6744000		50	10/10/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336980	6744190		50	10/10/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336980	6744379		50	10/10/2012	7a

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	336982	6748067		200	12/11/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337000	6747645		5	12/11/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337006	6744117		5	10/10/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337007	6744202		6	10/10/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337009	6744485		3	10/10/2012	7a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337009	6748510	WE080		24/11/2011	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337010	6743999		7	10/10/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337010	6744052		15	10/10/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337011	6744218		10	10/10/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337011	6747763		10	12/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337014	6744296		10	10/10/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337015	6744141		5	10/10/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337017	6744415		12	10/10/2012	7a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337018	6744391		6	10/10/2012	7a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337022	6747910		15	12/11/2012	10

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337025	6740970		5	15/11/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337025	6747965		200	12/11/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337037	6744005		60		13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337043	6744271		20		13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337043	6746701		50	13/11/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337054	6747060		200	23/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337060	6747389		10	12/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337067	6744200		40	10/10/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337070	6744045		30	10/10/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337071	6744189		15		8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337073	6744353		40	10/10/2012	7a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337073	6744493		10	10/10/2012	7a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337094	6744427		20	10/10/2012	7a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337096	6744000		3	10/10/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337096	6744328		2	10/10/2012	7a

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337096	6744369		10	10/10/2012	7a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337097	6744050		3	10/10/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337097	6744498		5	10/10/2012	7a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337098	6744519		4	10/10/2012	7a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337099	6744091		5	10/10/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337101	6744213		2	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337104	6744124		10	10/10/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337106	6744143		3	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337108	6746998		200	13/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337120	6746938		50	13/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337128	6744000		40		13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337128	6744128		50		8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337133	6744507		35		7a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337140	6741172		10	15/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337157	6744122		50	10/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337160	6744000		50	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337161	6744397		30	10/10/2012	7a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337161	6744550		15	10/10/2012	7a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337190	6744087		35	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337190	6744187		20	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337190	6744470		9	10/10/2012	7a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337190	6744525		5	10/10/2012	7a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337190	6744825		5	10/10/2012	7a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337200	6746809		50	13/11/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337212	6746999		50	13/11/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337217	6742155		100	8/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337223	6744624		30	9/10/2012	13b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337225	6744209		50	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337248	6742100		20	8/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337250	6746745		50	13/11/2012	7b

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337251	6744335		110	10/10/2012	7a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337258	6744087		30	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337259	6744226		20	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337280	6744000		20	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337280	6744100		10	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337280	6744312		15	10/10/2012	7a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337280	6744406		5	10/10/2012	7a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337280	6744506		18	10/10/2012	13b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337306	6746453		200	22/11/2011	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337322	6743976		50	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337340	6746781		20	13/11/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337490	6746897		10	13/11/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337600	6744165		10	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337601	6744034		10	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337601	6744101		10	10/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337628	6744012		2	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337657	6744071		2		8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337664	6744436		22		7a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337700	6744067		20	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337720	6744052		10	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337720	6744102		5	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337820	6743907		5	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337870	6747152		50	13/11/2012	13b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337877	6743871		50	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337877	6743932		6		8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337889	6743912		20	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337940	6743962		200	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337949	6743903		6	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337966	6747536		40	12/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337970	6747511		35		8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337971	6747832		10		7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	337978	6743990		11	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338019	6747244		15	12/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338020	6742674		20	13/11/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338027	6747127		20	13/11/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338033	6747217		20	11/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338044	6744932	WE040		25/10/2011	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338060	6743002		4	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338091	6743012		40	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338150	6744000		3	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338165	6747305		3	12/10/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338176	6743010		20	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338178	6743932		80	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338180	6743300		65	9/10/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338203	6743209		50	9/10/2012	11

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338205	6743030		50	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338205	6743074		20	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338208	6743930		3		8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338212	6743300		200	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338212	6743315		7		11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338229	6743937		12	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338235	6743351		8	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338238	6743404		20	9/10/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338240	6743100		16	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338240	6743200		8	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338246	6740271		20	13/11/2012	13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338268	6743285		50	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338269	6743132		200	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338270	6743300		30	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338270	6743400		10	9/10/2012	7b

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338270	6743942		10	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338275	6743255		50	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338297	6743447		50	9/10/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338304	6743102		6		8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338305	6743203		5		11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338317	6743302	WE053		27/10/2011	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338324	6743143		5	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338324	6743303		5	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338330	6744155		5	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338331	6743216		10	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338332	6743381		10	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338332	6743487		27	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338332	6743988		2	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338358	6743528		1000	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338360	6743170		45	9/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338360	6743300		10	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338363	6743368		200	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338370	6747241		20	13/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338388	6743296		10	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338390	6743566		25		8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338391	6743478		16		11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338393	6747246	WE064		21/11/2011	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338394	6743250		30	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338396	6743345		6		11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338406	6747197		20	13/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338409	6743909		5		8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338416	6742899		5	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338416	6743000		5	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338416	6743100		10	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338416	6743200		5	9/10/2012	11

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338416	6743275		5	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338418	6743928		5	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338420	6747204		50	13/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338423	6743386		3	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338423	6743494		4	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338425	6744271		5	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338426	6743554		1	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338439	6746998		50	13/11/2012	7b
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338448	6743725		20	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338450	6743300		30	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338450	6743448		20	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338450	6744208		15	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338450	6744495		60	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338452	6744134		10	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338456	6743300		20	9/10/2012	11

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338473	6743386		50	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338476	6743300		50	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338479	6743443		50	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338480	6743267		7		8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338482	6743662		50	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338483	6744213		100	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338483	6744494		100	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338486	6743906		20	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338490	6744359		1	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338500	6742382		20	13/11/2012	7a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338508	6743263		23	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338508	6743400		10	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338508	6743558		15	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338510	6744115		10	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338510	6744200		17	10/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338510	6744300		30	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338510	6744400		16	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338510	6744500		19	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338510	6744700		4	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338511	6743699		14	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338511	6743801		1	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338511	6743909		15	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338514	6743195		5	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338527	6744328		30	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338530	6746971		20	13/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338532	6744389		40	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338534	6743870		5	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338536	6744101		5	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338538	6743781		100	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338540	6743372		20	9/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338540	6744000		20	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338541	6743298		40	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338541	6743572		50	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338541	6743673		10	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338541	6744271		1	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338541	6747002		200	13/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338543	6743525		20	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338545	6743468		30	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338546	6744493		40	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338563	6743679		4		8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338567	6744030		3		8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338567	6744335		6		8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338567	6747320				11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338568	6743806		5		8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338570	6744495		11		8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338571	6743518		35		8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338572	6744274		1		8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338575	6744169		10		8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338575	6744330	WE042		26/10/2011	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338589	6744024		10	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338590	6744097		5	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338590	6746978		50	13/11/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338594	6744049		10	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338595	6743286		1	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338595	6744298		5	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338596	6743389		15	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338597	6744439		10	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338597	6744579		1	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338600	6744200		5	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338600	6744417		1	9/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338601	6745358				13a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338602	6743480		3	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338604	6743619		3	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338604	6743779		5	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338609	6744888				8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338611	6741171		10	15/11/2012	10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338617	6744398				8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338625	6743928				8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338625	6744474	EM-51			8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338629	6743359		7	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338629	6744331		40	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338630	6743852		37	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338630	6743939		25	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338630	6744033		10	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338630	6744136		60	9/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338630	6744200		30	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338630	6745656				11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338631	6744215				8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338631	6744601		20	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338632	6743506		60	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338632	6743696		60	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338634	6743450				8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338636	6744750				8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338642	6743659	EM-50			8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338646	6743942		50	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338657	6743316		50	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338659	6744184		30	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338662	6743632		50	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338663	6744748		20	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338664	6743407		50	9/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338665	6743065		1	8/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338665	6744368		50	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338667	6743522		50	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338680	6740722				7a
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338686	6747883		30		8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338690	6743364		5	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338690	6743507		10	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338690	6743649		5	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338690	6744145		5	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338690	6744200		30	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338690	6744330		10	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338690	6744600		5	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338690	6744639		11	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338690	6744796		42	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338690	6744840		10	10/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338692	6743255		10	8/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338713	6744037		12	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338714	6744150		20	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338715	6744831		100	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338715	6744893		100	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338717	6743483		20	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338718	6743239		15	8/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338718	6743595		40	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338719	6743394		50	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338720	6743300		25	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338720	6743449		20	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338720	6743557		30	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338720	6744200		100	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338720	6744950		30	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338721	6744438		30	9/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338723	6744647		50	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338724	6743259		80	8/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338724	6743354		150	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338724	6743521		30	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338724	6743635		10	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338724	6744555		200	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338726	6743656		10	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338748	6743980		15		8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338748	6744190		12		8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338749	6743182		7	8/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338749	6744126		3		8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338749	6744926		17		11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338750	6743302		36	8/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338750	6744448		4		8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338751	6743626		15	8/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338751	6743802		10	8/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338752	6743372		35	8/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338754	6744794		38		11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338756	6743769		15	8/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338758	6743335		15	8/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338758	6743569		9	8/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338774	6743224		8	8/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338777	6743837		10	8/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338777	6744201		2	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338778	6743871		10	8/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338778	6744144		3	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338779	6743382		10	8/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338780	6744200		1	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338780	6744649		8	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338780	6744714		6	9/10/2012	11

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338780	6744942		15	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338781	6743457		1	8/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338781	6744311		5	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338781	6744395		10	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338782	6744567		4	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338783	6744795		8	9/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338785	6743533		10	8/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338786	6743297		10	8/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338786	6744426		6	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338805	6744382		30	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338805	6744583		30	10/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338805	6744758		40	10/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338805	6744857		20	10/10/2012	11
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338806	6743301		20	8/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338809	6743350		30	9/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338809	6743436		30	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338809	6743539		25	23/11/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338809	6743621		22	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338810	6743683		1	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338810	6744200		50	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338811	6743329		6	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338811	6743467		22	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338811	6743488		35	9/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338857	6743365		3	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338859	6743681		2	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338861	6740930		5		10
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338866	6743620		30	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	338869	6743506		20	10/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	339565	6744268		5	4/10/2012	8
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	339576	6744327		20	4/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	341088	6745813	SITE05	50	4/10/2012	11
<i>Micromyrtus rogeri</i>	1	333249	6742064	WE036		24/10/2011	9
<i>Micromyrtus rogeri</i>	1	333415	6745907		20	11/10/2012	3
<i>Micromyrtus rogeri</i>	1	333473	6745892		80	11/10/2012	3
<i>Micromyrtus rogeri</i>	1	333475	6746310		100	11/10/2012	12
<i>Micromyrtus rogeri</i>	1	333778	6742910		100	11/10/2012	8
<i>Micromyrtus rogeri</i>	1	333802	6742848		50	11/10/2012	8
<i>Micromyrtus rogeri</i>	1	334052	6747404	WE033		26/10/2011	7a
<i>Micromyrtus rogeri</i>	1	334635	6748026	WE076		24/11/2011	9
<i>Micromyrtus rogeri</i>	1	334878	6747924		100	23/11/2011	9
<i>Micromyrtus rogeri</i>	1	335103	6747272	WE068		23/11/2011	8
<i>Micromyrtus rogeri</i>	1	335135	6747326		15	22/10/2012	8
<i>Micromyrtus rogeri</i>	1	335156	6747346		40	22/10/2012	8
<i>Micromyrtus rogeri</i>	1	335191	6747326		10	22/10/2012	8
<i>Micromyrtus rogeri</i>	1	335393	6743205				10
<i>Micromyrtus rogeri</i>	1	335485	6747339		100	22/10/2012	8
<i>Micromyrtus rogeri</i>	1	335517	6747229		50	11/10/2012	8
<i>Micromyrtus rogeri</i>	1	335528	6747364		4		8
<i>Micromyrtus rogeri</i>	1	335532	6747305		7		8
<i>Micromyrtus rogeri</i>	1	335559	6747362		2	11/10/2012	8
<i>Micromyrtus rogeri</i>	1	335560	6747352		8	11/10/2012	8
<i>Micromyrtus rogeri</i>	1	335585	6747297		2	11/10/2012	8
<i>Micromyrtus rogeri</i>	1	335599	6747236		8	11/10/2012	8
<i>Micromyrtus rogeri</i>	1	335701	6747173		30	11/10/2012	8
<i>Micromyrtus rogeri</i>	1	335702	6747203		12		8
<i>Micromyrtus rogeri</i>	1	335710	6747184		10	11/10/2012	8
<i>Micromyrtus rogeri</i>	1	335719	6747218		30	11/10/2012	8
<i>Micromyrtus rogeri</i>	1	335731	6747130		8	11/10/2012	8
<i>Micromyrtus rogeri</i>	1	335734	6747230		7		8
<i>Micromyrtus rogeri</i>	1	335736	6747143		1		8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Micromyrtus rogeri</i>	1	335778	6747226		10	11/10/2012	8
<i>Micromyrtus rogeri</i>	1	335790	6747139		5	11/10/2012	8
<i>Micromyrtus rogeri</i>	1	335813	6747224		10	11/10/2012	8
<i>Micromyrtus rogeri</i>	1	336067	6747151		20	22/10/2012	8
<i>Micromyrtus rogeri</i>	1	336075	6747120		20	22/10/2012	8
<i>Micromyrtus rogeri</i>	1	336126	6747113		20	22/10/2012	8
<i>Micromyrtus rogeri</i>	1	336134	6747139		30	5/11/2012	8
<i>Micromyrtus rogeri</i>	1	336175	6746215		30	7/11/2012	11
<i>Micromyrtus rogeri</i>	1	336182	6747158		16	6/11/2012	8
<i>Micromyrtus rogeri</i>	1	336189	6746255		15	7/11/2012	7b
<i>Micromyrtus rogeri</i>	1	336287	6746230		100	7/11/2012	7b
<i>Micromyrtus rogeri</i>	1	336329	6746119		50	7/11/2012	11
<i>Micromyrtus rogeri</i>	1	336350	6744284		50	26/10/2011	7b
<i>Micromyrtus rogeri</i>	1	336351	6746146		5	7/11/2012	7b
<i>Micromyrtus rogeri</i>	1	336383	6746698		40	13/11/2012	11
<i>Micromyrtus rogeri</i>	1	336442	6746830		100	13/11/2012	8
<i>Micromyrtus rogeri</i>	1	336470	6746815		20	13/11/2012	8
<i>Micromyrtus rogeri</i>	1	336490	6746821		2	13/11/2012	7b
<i>Micromyrtus rogeri</i>	1	336502	6746718		50	5/11/2012	8
<i>Micromyrtus rogeri</i>	1	336560	6746658		10	13/11/2012	7b
<i>Micromyrtus rogeri</i>	1	336587	6746618		10	13/11/2012	7b
<i>Micromyrtus rogeri</i>	1	336657	6746629		50	13/11/2012	7b
<i>Micromyrtus rogeri</i>	1	336883	6747065		100	13/11/2012	8
<i>Micromyrtus rogeri</i>	1	336907	6746988		30	23/10/2012	8
<i>Micromyrtus rogeri</i>	1	336928	6747008		5	13/11/2012	8
<i>Micromyrtus rogeri</i>	1	336950	6746777		30	23/10/2012	8
<i>Micromyrtus rogeri</i>	1	336970	6746886		20	23/10/2012	8
<i>Micromyrtus rogeri</i>	1	337010	6746937		5	13/11/2012	8
<i>Micromyrtus rogeri</i>	1	337030	6746755		10	13/11/2012	8
<i>Micromyrtus rogeri</i>	1	337161	6747038		200	23/10/2012	9
<i>Micromyrtus rogeri</i>	1	337166	6746734		200	13/11/2012	9

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Micromyrtus rogeri</i>	1	337169	6746999		100	13/11/2012	7b
<i>Micromyrtus rogeri</i>	1	337221	6744545		70	9/10/2012	13b
<i>Micromyrtus rogeri</i>	1	337250	6746942		10	13/11/2012	7b
<i>Micromyrtus rogeri</i>	1	337306	6746453		50	22/11/2011	7b
<i>Micromyrtus rogeri</i>	1	337389	6746455	WE061		21/11/2011	8
<i>Micromyrtus rogeri</i>	1	337440	6746896		50	13/11/2012	7b
<i>Micromyrtus rogeri</i>	1	337458	6746918		50	23/10/2012	7b
<i>Micromyrtus rogeri</i>	1	337602	6744788		20	10/10/2012	11
<i>Micromyrtus rogeri</i>	1	337623	6747840		15	12/10/2012	8
<i>Micromyrtus rogeri</i>	1	337625	6744767		1	10/10/2012	11
<i>Micromyrtus rogeri</i>	1	337629	6742021		50	23/10/2012	8
<i>Micromyrtus rogeri</i>	1	337630	6744805		2	10/10/2012	11
<i>Micromyrtus rogeri</i>	1	337650	6744763		11		11
<i>Micromyrtus rogeri</i>	1	337660	6742287		100	23/10/2012	8
<i>Micromyrtus rogeri</i>	1	337662	6744795		3		11
<i>Micromyrtus rogeri</i>	1	337672	6747863		4	12/10/2012	8
<i>Micromyrtus rogeri</i>	1	337683	6742353		30	23/10/2012	7b
<i>Micromyrtus rogeri</i>	1	337685	6744716		60	10/10/2012	11
<i>Micromyrtus rogeri</i>	1	337688	6747838		25	12/10/2012	8
<i>Micromyrtus rogeri</i>	1	337690	6744800		10	10/10/2012	11
<i>Micromyrtus rogeri</i>	1	337696	6744000		5	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	337716	6746205		40	12/10/2012	8
<i>Micromyrtus rogeri</i>	1	337719	6746148		10	12/12/2012	8
<i>Micromyrtus rogeri</i>	1	337720	6744022		5	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	337720	6744600		1	10/10/2012	7a
<i>Micromyrtus rogeri</i>	1	337720	6744700		45	10/10/2012	11
<i>Micromyrtus rogeri</i>	1	337720	6744796		10	10/10/2012	11
<i>Micromyrtus rogeri</i>	1	337722	6747690		2		8
<i>Micromyrtus rogeri</i>	1	337726	6746159		10	12/12/2012	8
<i>Micromyrtus rogeri</i>	1	337740	6746091		20	12/10/2012	8
<i>Micromyrtus rogeri</i>	1	337742	6746211		10	12/12/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Micromyrtus rogeri</i>	1	337747	6746233		10	12/10/2012	8
<i>Micromyrtus rogeri</i>	1	337749	6744514		20	9/10/2012	7a
<i>Micromyrtus rogeri</i>	1	337749	6744694		100	9/10/2012	11
<i>Micromyrtus rogeri</i>	1	337749	6747866		18	12/10/2012	8
<i>Micromyrtus rogeri</i>	1	337753	6744627		100	9/10/2012	11
<i>Micromyrtus rogeri</i>	1	337754	6744026		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	337754	6744762		5	9/10/2012	11
<i>Micromyrtus rogeri</i>	1	337756	6746094		10	12/12/2012	8
<i>Micromyrtus rogeri</i>	1	337768	6746140		20	12/12/2012	8
<i>Micromyrtus rogeri</i>	1	337770	6746238		10	12/10/2012	8
<i>Micromyrtus rogeri</i>	1	337778	6747793		50		8
<i>Micromyrtus rogeri</i>	1	337779	6746109		30	12/10/2012	8
<i>Micromyrtus rogeri</i>	1	337780	6747817		50	12/10/2012	8
<i>Micromyrtus rogeri</i>	1	337796	6747590		2		13b
<i>Micromyrtus rogeri</i>	1	337808	6743990		5	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	337817	6747857		15	12/10/2012	8
<i>Micromyrtus rogeri</i>	1	337822	6746218		1	12/10/2012	8
<i>Micromyrtus rogeri</i>	1	337827	6744056		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	337861	6746125	WE081		24/11/2011	8
<i>Micromyrtus rogeri</i>	1	337877	6745164				7b
<i>Micromyrtus rogeri</i>	1	337878	6747823		50	12/10/2012	8
<i>Micromyrtus rogeri</i>	1	337886	6747812		25		8
<i>Micromyrtus rogeri</i>	1	337891	6747857		10	12/10/2012	8
<i>Micromyrtus rogeri</i>	1	337898	6746248		20	12/10/2012	8
<i>Micromyrtus rogeri</i>	1	337905	6747865		5	12/10/2012	8
<i>Micromyrtus rogeri</i>	1	337926	6744659		1		11
<i>Micromyrtus rogeri</i>	1	337926	6747841		2	12/10/2012	8
<i>Micromyrtus rogeri</i>	1	337972	6746248		60	12/10/2012	8
<i>Micromyrtus rogeri</i>	1	338003	6747230		6	12/10/2012	8
<i>Micromyrtus rogeri</i>	1	338006	6743898		3	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338010	6747185		20	13/11/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Micromyrtus rogeri</i>	1	338011	6747265		1	12/10/2012	8
<i>Micromyrtus rogeri</i>	1	338015	6745305				7b
<i>Micromyrtus rogeri</i>	1	338021	6747229		10		8
<i>Micromyrtus rogeri</i>	1	338024	6746456		200	22/11/2011	7b
<i>Micromyrtus rogeri</i>	1	338033	6746249		30	12/10/2012	7b
<i>Micromyrtus rogeri</i>	1	338035	6746231		65	12/12/2012	7b
<i>Micromyrtus rogeri</i>	1	338038	6746220		50	12/10/2012	7b
<i>Micromyrtus rogeri</i>	1	338060	6743100		9	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338060	6743163		6	9/10/2012	7b
<i>Micromyrtus rogeri</i>	1	338080	6747334		10	12/10/2012	7b
<i>Micromyrtus rogeri</i>	1	338084	6747230		15	12/10/2012	8
<i>Micromyrtus rogeri</i>	1	338088	6742232		5	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338098	6742213		10	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338103	6743403		100	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338107	6742291	WE059		21/11/2011	8
<i>Micromyrtus rogeri</i>	1	338112	6743351		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338112	6743646		100	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338113	6742781		100	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338114	6742376		100	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338118	6743018		24		8
<i>Micromyrtus rogeri</i>	1	338118	6744134		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338119	6744033		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338119	6747284		50	22/11/2011	8
<i>Micromyrtus rogeri</i>	1	338121	6743460		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338123	6743930		2	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338124	6743704		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338124	6743809		50	9/10/2012	1b
<i>Micromyrtus rogeri</i>	1	338128	6742509		100	13/11/2012	8
<i>Micromyrtus rogeri</i>	1	338131	6743554		200	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338132	6743584		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338134	6742710		100	13/11/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Micromyrtus rogeri</i>	1	338136	6742692		100	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338139	6742375		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338140	6742556		50	13/11/2012	8
<i>Micromyrtus rogeri</i>	1	338143	6747302		20	12/10/2012	7b
<i>Micromyrtus rogeri</i>	1	338148	6743044		4	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338150	6743393		3	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338150	6743439		2	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338150	6743456		15	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338150	6743550		10	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338150	6743574		26	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338150	6743703		11	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338150	6743919		5	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338163	6742253		100	22/11/2011	8
<i>Micromyrtus rogeri</i>	1	338172	6742594		100	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338179	6743644		85	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338181	6742988		35	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338181	6743502		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338181	6744076		40	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338184	6743379		30	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338185	6743899		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338199	6747000		50	13/11/2012	11
<i>Micromyrtus rogeri</i>	1	338208	6743403		16		8
<i>Micromyrtus rogeri</i>	1	338208	6743505		5		8
<i>Micromyrtus rogeri</i>	1	338209	6743616		38		8
<i>Micromyrtus rogeri</i>	1	338210	6743867		10		8
<i>Micromyrtus rogeri</i>	1	338210	6744070		38		8
<i>Micromyrtus rogeri</i>	1	338211	6742651		100	13/11/2012	8
<i>Micromyrtus rogeri</i>	1	338214	6743004		100	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338215	6742891		80	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338216	6742844		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338217	6740905		5	12/10/2012	7a

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Micromyrtus rogeri</i>	1	338218	6742793		5	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338229	6743893		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338234	6743734		7	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338238	6744058		15	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338240	6742793		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338240	6742943		10	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338240	6743013		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338240	6743567		16	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338240	6743838		15	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338245	6743615		30	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338262	6742862		30	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338265	6743029		25	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338270	6742482		20	13/11/2012	8
<i>Micromyrtus rogeri</i>	1	338270	6743462		22	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338270	6743596		22	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338270	6743748		35	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338270	6744000		10	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338270	6744135		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338273	6742816		45	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338280	6746958		150	13/11/2012	7b
<i>Micromyrtus rogeri</i>	1	338290	6743587		75	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338300	6743990		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338301	6743822		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338304	6743102		33		8
<i>Micromyrtus rogeri</i>	1	338306	6742918		20		8
<i>Micromyrtus rogeri</i>	1	338309	6742819		4		8
<i>Micromyrtus rogeri</i>	1	338309	6743953		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338309	6744049		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338309	6747000		150	13/11/2012	7b
<i>Micromyrtus rogeri</i>	1	338327	6743160		15	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338330	6742800		25	9/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Micromyrtus rogeri</i>	1	338330	6743020		25	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338330	6743092		15	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338330	6744041		20	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338330	6744175		5	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338332	6742892		8	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338332	6743658		8	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338332	6743703		25	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338332	6743880		1	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338332	6743988		43	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338333	6742549		100	13/11/2012	8
<i>Micromyrtus rogeri</i>	1	338340	6746965		25	13/11/2012	7b
<i>Micromyrtus rogeri</i>	1	338357	6743089		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338360	6742791		10	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338360	6744000		30	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338361	6742866		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338361	6743001		15	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338362	6742941		7	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338362	6744113		60	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338362	6744177		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338364	6743893		10	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338367	6743656		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338385	6744336		8		8
<i>Micromyrtus rogeri</i>	1	338386	6743106		250	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338387	6742989		30	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338388	6742835		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338389	6743895		8		8
<i>Micromyrtus rogeri</i>	1	338389	6743995		15		8
<i>Micromyrtus rogeri</i>	1	338390	6742790		100	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338390	6744204		7		8
<i>Micromyrtus rogeri</i>	1	338396	6743210		20	9/10/2012	11
<i>Micromyrtus rogeri</i>	1	338396	6743345		29		11

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Micromyrtus rogeri</i>	1	338415	6744084		25	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338416	6742899		5	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338416	6743000		15	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338416	6743100		10	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338416	6743200		20	9/10/2012	11
<i>Micromyrtus rogeri</i>	1	338416	6743275		5	9/10/2012	11
<i>Micromyrtus rogeri</i>	1	338420	6744000		10	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338420	6744050		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338420	6744403		3	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338422	6743725		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338422	6744211		2	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338423	6743766		30	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338423	6743827		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338426	6744162		10	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338426	6744290		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338429	6742505		50	13/11/2012	7a
<i>Micromyrtus rogeri</i>	1	338448	6744118		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338449	6742876		10	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338450	6743641		5	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338450	6743791		30	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338450	6744000		200	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338450	6744235		60	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338450	6744376		70	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338456	6743300		10	9/10/2012	11
<i>Micromyrtus rogeri</i>	1	338460	6743118		25	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338464	6742949		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338472	6743639		30	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338473	6743386		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338475	6743742		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338478	6743982		10	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338480	6742894		20		8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Micromyrtus rogeri</i>	1	338480	6743267		7		8
<i>Micromyrtus rogeri</i>	1	338483	6744004		30	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338483	6744083		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338483	6744213		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338486	6743123		15		8
<i>Micromyrtus rogeri</i>	1	338486	6743590		30	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338487	6744189		200	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338490	6744359		40	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338508	6743263		15	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338508	6743384		45	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338508	6743558		13	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338510	6742865		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338510	6743135		4	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338510	6744000		25	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338510	6744106		43	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338510	6744200		20	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338510	6744300		22	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338510	6744447		1	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338510	6744680		1	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338511	6743678		12	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338511	6743997		25	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338513	6742940		10	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338514	6743195		1	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338514	6743290		10	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338536	6744101		30	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338537	6743163		34	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338540	6743300		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338540	6743372		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338540	6744000		370	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338540	6744074		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338540	6744200		50	9/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Micromyrtus rogeri</i>	1	338541	6743298		10	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338541	6744271		100	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338542	6742908		30	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338543	6743525		30	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338546	6743646		30	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338560	6743348		31		8
<i>Micromyrtus rogeri</i>	1	338565	6743150		15	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338568	6742887		20	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338568	6743966	WE043		26/10/2011	8
<i>Micromyrtus rogeri</i>	1	338569	6743990		18		8
<i>Micromyrtus rogeri</i>	1	338570	6744200		8		8
<i>Micromyrtus rogeri</i>	1	338571	6743518		15		8
<i>Micromyrtus rogeri</i>	1	338571	6743966				8
<i>Micromyrtus rogeri</i>	1	338571	6744141		30		8
<i>Micromyrtus rogeri</i>	1	338572	6743031		20	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338572	6743995		40		8
<i>Micromyrtus rogeri</i>	1	338572	6744274		7		8
<i>Micromyrtus rogeri</i>	1	338575	6744330	WE042		26/10/2011	8
<i>Micromyrtus rogeri</i>	1	338588	6743115		100	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338590	6744097		3	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338594	6744049		15	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338595	6744200		8	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338598	6743529		3	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338599	6743040		6	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338600	6742990		25	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338600	6744000		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338600	6744200		10	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338601	6743330		40	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338602	6743480		10	9/10/2012	11
<i>Micromyrtus rogeri</i>	1	338602	6743957		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338603	6743549		7	9/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Micromyrtus rogeri</i>	1	338603	6744927				8
<i>Micromyrtus rogeri</i>	1	338606	6743097		25	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338615	6744983				8
<i>Micromyrtus rogeri</i>	1	338617	6744398				8
<i>Micromyrtus rogeri</i>	1	338619	6743860				8
<i>Micromyrtus rogeri</i>	1	338620	6743103		4	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338624	6742846		200	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338625	6743069		10	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338625	6743928				8
<i>Micromyrtus rogeri</i>	1	338625	6744474	EM-51			8
<i>Micromyrtus rogeri</i>	1	338627	6743181		10	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338629	6743359		25	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338629	6743400				8
<i>Micromyrtus rogeri</i>	1	338630	6742915		20	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338630	6743852		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338630	6744000		145	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338630	6744136		40	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338631	6743086		1	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338631	6743651		15	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338631	6744215				8
<i>Micromyrtus rogeri</i>	1	338632	6743506		60	9/10/2012	11
<i>Micromyrtus rogeri</i>	1	338634	6743450				8
<i>Micromyrtus rogeri</i>	1	338637	6743860				8
<i>Micromyrtus rogeri</i>	1	338637	6744020				8
<i>Micromyrtus rogeri</i>	1	338642	6743659	EM-50			8
<i>Micromyrtus rogeri</i>	1	338645	6742584				8
<i>Micromyrtus rogeri</i>	1	338646	6743942		200	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338647	6743115				8
<i>Micromyrtus rogeri</i>	1	338648	6743658		100	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338651	6743765		100	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338652	6743873		50	9/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Micromyrtus rogeri</i>	1	338655	6743185		20	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338658	6743737		100	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338659	6743366		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338660	6743091		50	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338661	6743157		40	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338661	6743219				8
<i>Micromyrtus rogeri</i>	1	338661	6744162		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338662	6743632		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338662	6744003		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338663	6743472		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338663	6744087		200	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338664	6743407		100	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338664	6744073		100	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338667	6743522		100	9/10/2012	11
<i>Micromyrtus rogeri</i>	1	338675	6742642				8
<i>Micromyrtus rogeri</i>	1	338684	6743012	EM-49			8
<i>Micromyrtus rogeri</i>	1	338688	6742928		20	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338690	6743364		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338690	6743492		15	9/10/2012	11
<i>Micromyrtus rogeri</i>	1	338690	6743600		5	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338690	6743856		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338690	6744145		15	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338691	6742995		100	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338691	6743064		250	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338693	6743200		200	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338694	6743762				8
<i>Micromyrtus rogeri</i>	1	338698	6742862		20	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338705	6742855	EM-48			8
<i>Micromyrtus rogeri</i>	1	338707	6743087		50	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338707	6743141		100	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338710	6742984				8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Micromyrtus rogeri</i>	1	338710	6744000		60	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338711	6743912		30	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338713	6743844		100	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338714	6744150		40	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338716	6744100		100	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338717	6742906		60	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338717	6743483		10	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338718	6743595		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338719	6743394		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338719	6743790		10	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338720	6742865		50	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338720	6743181		50	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338720	6743557		40	9/10/2012	11
<i>Micromyrtus rogeri</i>	1	338720	6744272		1	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338721	6743121		80	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338723	6743729		20	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338724	6742989		150	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338724	6743066		60	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338724	6743354		200	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338724	6743521		50	9/10/2012	11
<i>Micromyrtus rogeri</i>	1	338724	6743635		30	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338726	6743656		10	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338730	6742875				8
<i>Micromyrtus rogeri</i>	1	338745	6744060		14		8
<i>Micromyrtus rogeri</i>	1	338746	6744176		3		8
<i>Micromyrtus rogeri</i>	1	338748	6743859		1	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338749	6742925		50	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338749	6743732		30	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338749	6744126		22		8
<i>Micromyrtus rogeri</i>	1	338750	6744153		16		8
<i>Micromyrtus rogeri</i>	1	338751	6742881		15	8/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Micromyrtus rogeri</i>	1	338751	6743626		28	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338751	6743802		45	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338752	6743057		30	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338752	6743139		22	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338752	6743372		15	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338756	6743769		20	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338757	6742984		20	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338758	6743335		10	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338758	6743569		22	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338771	6743106		20	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338773	6743587		30	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338774	6744070		8	9/10/2012	1b
<i>Micromyrtus rogeri</i>	1	338777	6743837		20	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338778	6743359		30	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338778	6743417		6	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338778	6743871		50	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338778	6744144		6	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338780	6742973		30	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338780	6744168		15	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338781	6743457		8	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338782	6743681		7	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338782	6743787		30	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338782	6743967		20	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338785	6743533		8	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338786	6743297		7	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338808	6742933		6	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338808	6742990		30	8/10/2012	8
<i>Micromyrtus rogeri</i>	1	338809	6743350		50	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338809	6743436		22	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338809	6743539		35	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338809	6743621		25	9/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Micromyrtus rogeri</i>	1	338809	6743806		30	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338810	6743317		30	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338810	6743683		40	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338810	6743751		15	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338810	6743853		45	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338811	6743488		30	9/10/2012	8
<i>Micromyrtus rogeri</i>	1	338847	6742666		2		8
<i>Micromyrtus rogeri</i>	1	338854	6742730		36		1b
<i>Micromyrtus rogeri</i>	1	338855	6742663		5	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338856	6742679		7		8
<i>Micromyrtus rogeri</i>	1	338856	6743775		3	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338857	6743365		5	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338857	6743590		5	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338857	6743858		5	10/10/2012	C
<i>Micromyrtus rogeri</i>	1	338858	6742708		5		8
<i>Micromyrtus rogeri</i>	1	338859	6743256		5	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338859	6743308		10	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338859	6743681		5	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338860	6742962		3	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338860	6743107		2	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338860	6743509		1	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338863	6743005		9	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338866	6743620		10	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338869	6743250		50	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338871	6742972		30	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338871	6743713		3	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338871	6743770		30	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338871	6743853		15	10/10/2012	C
<i>Micromyrtus rogeri</i>	1	338875	6743105		20	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338878	6743142		10	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338879	6742644		20	10/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Micromyrtus rogeri</i>	1	338880	6742642		5	10/10/2012	8
<i>Micromyrtus rogeri</i>	1	338997	6743188				C
<i>Micromyrtus rogeri</i>	1	339499	6742778		20	4/10/2012	1a
<i>Micromyrtus rogeri</i>	1	339600	6743071		50	4/10/2012	8
<i>Micromyrtus rogeri</i>	1	339640	6743108		100	5/10/2012	8
<i>Micromyrtus rogeri</i>	1	339650	6743152		150	5/10/2012	8
<i>Micromyrtus rogeri</i>	1	339651	6743073		50	4/10/2012	8
<i>Micromyrtus rogeri</i>	1	339670	6743175		100	5/10/2012	1a
<i>Micromyrtus rogeri</i>	1	339688	6743149		50	5/10/2012	8
<i>Micromyrtus rogeri</i>	1	339713	6743152		30	5/10/2012	8
<i>Paracaleana dixonii</i>	T	335016	6747270		5	23/11/11	8
<i>Paracaleana dixonii</i>	T	332426	6742011		2	25/11/11	10
<i>Paracaleana dixonii</i>	T	332458	6742000		1	25/11/11	10
<i>Paracaleana dixonii</i>	T	332627	6742133		1	16/11/12	10
<i>Paracaleana dixonii</i>	T	334048	6748416		1	6/11/12	10
<i>Paracaleana dixonii</i>	T	334282	6748070		1	5/11/12	10
<i>Paracaleana dixonii</i>	T	334307	6747367		1	5/11/12	10
<i>Paracaleana dixonii</i>	T	334509	6747354		1	5/11/12	10
<i>Paracaleana dixonii</i>	T	334692	6745127		1	9/11/12	10
<i>Paracaleana dixonii</i>	T	334728	6744690		1	8/11/12	10
<i>Paracaleana dixonii</i>	T	334943	6747279		2	23/11/11	10
<i>Paracaleana dixonii</i>	T	334980	6748332		1	24/11/11	10
<i>Paracaleana dixonii</i>	T	335113	6748202		2	23/11/11	10
<i>Paracaleana dixonii</i>	T	335137	6742270		1	26/11/11	10
<i>Paracaleana dixonii</i>	T	335160	6742249		1	26/11/11	10
<i>Paracaleana dixonii</i>	T	335178	6742632		1	14/11/12	10
<i>Paracaleana dixonii</i>	T	335639	6742596		1	14/11/12	10
<i>Paracaleana dixonii</i>	T	335697	6742805		1	14/11/12	10
<i>Paracaleana dixonii</i>	T	335701	6742599		1	14/11/12	10
<i>Paracaleana dixonii</i>	T	335729	6742599		1	14/11/12	10
<i>Paracaleana dixonii</i>	T	336425	6748325		1	12/11/12	10

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Paracaleana dixonii</i>	T	336428	6748271		2	12/11/12	10
<i>Paracaleana dixonii</i>	T	336430	6748311		1	12/11/12	10
<i>Paracaleana dixonii</i>	T	336430	6748360		1	12/11/12	10
<i>Paracaleana dixonii</i>	T	336444	6748351		1	12/11/12	10
<i>Paracaleana dixonii</i>	T	336455	6748299		1	12/11/12	10
<i>Paracaleana dixonii</i>	T	336488	6747968		1	12/11/12	10
<i>Paracaleana dixonii</i>	T	336567	6748421		1	6/11/12	10
<i>Paracaleana dixonii</i>	T	336570	6748608	WEC079	2	5/11/12	10
<i>Paracaleana dixonii</i>	T	336581	6748596		2	5/11/12	10
<i>Paracaleana dixonii</i>	T	336588	6748450		1	6/11/12	10
<i>Paracaleana dixonii</i>	T	336592	6748457		1	6/11/12	10
<i>Paracaleana dixonii</i>	T	336594	6747919		2	5/11/12	10
<i>Paracaleana dixonii</i>	T	336596	6748629		1	5/11/12	10
<i>Paracaleana dixonii</i>	T	336607	6748447		1	5/11/12	10
<i>Paracaleana dixonii</i>	T	336617	6748552		1	5/11/12	10
<i>Paracaleana dixonii</i>	T	336621	6748558		2	5/11/12	10
<i>Paracaleana dixonii</i>	T	336690	6748469		2	5/11/12	10
<i>Paracaleana dixonii</i>	T	337391	6741967		3	8/11/12	10
<i>Paracaleana dixonii</i>	T	337644	6741895		2	8/11/12	10
<i>Paracaleana dixonii</i>	T	335486	6748067		1	5/11/12	11
<i>Paracaleana dixonii</i>	T	335489	6748093		1	5/11/12	11
<i>Paracaleana dixonii</i>	T	336268	6746799		3	5/11/12	11
<i>Paracaleana dixonii</i>	T	336336	6748551		1	5/11/12	11
<i>Paracaleana dixonii</i>	T	336511	6748583		2	6/11/12	11
<i>Paracaleana dixonii</i>	T	338210	6747252		1	22/11/11	11
<i>Paracaleana dixonii</i>	T	338237	6747264		2	22/11/11	11
<i>Paracaleana dixonii</i>	T	333217	6745215		1	7/11/12	12
<i>Paracaleana dixonii</i>	T	333227	6745228		1	7/11/12	12
<i>Paracaleana dixonii</i>	T	333286	6745226		2	7/11/12	12
<i>Paracaleana dixonii</i>	T	333291	6745235		1	7/11/12	12
<i>Paracaleana dixonii</i>	T	333310	6745202		1	7/11/12	12

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Paracaleana dixonii</i>	T	333311	6745949		1	5/11/12	12
<i>Paracaleana dixonii</i>	T	333325	6745218		1	7/11/12	12
<i>Paracaleana dixonii</i>	T	333341	6745877		1	5/11/12	12
<i>Paracaleana dixonii</i>	T	333360	6746194		2	5/11/12	12
<i>Paracaleana dixonii</i>	T	333376	6745840		1	6/11/12	12
<i>Paracaleana dixonii</i>	T	333381	6745836		1	6/11/12	12
<i>Paracaleana dixonii</i>	T	333385	6746298		1	5/11/12	12
<i>Paracaleana dixonii</i>	T	333390	6746338		1	5/11/12	12
<i>Paracaleana dixonii</i>	T	333450	6745789		3	6/11/12	12
<i>Paracaleana dixonii</i>	T	333455	6745794		1	6/11/12	12
<i>Paracaleana dixonii</i>	T	332786	6740806		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	332908	6744374		1	7/11/12	13a
<i>Paracaleana dixonii</i>	T	332909	6744366		1	7/11/12	13a
<i>Paracaleana dixonii</i>	T	332910	6740772		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	333123	6740808		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	333300	6740818		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	333591	6740851		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	333593	6740844		3	8/11/12	13a
<i>Paracaleana dixonii</i>	T	333683	6745050		2	7/11/12	13a
<i>Paracaleana dixonii</i>	T	333691	6745046		1	7/11/12	13a
<i>Paracaleana dixonii</i>	T	333697	6745038		5	7/11/12	13a
<i>Paracaleana dixonii</i>	T	333897	6740773		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334200	6744610		1	7/11/12	13a
<i>Paracaleana dixonii</i>	T	334208	6744606		1	7/11/12	13a
<i>Paracaleana dixonii</i>	T	334216	6744632		2	7/11/12	13a
<i>Paracaleana dixonii</i>	T	334336	6745287		1	9/11/12	13a
<i>Paracaleana dixonii</i>	T	334368	6744363		2	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334373	6744661		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334376	6744662		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334388	6745171		1	9/11/12	13a
<i>Paracaleana dixonii</i>	T	334389	6745172		1	9/11/12	13a

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Paracaleana dixonii</i>	T	334418	6745134		4	9/11/12	13a
<i>Paracaleana dixonii</i>	T	334433	6745364		1	9/11/12	13a
<i>Paracaleana dixonii</i>	T	334478	6744369		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334478	6744372		5	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334479	6744374		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334490	6744749		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334494	6744749		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334542	6745066		1	9/11/12	13a
<i>Paracaleana dixonii</i>	T	334546	6744795		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334562	6744404		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334569	6745057		4	9/11/12	13a
<i>Paracaleana dixonii</i>	T	334594	6745055		2	9/11/12	13a
<i>Paracaleana dixonii</i>	T	334599	6745057		1	9/11/12	13a
<i>Paracaleana dixonii</i>	T	334622	6744436		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334624	6744436		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334625	6745051		1	9/11/12	13a
<i>Paracaleana dixonii</i>	T	334634	6745010		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334637	6745007		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334671	6745199		1	9/11/12	13a
<i>Paracaleana dixonii</i>	T	334698	6744486		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334699	6744472		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334702	6744490		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334710	6744488		2	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334715	6744878		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334717	6744880		3	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334718	6744887		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334719	6744882		2	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334723	6744939		2	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334725	6744884		2	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334725	6744889		2	8/11/12	13a
<i>Paracaleana dixonii</i>	T	334743	6743864		1	26/11/11	13a

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Paracaleana dixonii</i>	T	334798	6743860		1	26/11/11	13a
<i>Paracaleana dixonii</i>	T	334863	6742133		1	15/11/12	13a
<i>Paracaleana dixonii</i>	T	335034	6741866		1	15/11/12	13a
<i>Paracaleana dixonii</i>	T	335057	6741859		2	15/11/12	13a
<i>Paracaleana dixonii</i>	T	335061	6741858		7	15/11/12	13a
<i>Paracaleana dixonii</i>	T	335195	6741855		1	15/11/12	13a
<i>Paracaleana dixonii</i>	T	335240	6741862		2	15/11/12	13a
<i>Paracaleana dixonii</i>	T	335262	6741857		2	15/11/12	13a
<i>Paracaleana dixonii</i>	T	335437	6742798		1	14/11/12	13a
<i>Paracaleana dixonii</i>	T	335694	6741860		1	15/11/12	13a
<i>Paracaleana dixonii</i>	T	336353	6741147		2	15/11/12	13a
<i>Paracaleana dixonii</i>	T	336872	6740969		1	15/11/12	13a
<i>Paracaleana dixonii</i>	T	336967	6742374		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	337017	6742313		2	8/11/12	13a
<i>Paracaleana dixonii</i>	T	337030	6740999		1	15/11/12	13a
<i>Paracaleana dixonii</i>	T	338549	6742128		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	338571	6742133		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	338575	6742129		1	8/11/12	13a
<i>Paracaleana dixonii</i>	T	333551	6741816		1	9/11/12	7a
<i>Paracaleana dixonii</i>	T	333560	6741825		2	9/11/12	7a
<i>Paracaleana dixonii</i>	T	333577	6741943		2	9/11/12	7a
<i>Paracaleana dixonii</i>	T	334920	6742328		4	26/11/11	7a
<i>Paracaleana dixonii</i>	T	337303	6740081		1	14/11/12	7a
<i>Paracaleana dixonii</i>	T	337304	6739768		2	14/11/12	7a
<i>Paracaleana dixonii</i>	T	337572	6740055		1	14/11/12	7a
<i>Paracaleana dixonii</i>	T	337609	6739673		1	14/11/12	7a
<i>Paracaleana dixonii</i>	T	337740	6739893	WEC055		21/11/11	7a
<i>Paracaleana dixonii</i>	T	337741	6739831		2	21/11/11	7a
<i>Paracaleana dixonii</i>	T	337995	6741892		1	8/11/12	7a
<i>Paracaleana dixonii</i>	T	338268	6739970		1	13/11/12	7a
<i>Paracaleana dixonii</i>	T	338284	6740305		1	13/11/12	7a

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Paracaleana dixonii</i>	T	333342	6745883		1	5/11/12	7b
<i>Paracaleana dixonii</i>	T	333363	6745852		2	5/11/12	7b
<i>Paracaleana dixonii</i>	T	333364	6745852		2	7/11/12	7b
<i>Paracaleana dixonii</i>	T	333377	6745877		1	6/11/12	7b
<i>Paracaleana dixonii</i>	T	334130	6741864		1	9/11/12	7b
<i>Paracaleana dixonii</i>	T	334243	6741871		1	9/11/12	7b
<i>Paracaleana dixonii</i>	T	334247	6741872		1	9/11/12	7b
<i>Paracaleana dixonii</i>	T	334292	6741712		1	24/11/11	7b
<i>Paracaleana dixonii</i>	T	334304	6741712		1	24/11/11	7b
<i>Paracaleana dixonii</i>	T	334309	6741734		3	24/11/11	7b
<i>Paracaleana dixonii</i>	T	334311	6741719		1	24/11/11	7b
<i>Paracaleana dixonii</i>	T	334317	6741732		2	24/11/11	7b
<i>Paracaleana dixonii</i>	T	334322	6741720		1	24/11/11	7b
<i>Paracaleana dixonii</i>	T	334329	6741729		1	24/11/11	7b
<i>Paracaleana dixonii</i>	T	335544	6745287		1	7/11/12	7b
<i>Paracaleana dixonii</i>	T	335551	6745287		1	7/11/12	7b
<i>Paracaleana dixonii</i>	T	335559	6745218		1	7/11/12	7b
<i>Paracaleana dixonii</i>	T	336001	6744187		1	15/11/12	7b
<i>Paracaleana dixonii</i>	T	336115	6742769		1	14/11/12	7b
<i>Paracaleana dixonii</i>	T	336139	6742798		1	14/11/12	7b
<i>Paracaleana dixonii</i>	T	336189	6747338		1	5/11/12	7b
<i>Paracaleana dixonii</i>	T	336607	6748263		5	5/11/12	7b
<i>Paracaleana dixonii</i>	T	336609	6748264		12	5/11/12	7b
<i>Paracaleana dixonii</i>	T	336612	6748005		1	5/11/12	7b
<i>Paracaleana dixonii</i>	T	336615	6748037		1	5/11/12	7b
<i>Paracaleana dixonii</i>	T	336678	6746735		1	5/11/12	7b
<i>Paracaleana dixonii</i>	T	336794	6746852		1	5/11/12	7b
<i>Paracaleana dixonii</i>	T	337159	6742571		1	8/11/12	7b
<i>Paracaleana dixonii</i>	T	337200	6742591		1	8/11/12	7b
<i>Persoonia filiformis</i>	2	337602	6738956		1	14/11/12	13a
<i>Persoonia filiformis</i>	2	337307	6738960		2	14/11/12	10

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Persoonia filiformis</i>	2	336938	6739443	WEC003		27/09/11	10
<i>Persoonia filiformis</i>	2	337740	6739893	WEC055		21/11/11	7a
<i>Persoonia filiformis</i>	2	337315	6740160		1	14/11/12	7a
<i>Persoonia filiformis</i>	2	338504	6740656		1	12/10/12	7a
<i>Persoonia filiformis</i>	2	335868	6740760	WEC090		26/11/11	7b
<i>Persoonia filiformis</i>	2	338331	6740845		1	12/10/12	7a
<i>Persoonia filiformis</i>	2	334149	6742226		2	16/11/12	10
<i>Persoonia filiformis</i>	2	335172	6742250	WEC019		30/09/11	10
<i>Persoonia filiformis</i>	2	338294	6741000		1	15/11/12	7a
<i>Persoonia filiformis</i>	2	338104	6740999		4	15/11/12	7a
<i>Persoonia filiformis</i>	2	338000	6741001		3	15/11/12	7a
<i>Persoonia filiformis</i>	2	337744	6741003		1	15/11/12	10
<i>Persoonia filiformis</i>	2	337287	6741006		4	15/11/12	10
<i>Persoonia filiformis</i>	2	336924	6741002		1	15/11/12	13a
<i>Persoonia filiformis</i>	2	336493	6740997		1	15/11/12	7a
<i>Persoonia filiformis</i>	2	336392	6740999		1	15/11/12	7a
<i>Persoonia filiformis</i>	2	336790	6741006		2	15/11/12	7a
<i>Persoonia filiformis</i>	2	337364	6741169		1	15/11/12	10
<i>Persoonia filiformis</i>	2	337251	6741170		1	15/11/12	10
<i>Persoonia filiformis</i>	2	336861	6741173		1	15/11/12	13a
<i>Persoonia filiformis</i>	2	336942	6741175		1	15/11/12	10
<i>Persoonia filiformis</i>	2	336866	6741199		1	15/11/12	13a
<i>Persoonia filiformis</i>	2	337210	6741207		2	15/11/12	10
<i>Persoonia filiformis</i>	2	336715	6741205		2	15/11/12	7a
<i>Persoonia filiformis</i>	2	331909	6741361	WEC023		25/10/11	10
<i>Persoonia filiformis</i>	2	334284	6741724	WEC013		29/09/11	7b
<i>Persoonia filiformis</i>	2	336050	6741856		1	15/11/12	10
<i>Persoonia filiformis</i>	2	336156	6741861		3	15/11/12	10
<i>Persoonia filiformis</i>	2	335891	6741860		1	15/11/12	10
<i>Persoonia filiformis</i>	2	336017	6741889		1	15/11/12	10
<i>Persoonia filiformis</i>	2	335922	6741889		1	15/11/12	10

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Persoonia filiformis</i>	2	334134	6741864		1	9/11/12	7b
<i>Persoonia filiformis</i>	2	335833	6741894		1	15/11/12	10
<i>Persoonia filiformis</i>	2	334247	6741872		1	9/11/12	7b
<i>Persoonia filiformis</i>	2	334163	6741873		4	9/11/12	7b
<i>Persoonia filiformis</i>	2	334736	6741887		2	15/11/12	13a
<i>Persoonia filiformis</i>	2	336505	6742085		1	15/11/12	13a
<i>Persoonia filiformis</i>	2	334313	6742082		2	9/11/12	10
<i>Persoonia filiformis</i>	2	336286	6742128		1	15/11/12	10
<i>Persoonia filiformis</i>	2	336154	6742129		1	15/11/12	10
<i>Persoonia filiformis</i>	2	335916	6742126		1	15/11/12	10
<i>Persoonia filiformis</i>	2	335134	6742128		1	15/11/12	10
<i>Persoonia filiformis</i>	2	334780	6742131		1	15/11/12	7a
<i>Persoonia filiformis</i>	2	335680	6742151		1	15/11/12	13a
<i>Persoonia filiformis</i>	2	336261	6742162		1	15/11/12	10
<i>Persoonia filiformis</i>	2	336138	6742161		1	15/11/12	10
<i>Persoonia filiformis</i>	2	335729	6742159		1	15/11/12	10
<i>Persoonia filiformis</i>	2	335994	6742165		2	15/11/12	10
<i>Persoonia filiformis</i>	2	335290	6742163		1	15/11/12	10
<i>Persoonia filiformis</i>	2	334406	6742152		1	16/11/12	10
<i>Persoonia filiformis</i>	2	334648	6742157		1	15/11/12	7a
<i>Persoonia filiformis</i>	2	334219	6742351		1	16/11/12	10
<i>Persoonia filiformis</i>	2	334355	6742383		1	16/11/12	10
<i>Persoonia filiformis</i>	2	336299	6743764		1		7b
<i>Persoonia filiformis</i>	2	336280	6743771				7b
<i>Persoonia filiformis</i>	2	335111	6742603		3	14/11/12	10
<i>Persoonia filiformis</i>	2	335653	6742799		1	14/11/12	10
<i>Persoonia filiformis</i>	2	335225	6742795		2	14/11/12	10
<i>Persoonia filiformis</i>	2	335744	6742803		1	14/11/12	10
<i>Persoonia filiformis</i>	2	335540	6742805		1	14/11/12	10
<i>Persoonia filiformis</i>	2	335157	6742802		1	14/11/12	10
<i>Persoonia filiformis</i>	2	336001	6744020		12	15/11/12	10

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Persoonia filiformis</i>	2	335392	6743889		5	15/11/12	10
<i>Persoonia filiformis</i>	2	335474	6743895		10	15/11/12	10
<i>Persoonia filiformis</i>	2	335801	6743901		6	15/11/12	10
<i>Persoonia filiformis</i>	2	335580	6743898		2	15/11/12	10
<i>Persoonia filiformis</i>	2	335911	6743903		4	15/11/12	10
<i>Persoonia filiformis</i>	2	335699	6743901		2	15/11/12	10
<i>Persoonia filiformis</i>	2	335052	6743903		5	15/11/12	10
<i>Persoonia filiformis</i>	2	335225	6743906		6	15/11/12	7b
<i>Persoonia filiformis</i>	2	335711	6743932		1	15/11/12	10
<i>Persoonia filiformis</i>	2	335422	6743931		2	15/11/12	10
<i>Persoonia filiformis</i>	2	335088	6743929		10	15/11/12	13a
<i>Persoonia filiformis</i>	2	335730	6744167		6	15/11/12	10
<i>Persoonia filiformis</i>	2	335201	6744169		4	15/11/12	10
<i>Persoonia filiformis</i>	2	336005	6744187		2	15/11/12	7b
<i>Persoonia filiformis</i>	2	335718	6744195		4	15/11/12	10
<i>Persoonia filiformis</i>	2	335590	6744197		4	15/11/12	7b
<i>Persoonia filiformis</i>	2	335481	6744199		5	15/11/12	10
<i>Persoonia filiformis</i>	2	335324	6744199		5	15/11/12	10
<i>Persoonia filiformis</i>	2	334590	6744431		1	8/11/12	13a
<i>Persoonia filiformis</i>	2	334624	6744436		1	8/11/12	13a
<i>Persoonia filiformis</i>	2	334730	6744572		1	8/11/12	10
<i>Persoonia filiformis</i>	2	334727	6744607		3	8/11/12	10
<i>Persoonia filiformis</i>	2	335278	6744815			29/09/11	10
<i>Persoonia filiformis</i>	2	334720	6744849		1	8/11/12	10
<i>Persoonia rudis</i>	3	335700	6741862		1	15/11/12	13a
<i>Persoonia rudis</i>	3	332942	6741938		1	16/11/12	7a
<i>Persoonia rudis</i>	3	338563	6742142		1	8/11/12	13a
<i>Persoonia rudis</i>	3	338505	6742152		2	8/11/12	13a
<i>Persoonia rudis</i>	3	332672	6742105		1	16/11/12	10
<i>Persoonia rudis</i>	3	335722	6742166		1	15/11/12	10
<i>Persoonia rudis</i>	3	332655	6742499		1	16/11/12	13a

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Persoonia rudis</i>	3	334725	6744610		1	8/11/12	10
<i>Persoonia rudis</i>	3	333077	6744613		1	7/11/12	10
<i>Persoonia rudis</i>	3	333257	6745220		1	7/11/12	12
<i>Persoonia rudis</i>	3	338561	6746401		1	23/10/12	13a
<i>Persoonia rudis</i>	3	338294	6746562		1	22/11/11	13a
<i>Persoonia rudis</i>	3	336978	6746572		1	23/10/12	11
<i>Persoonia rudis</i>	3	336800	6746876		1	5/11/12	7b
<i>Persoonia rudis</i>	3	334793	6747581		1	5/11/12	8
<i>Persoonia rudis</i>	3	336388	6747609		1	5/11/12	11
<i>Persoonia rudis</i>	3	336058	6748541		1	5/11/12	10
<i>Schoenus badius</i>	2	334133	6740257	WEC008		28/09/11	14
<i>Schoenus badius</i>	2	334382	6740263	WEC007		27/09/11	14
<i>Schoenus badius</i>	2	331705	6741485	WEC024		25/10/11	14
<i>Schoenus badius</i>	2	332100	6742266	WEC025		25/10/11	10
<i>Schoenus badius</i>	2	332369	6742776	WEC026		25/10/11	7a
<i>Schoenus badius</i>	2	335800	6744971	WEC037		25/10/11	14
<i>Schoenus badius</i>	2	333677	6746827	WEC034		26/10/11	13b
? <i>Stylidium carnosum</i> subsp. Narrow leaves (J.A. Wege 490)		336612	6747977		1	6/11/12	10
<i>Stylidium drummondianum</i>	3	332609	6744460		3	11/10/2012	8
<i>Stylidium drummondianum</i>	3	333223	6744968		2	11/10/2012	10
<i>Stylidium drummondianum</i>	3	333274	6744944		4	11/10/2012	8
<i>Stylidium drummondianum</i>	3	333346	6744912		5	11/10/2012	8
<i>Stylidium drummondianum</i>	3	333379	6744896		3		8
<i>Stylidium drummondianum</i>	3	333428	6744856		5	11/10/2012	8
<i>Stylidium drummondianum</i>	3	333778	6742910		100	11/10/2012	8
<i>Stylidium drummondianum</i>	3	333928	6742762		100	11/10/2012	7a
<i>Stylidium drummondianum</i>	3	333971	6741681	WE011		28/09/2011	8
<i>Stylidium drummondianum</i>	3	333988	6742003		100	11/10/2012	8
<i>Stylidium drummondianum</i>	3	334012	6740750		20	8/11/2012	7a
<i>Stylidium drummondianum</i>	3	334012	6741700		15	11/10/2012	7b

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Stylidium drummondianum</i>	3	334013	6745001		100	11/10/2012	10
<i>Stylidium drummondianum</i>	3	334044	6744749		50	11/10/2012	8
<i>Stylidium drummondianum</i>	3	334082	6743780	WE014		29/09/2011	7a
<i>Stylidium drummondianum</i>	3	334087	6742469		500	11/10/2012	8
<i>Stylidium drummondianum</i>	3	334088	6745002	WE022		24/10/2011	8
<i>Stylidium drummondianum</i>	3	334100	6745060		100	11/10/2012	8
<i>Stylidium drummondianum</i>	3	334111	6741591		100	11/10/2012	8
<i>Stylidium drummondianum</i>	3	334117	6742339		100	11/10/2012	7a
<i>Stylidium drummondianum</i>	3	334127	6744809		250	11/10/2012	8
<i>Stylidium drummondianum</i>	3	334132	6744996		100	11/10/2012	8
<i>Stylidium drummondianum</i>	3	334135	6741623	WE012		28/09/2011	7b
<i>Stylidium drummondianum</i>	3	334170	6743952		6		9
<i>Stylidium drummondianum</i>	3	334173	6740918		200	10/10/2012	7a
<i>Stylidium drummondianum</i>	3	334180	6743999		5	11/10/2012	9
<i>Stylidium drummondianum</i>	3	334241	6741265		1	11/10/2012	7a
<i>Stylidium drummondianum</i>	3	334242	6741002		10	11/10/2012	7a
<i>Stylidium drummondianum</i>	3	334249	6741085		30	11/10/2012	7a
<i>Stylidium drummondianum</i>	3	334250	6743863	WE015		29/09/2011	9
<i>Stylidium drummondianum</i>	3	334259	6741385		100	11/10/2012	7b
<i>Stylidium drummondianum</i>	3	334263	6741055		100	10/10/2012	7a
<i>Stylidium drummondianum</i>	3	334288	6741370			26/09/2011	7b
<i>Stylidium drummondianum</i>	3	334303	6741063		20	11/10/2012	7a
<i>Stylidium drummondianum</i>	3	334306	6743975		2	11/10/2012	7a
<i>Stylidium drummondianum</i>	3	334338	6740983	WE009		28/09/2011	7a
<i>Stylidium drummondianum</i>	3	334557	6740866		2	11/10/2012	7a
<i>Stylidium drummondianum</i>	3	334933	6748093	WE077		24/11/2011	7a
<i>Stylidium drummondianum</i>	3	335103	6747272	WE068		23/11/2011	8
<i>Stylidium drummondianum</i>	3	335199	6747295		20	22/10/2012	8
<i>Stylidium drummondianum</i>	3	335207	6748051		50	22/10/2012	8
<i>Stylidium drummondianum</i>	3	335278	6740449		3	11/10/2012	8
<i>Stylidium drummondianum</i>	3	335284	6747270		30	22/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Stylidium drummondianum</i>	3	335292	6740675		2	11/10/2012	7a
<i>Stylidium drummondianum</i>	3	335304	6740536		4		8
<i>Stylidium drummondianum</i>	3	335313	6747286	WE069		23/11/2011	8
<i>Stylidium drummondianum</i>	3	335315	6740622		8	11/10/2012	8
<i>Stylidium drummondianum</i>	3	335338	6740605		10	11/10/2012	8
<i>Stylidium drummondianum</i>	3	335344	6740456		3	11/10/2012	8
<i>Stylidium drummondianum</i>	3	335376	6740430		5	11/10/2012	7a
<i>Stylidium drummondianum</i>	3	335394	6740446		5		8
<i>Stylidium drummondianum</i>	3	335418	6740441		11	11/10/2012	8
<i>Stylidium drummondianum</i>	3	335485	6747339		100	22/10/2012	8
<i>Stylidium drummondianum</i>	3	335498	6740136		4	11/10/2012	7a
<i>Stylidium drummondianum</i>	3	335516	6740171		5	11/10/2012	7a
<i>Stylidium drummondianum</i>	3	335552	6747178		6		8
<i>Stylidium drummondianum</i>	3	335607	6740020		4	11/10/2012	7a
<i>Stylidium drummondianum</i>	3	335715	6740078		5	11/10/2012	7a
<i>Stylidium drummondianum</i>	3	335734	6747230		10		8
<i>Stylidium drummondianum</i>	3	335736	6747143		30		8
<i>Stylidium drummondianum</i>	3	335784	6740087		2	11/10/2012	7a
<i>Stylidium drummondianum</i>	3	335826	6740087		3		7a
<i>Stylidium drummondianum</i>	3	335868	6740760	WE090		26/11/2011	7b
<i>Stylidium drummondianum</i>	3	335870	6740066		4	11/10/2012	7a
<i>Stylidium drummondianum</i>	3	335897	6747252		100	22/10/2012	8
<i>Stylidium drummondianum</i>	3	336000	6740093		13	11/10/2012	7a
<i>Stylidium drummondianum</i>	3	336018	6747172		200	22/10/2012	8
<i>Stylidium drummondianum</i>	3	336177	6739953		1	11/10/2012	9
<i>Stylidium drummondianum</i>	3	336180	6747027		50	22/10/2012	8
<i>Stylidium drummondianum</i>	3	336206	6739936		10		9
<i>Stylidium drummondianum</i>	3	336261	6739825		5	11/10/2012	9
<i>Stylidium drummondianum</i>	3	336315	6739856		1		7a
<i>Stylidium drummondianum</i>	3	336322	6739467		8	11/10/2012	8
<i>Stylidium drummondianum</i>	3	336322	6739825		2	11/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Stylidium drummondianum</i>	3	336362	6739499	WE004		27/09/2011	8
<i>Stylidium drummondianum</i>	3	336367	6739613		6	11/10/2012	7a
<i>Stylidium drummondianum</i>	3	336376	6739479		10		8
<i>Stylidium drummondianum</i>	3	336388	6739803		3	11/10/2012	8
<i>Stylidium drummondianum</i>	3	336407	6739701		8	11/10/2012	7a
<i>Stylidium drummondianum</i>	3	336412	6739386	WE005		27/09/2011	7a
<i>Stylidium drummondianum</i>	3	336433	6739489		5	11/10/2012	8
<i>Stylidium drummondianum</i>	3	336458	6739833		2		7a
<i>Stylidium drummondianum</i>	3	336469	6739506		1	11/10/2012	8
<i>Stylidium drummondianum</i>	3	336498	6739530		3	11/10/2012	8
<i>Stylidium drummondianum</i>	3	336539	6746129	WE074		24/11/2011	7b
<i>Stylidium drummondianum</i>	3	336648	6739466		40		7a
<i>Stylidium drummondianum</i>	3	336692	6739205		2	11/10/2012	13a
<i>Stylidium drummondianum</i>	3	336762	6739361		3	11/10/2012	7a
<i>Stylidium drummondianum</i>	3	336765	6739317		20	11/10/2012	7a
<i>Stylidium drummondianum</i>	3	336793	6739250		30		7a
<i>Stylidium drummondianum</i>	3	336917	6746683		20	23/10/2012	8
<i>Stylidium drummondianum</i>	3	336980	6744423		1	10/10/2012	7a
<i>Stylidium drummondianum</i>	3	337003	6744711		2	10/10/2012	7a
<i>Stylidium drummondianum</i>	3	337009	6744485		2	10/10/2012	7a
<i>Stylidium drummondianum</i>	3	337009	6744570		3	10/10/2012	7a
<i>Stylidium drummondianum</i>	3	337010	6744052		1	10/10/2012	13a
<i>Stylidium drummondianum</i>	3	337010	6746937		5	13/11/2012	8
<i>Stylidium drummondianum</i>	3	337011	6744218		2	10/10/2012	13a
<i>Stylidium drummondianum</i>	3	337015	6744141		1	10/10/2012	13a
<i>Stylidium drummondianum</i>	3	337017	6744415		4	10/10/2012	7a
<i>Stylidium drummondianum</i>	3	337035	6744597		30		7a
<i>Stylidium drummondianum</i>	3	337037	6744778		30		7a
<i>Stylidium drummondianum</i>	3	337042	6744075		20		13a
<i>Stylidium drummondianum</i>	3	337094	6744427		4	10/10/2012	7a
<i>Stylidium drummondianum</i>	3	337096	6744000		5	10/10/2012	13a

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Stylidium drummondianum</i>	3	337096	6744328		2	10/10/2012	7a
<i>Stylidium drummondianum</i>	3	337096	6744369		4	10/10/2012	7a
<i>Stylidium drummondianum</i>	3	337097	6744050		3	10/10/2012	13a
<i>Stylidium drummondianum</i>	3	337098	6744179		4	10/10/2012	8
<i>Stylidium drummondianum</i>	3	337104	6744124		2	10/10/2012	13a
<i>Stylidium drummondianum</i>	3	337130	6744210		8		8
<i>Stylidium drummondianum</i>	3	337135	6744741		10		7a
<i>Stylidium drummondianum</i>	3	337154	6744697		10	10/10/2012	7a
<i>Stylidium drummondianum</i>	3	337163	6744186		10	10/10/2012	8
<i>Stylidium drummondianum</i>	3	337165	6744589		50	10/10/2012	7a
<i>Stylidium drummondianum</i>	3	337190	6744087		2	10/10/2012	8
<i>Stylidium drummondianum</i>	3	337190	6744238		6	10/10/2012	8
<i>Stylidium drummondianum</i>	3	337190	6744346		15	10/10/2012	7a
<i>Stylidium drummondianum</i>	3	337221	6744545		50	9/10/2012	13b
<i>Stylidium drummondianum</i>	3	337223	6744774		100	9/10/2012	7a
<i>Stylidium drummondianum</i>	3	337224	6748208		20	11/10/2012	8
<i>Stylidium drummondianum</i>	3	337225	6744469		50	9/10/2012	7a
<i>Stylidium drummondianum</i>	3	337250	6744000		20	10/10/2012	8
<i>Stylidium drummondianum</i>	3	337251	6744335		10	10/10/2012	7a
<i>Stylidium drummondianum</i>	3	337259	6744226		20	10/10/2012	8
<i>Stylidium drummondianum</i>	3	337280	6744000		30	10/10/2012	8
<i>Stylidium drummondianum</i>	3	337280	6744277		15	10/10/2012	8
<i>Stylidium drummondianum</i>	3	337280	6744700		10	10/10/2012	13b
<i>Stylidium drummondianum</i>	3	337291	6744314		2		7a
<i>Stylidium drummondianum</i>	3	337318	6744327		2		7a
<i>Stylidium drummondianum</i>	3	337358	6744348		2		7a
<i>Stylidium drummondianum</i>	3	337360	6742889		15	13/11/2012	7b
<i>Stylidium drummondianum</i>	3	337380	6746907		2	13/11/2012	7b
<i>Stylidium drummondianum</i>	3	337389	6746455	WE061		21/11/2011	8
<i>Stylidium drummondianum</i>	3	337390	6742963		20	13/11/2012	7b
<i>Stylidium drummondianum</i>	3	337509	6746771	WE062		21/11/2011	7b

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Stylidium drummondianum</i>	3	337626	6744033		3	10/10/2012	8
<i>Stylidium drummondianum</i>	3	337642	6747795		2		8
<i>Stylidium drummondianum</i>	3	337648	6747719		1	12/10/2012	8
<i>Stylidium drummondianum</i>	3	337660	6744599		38		13b
<i>Stylidium drummondianum</i>	3	337667	6744499		5		7a
<i>Stylidium drummondianum</i>	3	337672	6747863		5	12/10/2012	8
<i>Stylidium drummondianum</i>	3	337681	6747703		1	12/10/2012	8
<i>Stylidium drummondianum</i>	3	337686	6744289		20	10/10/2012	7a
<i>Stylidium drummondianum</i>	3	337691	6744375		20	10/10/2012	7a
<i>Stylidium drummondianum</i>	3	337695	6744523		200	10/10/2012	7a
<i>Stylidium drummondianum</i>	3	337700	6744067		20	10/10/2012	8
<i>Stylidium drummondianum</i>	3	337700	6747862		3	12/10/2012	8
<i>Stylidium drummondianum</i>	3	337715	6740616	WE056		21/11/2011	8
<i>Stylidium drummondianum</i>	3	337720	6744162		20	10/10/2012	8
<i>Stylidium drummondianum</i>	3	337720	6744400		15	10/10/2012	7a
<i>Stylidium drummondianum</i>	3	337720	6744796		5	10/10/2012	11
<i>Stylidium drummondianum</i>	3	337722	6747690		5		8
<i>Stylidium drummondianum</i>	3	337740	6739893	WE055		21/11/2011	7a
<i>Stylidium drummondianum</i>	3	337742	6745079	WE039		25/10/2011	7b
<i>Stylidium drummondianum</i>	3	337742	6746211		5	12/12/2012	8
<i>Stylidium drummondianum</i>	3	337747	6746233		10	12/10/2012	8
<i>Stylidium drummondianum</i>	3	337754	6744451		50	9/10/2012	7a
<i>Stylidium drummondianum</i>	3	337756	6744143		30	9/10/2012	8
<i>Stylidium drummondianum</i>	3	337778	6747793		5		8
<i>Stylidium drummondianum</i>	3	337822	6739289	WE002		26/09/2011	7a
<i>Stylidium drummondianum</i>	3	337861	6746125	WE081		24/11/2011	8
<i>Stylidium drummondianum</i>	3	337949	6746231		20	12/12/2012	8
<i>Stylidium drummondianum</i>	3	337981	6747472		2	12/10/2012	8
<i>Stylidium drummondianum</i>	3	338033	6746249		20	12/10/2012	7b
<i>Stylidium drummondianum</i>	3	338060	6743200		1	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338060	6743236		5	9/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Stylidium drummondianum</i>	3	338089	6742258		5	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338098	6747248		2	12/10/2012	8
<i>Stylidium drummondianum</i>	3	338103	6743403		50	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338107	6742291	WE059		21/11/2011	8
<i>Stylidium drummondianum</i>	3	338112	6743646		100	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338113	6740750		4		7a
<i>Stylidium drummondianum</i>	3	338115	6742488		50	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338118	6744134		100	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338119	6744033		200	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338124	6743056		7		8
<i>Stylidium drummondianum</i>	3	338126	6740689		20	12/12/2012	7a
<i>Stylidium drummondianum</i>	3	338131	6743554		20	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338132	6743584		50	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338136	6742692		20	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338142	6743027		10	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338150	6743574		20	10/10/2012	8
<i>Stylidium drummondianum</i>	3	338150	6743680		29	10/10/2012	8
<i>Stylidium drummondianum</i>	3	338150	6743703		24	10/10/2012	8
<i>Stylidium drummondianum</i>	3	338150	6743870		17	10/10/2012	1b
<i>Stylidium drummondianum</i>	3	338150	6743893		30	10/10/2012	1b
<i>Stylidium drummondianum</i>	3	338150	6744100		75	10/10/2012	8
<i>Stylidium drummondianum</i>	3	338150	6744500		25	10/10/2012	8
<i>Stylidium drummondianum</i>	3	338154	6740956		4	12/10/2012	7a
<i>Stylidium drummondianum</i>	3	338155	6742655		30	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338157	6740775		1	12/10/2012	7a
<i>Stylidium drummondianum</i>	3	338172	6742594		20	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338176	6743010		1	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338181	6743502		5	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338182	6743606		20	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338183	6743826		50	9/10/2012	1b
<i>Stylidium drummondianum</i>	3	338207	6743828		16		1b

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Stylidium drummondianum</i>	3	338209	6743616		15		8
<i>Stylidium drummondianum</i>	3	338210	6743867		12		8
<i>Stylidium drummondianum</i>	3	338214	6743524		2		8
<i>Stylidium drummondianum</i>	3	338216	6742844		20	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338217	6740905		10	12/10/2012	7a
<i>Stylidium drummondianum</i>	3	338218	6742793		30	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338234	6743734		10	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338237	6743993		3	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338238	6743551		6	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338240	6742793		2	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338240	6742900		5	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338240	6742943		10	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338240	6743838		12	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338241	6744081		1	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338243	6740745	WE051		20/11/2011	7a
<i>Stylidium drummondianum</i>	3	338245	6743615		5	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338259	6740786		1	12/10/2012	7a
<i>Stylidium drummondianum</i>	3	338262	6742862		10	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338266	6740931		3		7a
<i>Stylidium drummondianum</i>	3	338266	6743697		2	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338270	6742803		5	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338270	6743572		2	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338278	6739687	WE113		11/09/2012	8
<i>Stylidium drummondianum</i>	3	338278	6740841		20	12/10/2012	7a
<i>Stylidium drummondianum</i>	3	338290	6743587		100	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338298	6743490		1	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338301	6743822		40	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338306	6742918		15		8
<i>Stylidium drummondianum</i>	3	338307	6743704		100	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338309	6742819		40		8
<i>Stylidium drummondianum</i>	3	338309	6744123		10	9/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Stylidium drummondianum</i>	3	338321	6740871		20	12/12/2012	7a
<i>Stylidium drummondianum</i>	3	338330	6742800		5	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338330	6743020		2	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338330	6744114		15	10/10/2012	8
<i>Stylidium drummondianum</i>	3	338330	6744271		30	10/10/2012	1b
<i>Stylidium drummondianum</i>	3	338330	6744315		20	10/10/2012	1b
<i>Stylidium drummondianum</i>	3	338330	6744500		15	10/10/2012	8
<i>Stylidium drummondianum</i>	3	338332	6742892		5	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338332	6743487		5	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338332	6743629		17	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338332	6743683		10	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338332	6743703		5	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338332	6743780		10	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338332	6743880		3	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338335	6742969		2	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338346	6740785		1	12/10/2012	7a
<i>Stylidium drummondianum</i>	3	338352	6744347		80	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338360	6742808		6	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338360	6744000		10	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338361	6743001		3	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338362	6742941		1	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338364	6743893		10	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338367	6743656		100	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338367	6743689		20	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338387	6740796		3	12/10/2012	7a
<i>Stylidium drummondianum</i>	3	338387	6743039		30	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338389	6742862		100	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338389	6743995		2		8
<i>Stylidium drummondianum</i>	3	338389	6744110		8		8
<i>Stylidium drummondianum</i>	3	338390	6742790		50	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338390	6743792		4		8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Stylidium drummondianum</i>	3	338391	6744301		5		8
<i>Stylidium drummondianum</i>	3	338396	6743210		20	9/10/2012	11
<i>Stylidium drummondianum</i>	3	338397	6743714		3		8
<i>Stylidium drummondianum</i>	3	338416	6743000		50	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338416	6743200		5	9/10/2012	11
<i>Stylidium drummondianum</i>	3	338416	6743275		5	9/10/2012	11
<i>Stylidium drummondianum</i>	3	338420	6744000		5	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338420	6744021		10	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338422	6743725		2	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338425	6744271		18	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338426	6744162		1	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338449	6742876		15	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338449	6743695		2	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338473	6740900		10	12/10/2012	7a
<i>Stylidium drummondianum</i>	3	338475	6743173		20		8
<i>Stylidium drummondianum</i>	3	338478	6743982		50	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338479	6743796		50	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338482	6743210		8		8
<i>Stylidium drummondianum</i>	3	338483	6744213		50	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338484	6744793		10	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338487	6744189		50	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338510	6744094		10	10/10/2012	8
<i>Stylidium drummondianum</i>	3	338511	6743801		5	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338511	6743997		15	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338514	6743195		5	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338516	6743252		20	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338539	6743109		1	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338539	6743217		3	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338540	6743152		1	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338556	6740952		1	12/10/2012	10
<i>Stylidium drummondianum</i>	3	338559	6747799				8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Stylidium drummondianum</i>	3	338559	6747847				8
<i>Stylidium drummondianum</i>	3	338561	6747658				8
<i>Stylidium drummondianum</i>	3	338562	6747672				8
<i>Stylidium drummondianum</i>	3	338564	6747679				8
<i>Stylidium drummondianum</i>	3	338565	6743150		200	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338566	6747676				8
<i>Stylidium drummondianum</i>	3	338566	6747693				8
<i>Stylidium drummondianum</i>	3	338566	6747747				8
<i>Stylidium drummondianum</i>	3	338567	6744335		15		8
<i>Stylidium drummondianum</i>	3	338567	6747761				8
<i>Stylidium drummondianum</i>	3	338567	6747834				8
<i>Stylidium drummondianum</i>	3	338568	6742887		100	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338568	6743636		10		8
<i>Stylidium drummondianum</i>	3	338568	6747689				8
<i>Stylidium drummondianum</i>	3	338569	6743990		6		8
<i>Stylidium drummondianum</i>	3	338570	6743210		50	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338570	6744200		2		8
<i>Stylidium drummondianum</i>	3	338570	6747781				8
<i>Stylidium drummondianum</i>	3	338571	6747709				8
<i>Stylidium drummondianum</i>	3	338571	6747785				8
<i>Stylidium drummondianum</i>	3	338572	6743031		50	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338575	6742931		100	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338575	6744330	WE042		26/10/2011	8
<i>Stylidium drummondianum</i>	3	338576	6744662		7		8
<i>Stylidium drummondianum</i>	3	338587	6747872				8
<i>Stylidium drummondianum</i>	3	338589	6747919				11
<i>Stylidium drummondianum</i>	3	338595	6744638		3	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338596	6747710				8
<i>Stylidium drummondianum</i>	3	338598	6743202		30	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338598	6743529		5	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338600	6743210		50	8/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Stylidium drummondianum</i>	3	338600	6744000		4	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338600	6744417		10	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338600	6747756				8
<i>Stylidium drummondianum</i>	3	338600	6747807				8
<i>Stylidium drummondianum</i>	3	338601	6744374		1	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338604	6743147		20	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338607	6743957		5	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338609	6744888				8
<i>Stylidium drummondianum</i>	3	338615	6744983				8
<i>Stylidium drummondianum</i>	3	338617	6744398				8
<i>Stylidium drummondianum</i>	3	338620	6743103		10	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338624	6742846		100	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338625	6743928				8
<i>Stylidium drummondianum</i>	3	338627	6743181		5	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338629	6743368		2	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338629	6743400				8
<i>Stylidium drummondianum</i>	3	338630	6743143		40	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338630	6743211		4	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338630	6744226		1	10/10/2012	8
<i>Stylidium drummondianum</i>	3	338631	6744215				8
<i>Stylidium drummondianum</i>	3	338631	6745680				11
<i>Stylidium drummondianum</i>	3	338634	6743450				8
<i>Stylidium drummondianum</i>	3	338637	6743860				8
<i>Stylidium drummondianum</i>	3	338637	6744020				8
<i>Stylidium drummondianum</i>	3	338642	6742974				8
<i>Stylidium drummondianum</i>	3	338647	6743115				8
<i>Stylidium drummondianum</i>	3	338651	6743765		10	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338652	6743873		100	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338656	6742868		10	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338658	6740963		5	12/10/2012	10
<i>Stylidium drummondianum</i>	3	338659	6742977		15	8/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Stylidium drummondianum</i>	3	338659	6744184		20	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338660	6743004		10	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338661	6743011		2	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338661	6743219				8
<i>Stylidium drummondianum</i>	3	338663	6742581				8
<i>Stylidium drummondianum</i>	3	338664	6744073		50	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338665	6741599				10
<i>Stylidium drummondianum</i>	3	338668	6742952		20	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338680	6740722				7a
<i>Stylidium drummondianum</i>	3	338682	6740354				7a
<i>Stylidium drummondianum</i>	3	338688	6740242				7a
<i>Stylidium drummondianum</i>	3	338688	6742928		150	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338690	6743492		50	9/10/2012	11
<i>Stylidium drummondianum</i>	3	338690	6743600		50	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338690	6743730		20	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338690	6744700		1	10/10/2012	8
<i>Stylidium drummondianum</i>	3	338693	6743200		50	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338698	6742862		50	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338705	6740254				7a
<i>Stylidium drummondianum</i>	3	338705	6747853	WE065		21/11/2011	8
<i>Stylidium drummondianum</i>	3	338711	6743912		2	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338717	6743483		5	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338717	6748327				11
<i>Stylidium drummondianum</i>	3	338717	6748327				11
<i>Stylidium drummondianum</i>	3	338719	6743394		5	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338720	6742865		20	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338720	6743449		5	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338721	6743121		10	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338721	6747862		2		8
<i>Stylidium drummondianum</i>	3	338724	6743066		20	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338730	6742875				8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Stylidium drummondianum</i>	3	338732	6747918		1	12/10/2012	8
<i>Stylidium drummondianum</i>	3	338748	6743859		3	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338749	6743732		10	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338750	6743711		1	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338752	6743372		3	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338753	6743032		5	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338772	6744064		1	9/10/2012	1b
<i>Stylidium drummondianum</i>	3	338775	6747965				C
<i>Stylidium drummondianum</i>	3	338775	6748410				C
<i>Stylidium drummondianum</i>	3	338778	6743417		11	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338779	6743708		10	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338779	6743857		1	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338780	6742983		5	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338780	6744168		1	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338781	6744395		1	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338782	6743787		10	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338809	6743697		1	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338810	6743831		3	9/10/2012	8
<i>Stylidium drummondianum</i>	3	338814	6743117		1	8/10/2012	8
<i>Stylidium drummondianum</i>	3	338838	6743935				C
<i>Stylidium drummondianum</i>	3	338848	6742652		8		8
<i>Stylidium drummondianum</i>	3	338857	6743455		5	10/10/2012	8
<i>Stylidium drummondianum</i>	3	338862	6742698		3		8
<i>Stylidium drummondianum</i>	3	338863	6743005		2	10/10/2012	8
<i>Stylidium drummondianum</i>	3	338865	6742664		7		8
<i>Stylidium drummondianum</i>	3	338871	6743853		5	10/10/2012	C
<i>Stylidium drummondianum</i>	3	338876	6742659		2	10/10/2012	8
<i>Stylidium drummondianum</i>	3	338878	6743142		1	10/10/2012	8
<i>Stylidium drummondianum</i>	3	338960	6742963				C
<i>Stylidium drummondianum</i>	3	338969	6744195				C
<i>Stylidium drummondianum</i>	3	339023	6744165				C

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Stylidium drummondianum</i>	3	339070	6742540		50	5/10/2012	8D
<i>Stylidium drummondianum</i>	3	339234	6742510		20	5/10/2012	8D
<i>Stylidium drummondianum</i>	3	339550	6744313	SITE06	50	4/10/2012	1a
<i>Stylidium drummondianum</i>	3	339564	6742912	SITE09	5	4/10/2012	8
<i>Stylidium drummondianum</i>	3	339565	6744268		20	4/10/2012	8
<i>Stylidium drummondianum</i>	3	339617	6743112		20	5/10/2012	8
<i>Stylidium drummondianum</i>	3	339620	6742988		50	4/10/2012	8
<i>Stylidium drummondianum</i>	3	339640	6743108		50	5/10/2012	8
<i>Stylidium drummondianum</i>	3	339643	6742944		50	4/10/2012	8
<i>Stylidium drummondianum</i>	3	339650	6742903		100	4/10/2012	8
<i>Stylidium drummondianum</i>	3	339651	6743073		20	4/10/2012	8
<i>Stylidium drummondianum</i>	3	339674	6743054		100	4/10/2012	8
<i>Stylidium drummondianum</i>	3	339688	6743149		20	5/10/2012	8
<i>Stylidium drummondianum</i>	3	339712	6742994		100	4/10/2012	8
<i>Stylidium drummondianum</i>	3	339727	6742928		100	4/10/2012	8
<i>Stylidium drummondianum</i>	3	339728	6742869		100	4/10/2012	8
<i>Stylidium drummondianum</i>	3	339744	6743152		50	5/10/2012	8
<i>Stylidium drummondianum</i>	3	339745	6743113		50	5/10/2012	8
<i>Stylidium pseudocaespitosum</i>	2	334804	6743806			29/09/11	13a
<i>Stylidium torticarpum</i>	3	333971	6741681	WEC011	500	28/09/11	8
<i>Stylidium torticarpum</i>	3	333249	6742064	WEC036		24/10/11	9
<i>Stylidium torticarpum</i>	3	338218	6742793		2	9/10/12	8
<i>Stylidium torticarpum</i>	3	338275	6742986		6	9/10/12	8
<i>Stylidium torticarpum</i>	3	338600	6743064		1	8/10/12	8
<i>Stylidium torticarpum</i>	3	338205	6743074		1	9/10/12	11
<i>Stylidium torticarpum</i>	3	338090	6743129		1	9/10/12	7b
<i>Stylidium torticarpum</i>	3	338148	6743141		1	9/10/12	11
<i>Stylidium torticarpum</i>	3	338083	6743216		32	9/10/12	8
<i>Stylidium torticarpum</i>	3	338043	6743248		100	9/10/12	8
<i>Stylidium torticarpum</i>	3	338240	6743269		2	9/10/12	11
<i>Stylidium torticarpum</i>	3	338305	6743294		3		11

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Stylidium torticarpum</i>	3	338060	6743300		20	9/10/12	1b
<i>Stylidium torticarpum</i>	3	337940	6743315	WEC046		26/10/11	1b
<i>Stylidium torticarpum</i>	3	338120	6743318		10	9/10/12	8
<i>Stylidium torticarpum</i>	3	338663	6743472		1	9/10/12	8
<i>Stylidium torticarpum</i>	3	338182	6743467		1	9/10/12	8
<i>Stylidium torticarpum</i>	3	338485	6743568		1	9/10/12	8
<i>Stylidium torticarpum</i>	3	338423	6743584		2	9/10/12	8
<i>Stylidium torticarpum</i>	3	338477	6743709		3	9/10/12	8
<i>Stylidium torticarpum</i>	3	338774	6744070		12	9/10/12	1b
<i>Stylidium torticarpum</i>	3	334250	6743863	WEC015		29/09/11	9
<i>Stylidium torticarpum</i>	3	338004	6743968		1	10/10/12	8
<i>Stylidium torticarpum</i>	3	337978	6743990		2	10/10/12	8
<i>Stylidium torticarpum</i>	3	337911	6743990		5	10/10/12	8
<i>Stylidium torticarpum</i>	3	338810	6744020		5	9/10/12	1b
<i>Stylidium torticarpum</i>	3	337915	6744022		1	9/10/12	8
<i>Stylidium torticarpum</i>	3	337754	6744026		10	9/10/12	8
<i>Stylidium torticarpum</i>	3	338810	6744116		7	9/10/12	8
<i>Stylidium torticarpum</i>	3	338330	6744155		2	10/10/12	8
<i>Stylidium torticarpum</i>	3	338426	6744162		2	9/10/12	8
<i>Stylidium torticarpum</i>	3	338969	6744195				C
<i>Stylidium torticarpum</i>	3	338240	6744238		5	9/10/12	1b
<i>Stylidium torticarpum</i>	3	339565	6744268		10	4/10/12	8
<i>Stylidium torticarpum</i>	3	338690	6744277		1	10/10/12	8
<i>Stylidium torticarpum</i>	3	338203	6744279	WEC020		30/09/11	1b
<i>Stylidium torticarpum</i>	3	339530	6744298		15	4/10/12	1a
<i>Stylidium torticarpum</i>	3	338182	6744358		2	9/10/12	1b
<i>Stylidium torticarpum</i>	3	338361	6744439		1	9/10/12	1b
<i>Stylidium torticarpum</i>	3	338430	6744442		2	9/10/12	8
<i>Stylidium torticarpum</i>	3	338805	6744448		20	10/10/12	8
<i>Stylidium torticarpum</i>	3	338805	6744471		6	10/10/12	8
<i>Stylidium torticarpum</i>	3	338690	6744512		1	10/10/12	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Stylidium torticarpum</i>	3	336346	6744538	WEC045		26/10/11	9
<i>Stylidium torticarpum</i>	3	338690	6744600		1	10/10/12	8
<i>Stylidium torticarpum</i>	3	338780	6744649		1	9/10/12	11
<i>Stylidium torticarpum</i>	3	338690	6744727		1	10/10/12	8
<i>Stylidium torticarpum</i>	3	333692	6745829		10	11/10/12	7b
<i>Stylidium torticarpum</i>	3	333603	6746199		50	11/10/12	3
<i>Stylidium torticarpum</i>	3	333609	6746569	WEC071		23/11/11	3
<i>Stylidium torticarpum</i>	3	340699	6747127	WEC121	20	4/10/12	4
<i>Stylidium torticarpum</i>	3	340671	6747304	WEC120		4/10/12	4
<i>Stylidium torticarpum</i>	3	340992	6747350	WEC127		4/10/12	4
<i>Stylidium torticarpum</i>	3	335307	6747465		50	23/11/11	9
<i>Stylidium torticarpum</i>	3	334878	6747924		50	23/11/11	9
<i>Stylidium torticarpum</i>	3	334635	6748026	WEC076		24/11/11	9
<i>Stylidium torticarpum</i>	3	334226	6748371		100	22/10/12	9
<i>Stylidium torticarpum</i>	3	335261	6750535		1	3/10/12	4
<i>Stylidium torticarpum</i>	3	341135	6750890	SITE04	20	3/10/12	4
<i>Synaphea aephynsa</i>	3	333089	6744610		3	7/11/2012	13a
<i>Synaphea aephynsa</i>	3	333327	6744930		1		8
<i>Synaphea aephynsa</i>	3	333409	6744932		1	11/10/2012	10
<i>Synaphea aephynsa</i>	3	333445	6744858		1		8
<i>Synaphea aephynsa</i>	3	333454	6744835		1	11/10/2012	8
<i>Synaphea aephynsa</i>	3	333498	6744753		1	11/10/2012	8
<i>Synaphea aephynsa</i>	3	333533	6744745		1	11/10/2012	8
<i>Synaphea aephynsa</i>	3	333607	6744765		1		10
<i>Synaphea aephynsa</i>	3	333624	6745724		1	6/11/2012	12
<i>Synaphea aephynsa</i>	3	333921	6744947		20	11/10/2012	10
<i>Synaphea aephynsa</i>	3	333921	6745009		2	11/10/2012	10
<i>Synaphea aephynsa</i>	3	333928	6745103		1	7/11/2012	10
<i>Synaphea aephynsa</i>	3	333930	6741888		3	11/10/2012	8
<i>Synaphea aephynsa</i>	3	333955	6744971		30	11/10/2012	10
<i>Synaphea aephynsa</i>	3	333955	6745041		2	11/10/2012	10

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Synaphea aephynsa</i>	3	333960	6744867		60	11/10/2012	8
<i>Synaphea aephynsa</i>	3	333980	6744880		15	11/10/2012	8
<i>Synaphea aephynsa</i>	3	333980	6744967		13	11/10/2012	10
<i>Synaphea aephynsa</i>	3	334004	6744860		3	11/10/2012	8
<i>Synaphea aephynsa</i>	3	334011	6744956		3	11/10/2012	10
<i>Synaphea aephynsa</i>	3	334015	6744781		3	11/10/2012	8
<i>Synaphea aephynsa</i>	3	334026	6741675		10	11/10/2012	8
<i>Synaphea aephynsa</i>	3	334028	6741678		2	11/10/2012	7b
<i>Synaphea aephynsa</i>	3	334038	6744809		30	11/10/2012	8
<i>Synaphea aephynsa</i>	3	334044	6744749		10	11/10/2012	8
<i>Synaphea aephynsa</i>	3	334047	6744940		40	11/10/2012	10
<i>Synaphea aephynsa</i>	3	334070	6744707		30	11/10/2012	10
<i>Synaphea aephynsa</i>	3	334070	6744896		15	11/10/2012	10
<i>Synaphea aephynsa</i>	3	334096	6744816		3	11/10/2012	10
<i>Synaphea aephynsa</i>	3	334100	6745038		1	11/10/2012	8
<i>Synaphea aephynsa</i>	3	334105	6742058		1	9/11/2012	8
<i>Synaphea aephynsa</i>	3	334105	6744881		5	11/10/2012	10
<i>Synaphea aephynsa</i>	3	334111	6741591		10	11/10/2012	8
<i>Synaphea aephynsa</i>	3	334117	6742435		1	11/10/2012	8
<i>Synaphea aephynsa</i>	3	334119	6742439		1	16/11/2012	8
<i>Synaphea aephynsa</i>	3	334121	6742474		5	11/10/2012	8
<i>Synaphea aephynsa</i>	3	334127	6744809		1	11/10/2012	8
<i>Synaphea aephynsa</i>	3	334135	6741623	WE012		28/09/2011	7b
<i>Synaphea aephynsa</i>	3	334160	6744033		1		9
<i>Synaphea aephynsa</i>	3	334162	6744794		4	11/10/2012	8
<i>Synaphea aephynsa</i>	3	334190	6743949		1	11/10/2012	9
<i>Synaphea aephynsa</i>	3	334217	6741558		5	11/10/2012	8
<i>Synaphea aephynsa</i>	3	334237	6741575		2	11/10/2012	8
<i>Synaphea aephynsa</i>	3	334242	6741002		2	11/10/2012	7a
<i>Synaphea aephynsa</i>	3	334249	6741085		2	11/10/2012	7a
<i>Synaphea aephynsa</i>	3	334249	6741563		4	11/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Synaphea aephynsa</i>	3	334259	6741385		5	11/10/2012	7b
<i>Synaphea aephynsa</i>	3	334263	6741055		5	10/10/2012	7a
<i>Synaphea aephynsa</i>	3	334265	6741019		2	10/10/2012	7a
<i>Synaphea aephynsa</i>	3	334279	6743993		1		7a
<i>Synaphea aephynsa</i>	3	334291	6741554		2	11/10/2012	7b
<i>Synaphea aephynsa</i>	3	334306	6743975		1	11/10/2012	7a
<i>Synaphea aephynsa</i>	3	334313	6741499		4	10/10/2012	7b
<i>Synaphea aephynsa</i>	3	334321	6741494		2	11/10/2012	7b
<i>Synaphea aephynsa</i>	3	334433	6744361		3	8/11/2012	13a
<i>Synaphea aephynsa</i>	3	335292	6740675		1	11/10/2012	7a
<i>Synaphea aephynsa</i>	3	335315	6740622		1	11/10/2012	8
<i>Synaphea aephynsa</i>	3	335324	6740619		2		8
<i>Synaphea aephynsa</i>	3	335394	6740446		2		8
<i>Synaphea aephynsa</i>	3	335412	6740295		4	11/10/2012	8
<i>Synaphea aephynsa</i>	3	335460	6740231		2	11/10/2012	7a
<i>Synaphea aephynsa</i>	3	335495	6740171		3		7a
<i>Synaphea aephynsa</i>	3	335498	6740136		2	11/10/2012	7a
<i>Synaphea aephynsa</i>	3	335516	6740103		1	11/10/2012	7a
<i>Synaphea aephynsa</i>	3	335566	6740043		2	11/10/2012	7a
<i>Synaphea aephynsa</i>	3	335607	6740020		3	11/10/2012	7a
<i>Synaphea aephynsa</i>	3	335607	6740043		2		7a
<i>Synaphea aephynsa</i>	3	335624	6740024		1	11/10/2012	7a
<i>Synaphea aephynsa</i>	3	335673	6747188		1	11/10/2012	8
<i>Synaphea aephynsa</i>	3	335705	6740052		2	11/10/2012	7a
<i>Synaphea aephynsa</i>	3	335765	6740079		1	11/10/2012	7a
<i>Synaphea aephynsa</i>	3	335826	6740087		4		7a
<i>Synaphea aephynsa</i>	3	335831	6744198		10	15/11/2012	7b
<i>Synaphea aephynsa</i>	3	335870	6740066		1	11/10/2012	7a
<i>Synaphea aephynsa</i>	3	335935	6740065		1	11/10/2012	7a
<i>Synaphea aephynsa</i>	3	335959	6740065		1	11/10/2012	7a
<i>Synaphea aephynsa</i>	3	336021	6740077		2		7a

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Synaphea aephynsa</i>	3	336125	6740047		1	11/10/2012	7a
<i>Synaphea aephynsa</i>	3	336206	6742798		2	14/11/2012	13a
<i>Synaphea aephynsa</i>	3	336213	6739916		1	11/10/2012	9
<i>Synaphea aephynsa</i>	3	336322	6739825		1	11/10/2012	8
<i>Synaphea aephynsa</i>	3	336350	6739816		1	11/10/2012	8
<i>Synaphea aephynsa</i>	3	336362	6739499	WE004		27/09/2011	8
<i>Synaphea aephynsa</i>	3	336388	6739803		1	11/10/2012	8
<i>Synaphea aephynsa</i>	3	336392	6740999		1	15/11/2012	7a
<i>Synaphea aephynsa</i>	3	336416	6740971		3	15/11/2012	7a
<i>Synaphea aephynsa</i>	3	336420	6739725		1000	11/10/2012	7a
<i>Synaphea aephynsa</i>	3	336458	6739820		3		7a
<i>Synaphea aephynsa</i>	3	336539	6746129	WE074		24/11/2011	7b
<i>Synaphea aephynsa</i>	3	336591	6741202		5	15/11/2012	7a
<i>Synaphea aephynsa</i>	3	336604	6739568		6		7a
<i>Synaphea aephynsa</i>	3	336606	6739491		2	11/10/2012	7a
<i>Synaphea aephynsa</i>	3	336683	6739426		2	11/10/2012	7a
<i>Synaphea aephynsa</i>	3	336703	6739520		1		7a
<i>Synaphea aephynsa</i>	3	336715	6741205		2	15/11/2012	7a
<i>Synaphea aephynsa</i>	3	336740	6739393		3	11/10/2012	7a
<i>Synaphea aephynsa</i>	3	336762	6739361		2	11/10/2012	7a
<i>Synaphea aephynsa</i>	3	336765	6739317		2	11/10/2012	7a
<i>Synaphea aephynsa</i>	3	336777	6739370		2		7a
<i>Synaphea aephynsa</i>	3	336790	6741171		5	15/11/2012	7a
<i>Synaphea aephynsa</i>	3	336799	6748246		10	12/11/2012	10
<i>Synaphea aephynsa</i>	3	336886	6741207		2	15/11/2012	13a
<i>Synaphea aephynsa</i>	3	336940	6742403		5	8/11/2012	13a
<i>Synaphea aephynsa</i>	3	337190	6744598		10	10/10/2012	7a
<i>Synaphea aephynsa</i>	3	337268	6740153		2	14/11/2012	7a
<i>Synaphea aephynsa</i>	3	337269	6739038		4	14/11/2012	10
<i>Synaphea aephynsa</i>	3	337274	6739791		3	14/11/2012	7a
<i>Synaphea aephynsa</i>	3	337280	6744177		10	10/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Synaphea aephynsa</i>	3	337280	6744312		3	10/10/2012	7a
<i>Synaphea aephynsa</i>	3	337301	6739018		5	14/11/2012	10
<i>Synaphea aephynsa</i>	3	337354	6740165		5	14/11/2012	7a
<i>Synaphea aephynsa</i>	3	337571	6739137		30	14/11/2012	7a
<i>Synaphea aephynsa</i>	3	337579	6739832		7	14/11/2012	7a
<i>Synaphea aephynsa</i>	3	337581	6739142				7a
<i>Synaphea aephynsa</i>	3	337600	6740160		10	14/11/2012	7a
<i>Synaphea aephynsa</i>	3	337604	6739765		5	14/11/2012	7a
<i>Synaphea aephynsa</i>	3	337604	6739914		5	14/11/2012	7a
<i>Synaphea aephynsa</i>	3	337605	6739296		5	14/11/2012	7a
<i>Synaphea aephynsa</i>	3	337608	6740052		5	14/11/2012	7a
<i>Synaphea aephynsa</i>	3	337740	6739893	WE055		21/11/2011	7a
<i>Synaphea aephynsa</i>	3	337822	6739289	WE002		26/09/2011	7a
<i>Synaphea aephynsa</i>	3	338000	6741001		1	15/11/2012	7a
<i>Synaphea aephynsa</i>	3	338037	6740959		1	12/10/2012	7a
<i>Synaphea aephynsa</i>	3	338074	6740790		1	12/10/2012	7a
<i>Synaphea aephynsa</i>	3	338092	6742124		2	23/10/2012	8
<i>Synaphea aephynsa</i>	3	338103	6743403		15	9/10/2012	8
<i>Synaphea aephynsa</i>	3	338115	6742488		2	9/10/2012	8
<i>Synaphea aephynsa</i>	3	338121	6743460		30	9/10/2012	8
<i>Synaphea aephynsa</i>	3	338126	6740666		2	12/10/2012	7a
<i>Synaphea aephynsa</i>	3	338162	6742602		1	9/10/2012	8
<i>Synaphea aephynsa</i>	3	338189	6740931		2		7a
<i>Synaphea aephynsa</i>	3	338243	6740745	WE051		20/11/2011	7a
<i>Synaphea aephynsa</i>	3	338244	6740687		5	12/12/2012	7a
<i>Synaphea aephynsa</i>	3	338271	6740753		3		7a
<i>Synaphea aephynsa</i>	3	338278	6739687	WE113		11/09/2012	8
<i>Synaphea aephynsa</i>	3	338278	6740841		5	12/10/2012	7a
<i>Synaphea aephynsa</i>	3	338290	6740961		2	12/10/2012	7a
<i>Synaphea aephynsa</i>	3	338292	6740782		3	12/10/2012	7a
<i>Synaphea aephynsa</i>	3	338298	6740719		10	12/10/2012	7a

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Synaphea aeplynsa</i>	3	338307	6743704		5	9/10/2012	8
<i>Synaphea aeplynsa</i>	3	338309	6743953		20	9/10/2012	8
<i>Synaphea aeplynsa</i>	3	338321	6740871		2	12/10/2012	7a
<i>Synaphea aeplynsa</i>	3	338328	6740782		1	12/10/2012	7a
<i>Synaphea aeplynsa</i>	3	338329	6740966		1	12/10/2012	7a
<i>Synaphea aeplynsa</i>	3	338346	6740785		3	12/10/2012	7a
<i>Synaphea aeplynsa</i>	3	338354	6740902		10	12/10/2012	7a
<i>Synaphea aeplynsa</i>	3	338360	6740931		2		7a
<i>Synaphea aeplynsa</i>	3	338363	6740720		5	12/10/2012	7a
<i>Synaphea aeplynsa</i>	3	338370	6740786		5		7a
<i>Synaphea aeplynsa</i>	3	338422	6740841		15	12/10/2012	7a
<i>Synaphea aeplynsa</i>	3	338426	6740693		3	12/12/2012	7a
<i>Synaphea aeplynsa</i>	3	338482	6740720		5	12/10/2012	7a
<i>Synaphea aeplynsa</i>	3	338482	6740840		2	12/10/2012	7a
<i>Synaphea aeplynsa</i>	3	338528	6740840		1	12/10/2012	7a
<i>Synaphea aeplynsa</i>	3	338581	6740270		5	13/11/2012	7a
<i>Synaphea aeplynsa</i>	3	338688	6740242				7a
<i>Synaphea aeplynsa</i>	3	338753	6740653		5	12/10/2012	7a
<i>Synaphea oulopha</i>	1	332609	6744460		1	11/10/2012	8
<i>Synaphea oulopha</i>	1	333266	6744948		1	11/10/2012	8
<i>Synaphea oulopha</i>	1	333332	6744939		2	11/10/2012	8
<i>Synaphea oulopha</i>	1	333379	6744896		2		8
<i>Synaphea oulopha</i>	1	333584	6744778		1	11/10/2012	10
<i>Synaphea oulopha</i>	1	333751	6744829		3	7/11/2012	10
<i>Synaphea oulopha</i>	1	334250	6741860		1	9/11/2012	7b
<i>Synaphea oulopha</i>	1	334263	6743964		3	11/10/2012	7a
<i>Synaphea oulopha</i>	1	334288	6742150		3	16/11/2012	10
<i>Synaphea oulopha</i>	1	335156	6747346		1	22/10/2012	8
<i>Synaphea oulopha</i>	1	335324	6740660		2	11/10/2012	8
<i>Synaphea oulopha</i>	1	335630	6740060		2	11/10/2012	7a
<i>Synaphea oulopha</i>	1	335690	6747210		1		8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Synaphea oulopha</i>	1	335736	6747143		1		8
<i>Synaphea oulopha</i>	1	335872	6740103		1	11/10/2012	7a
<i>Synaphea oulopha</i>	1	336000	6740093		3	11/10/2012	7a
<i>Synaphea oulopha</i>	1	336134	6747139		1	5/11/2012	8
<i>Synaphea oulopha</i>	1	336346	6744538	WE045		26/10/2011	9
<i>Synaphea oulopha</i>	1	336450	6739864		5	11/10/2012	7a
<i>Synaphea oulopha</i>	1	336500	6745552		2	7/11/2012	7b
<i>Synaphea oulopha</i>	1	336563	6742765		5	14/11/2012	7b
<i>Synaphea oulopha</i>	1	336720	6739460		2	11/10/2012	7a
<i>Synaphea oulopha</i>	1	336830	6740974		2	15/11/2012	13a
<i>Synaphea oulopha</i>	1	336905	6740970		1	15/11/2012	13a
<i>Synaphea oulopha</i>	1	336947	6747014		6	13/11/2012	8
<i>Synaphea oulopha</i>	1	336971	6744582		10	10/10/2012	7a
<i>Synaphea oulopha</i>	1	336977	6744831		10	10/10/2012	7a
<i>Synaphea oulopha</i>	1	336980	6744379		10	10/10/2012	7a
<i>Synaphea oulopha</i>	1	337008	6744452		4	10/10/2012	7a
<i>Synaphea oulopha</i>	1	337009	6744485		5	10/10/2012	7a
<i>Synaphea oulopha</i>	1	337009	6744515		2	10/10/2012	7a
<i>Synaphea oulopha</i>	1	337010	6746937		10	13/11/2012	8
<i>Synaphea oulopha</i>	1	337011	6744159		1	10/10/2012	13a
<i>Synaphea oulopha</i>	1	337030	6746755		2	13/11/2012	8
<i>Synaphea oulopha</i>	1	337037	6744778		4		7a
<i>Synaphea oulopha</i>	1	337039	6744550		4		7a
<i>Synaphea oulopha</i>	1	337041	6744165		2		13a
<i>Synaphea oulopha</i>	1	337046	6744370		5		7a
<i>Synaphea oulopha</i>	1	337067	6744200		10	10/10/2012	13a
<i>Synaphea oulopha</i>	1	337073	6744353		10	10/10/2012	7a
<i>Synaphea oulopha</i>	1	337073	6744493		20	10/10/2012	7a
<i>Synaphea oulopha</i>	1	337090	6744347		2	10/10/2012	7a
<i>Synaphea oulopha</i>	1	337093	6744665		1	10/10/2012	7a
<i>Synaphea oulopha</i>	1	337094	6744807		2	10/10/2012	7a

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Synaphea oulopha</i>	1	337095	6744537		1	10/10/2012	7a
<i>Synaphea oulopha</i>	1	337096	6744328		1	10/10/2012	7a
<i>Synaphea oulopha</i>	1	337096	6744369		4	10/10/2012	7a
<i>Synaphea oulopha</i>	1	337097	6744050		4	10/10/2012	13a
<i>Synaphea oulopha</i>	1	337097	6744498		6	10/10/2012	7a
<i>Synaphea oulopha</i>	1	337099	6744091		4	10/10/2012	13a
<i>Synaphea oulopha</i>	1	337101	6744213		1	10/10/2012	8
<i>Synaphea oulopha</i>	1	337102	6744730		1	10/10/2012	7a
<i>Synaphea oulopha</i>	1	337103	6744257		1	10/10/2012	8
<i>Synaphea oulopha</i>	1	337103	6744749		3	10/10/2012	7a
<i>Synaphea oulopha</i>	1	337106	6744143		1	10/10/2012	8
<i>Synaphea oulopha</i>	1	337129	6744373		3		7a
<i>Synaphea oulopha</i>	1	337130	6744792		1		7a
<i>Synaphea oulopha</i>	1	337133	6744507		1		7a
<i>Synaphea oulopha</i>	1	337136	6744661		3		7a
<i>Synaphea oulopha</i>	1	337154	6744697		5	10/10/2012	7a
<i>Synaphea oulopha</i>	1	337160	6744000		2	10/10/2012	8
<i>Synaphea oulopha</i>	1	337160	6744362		10	10/10/2012	7a
<i>Synaphea oulopha</i>	1	337163	6744186		3	10/10/2012	8
<i>Synaphea oulopha</i>	1	337165	6744491		7	10/10/2012	7a
<i>Synaphea oulopha</i>	1	337165	6744589		3	10/10/2012	7a
<i>Synaphea oulopha</i>	1	337165	6744777		5	10/10/2012	7a
<i>Synaphea oulopha</i>	1	337174	6748454		1	11/10/2012	11
<i>Synaphea oulopha</i>	1	337217	6743998		30	9/10/2012	8
<i>Synaphea oulopha</i>	1	337219	6744052		20	9/10/2012	8
<i>Synaphea oulopha</i>	1	337225	6744209		30	9/10/2012	8
<i>Synaphea oulopha</i>	1	337225	6744469		5	9/10/2012	7a
<i>Synaphea oulopha</i>	1	337226	6744320		20	9/10/2012	7a
<i>Synaphea oulopha</i>	1	337280	6744600		5	10/10/2012	13b
<i>Synaphea oulopha</i>	1	337332	6744029		5	9/10/2012	8
<i>Synaphea oulopha</i>	1	337580	6742897		5	13/11/2012	7b

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Synaphea oulopha</i>	1	337625	6744767		2	10/10/2012	11
<i>Synaphea oulopha</i>	1	337626	6744033		1	10/10/2012	8
<i>Synaphea oulopha</i>	1	337628	6744012		1	10/10/2012	8
<i>Synaphea oulopha</i>	1	337631	6744239		1	10/10/2012	7a
<i>Synaphea oulopha</i>	1	337631	6744723		1	10/10/2012	11
<i>Synaphea oulopha</i>	1	337632	6744153		1	10/10/2012	8
<i>Synaphea oulopha</i>	1	337650	6744763		3		11
<i>Synaphea oulopha</i>	1	337651	6747858		1	12/10/2012	8
<i>Synaphea oulopha</i>	1	337659	6744221		3		8
<i>Synaphea oulopha</i>	1	337660	6744106		2		8
<i>Synaphea oulopha</i>	1	337680	6744248		5	10/10/2012	7a
<i>Synaphea oulopha</i>	1	337685	6744716		3	10/10/2012	11
<i>Synaphea oulopha</i>	1	337686	6744289		5	10/10/2012	7a
<i>Synaphea oulopha</i>	1	337690	6744800		15	10/10/2012	11
<i>Synaphea oulopha</i>	1	337691	6744375		2	10/10/2012	7a
<i>Synaphea oulopha</i>	1	337749	6744514		10	9/10/2012	7a
<i>Synaphea oulopha</i>	1	337749	6744694		5	9/10/2012	11
<i>Synaphea oulopha</i>	1	337752	6744376		20	9/10/2012	7a
<i>Synaphea oulopha</i>	1	337753	6744627		20	9/10/2012	11
<i>Synaphea oulopha</i>	1	337754	6744451		20	9/10/2012	7a
<i>Synaphea oulopha</i>	1	337754	6744762		20	9/10/2012	11
<i>Synaphea oulopha</i>	1	337756	6744143		10	9/10/2012	8
<i>Synaphea oulopha</i>	1	337757	6744315		50	9/10/2012	7a
<i>Synaphea oulopha</i>	1	337800	6746911		5	13/11/2012	7b
<i>Synaphea oulopha</i>	1	337830	6742778		5	13/11/2012	7b
<i>Synaphea oulopha</i>	1	337884	6747853		1	12/10/2012	8
<i>Synaphea oulopha</i>	1	337949	6746231		2	12/12/2012	8
<i>Synaphea oulopha</i>	1	337966	6743903		1	10/10/2012	8
<i>Synaphea oulopha</i>	1	337972	6746248		1	12/10/2012	8
<i>Synaphea oulopha</i>	1	338012	6746179		1	12/10/2012	7b
<i>Synaphea oulopha</i>	1	338112	6743646		50	9/10/2012	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Synaphea oulopha</i>	1	338120	6744099		10	9/10/2012	8
<i>Synaphea oulopha</i>	1	338123	6744930		20	9/10/2012	11
<i>Synaphea oulopha</i>	1	338124	6743704		20	9/10/2012	8
<i>Synaphea oulopha</i>	1	338124	6743809		30	9/10/2012	1b
<i>Synaphea oulopha</i>	1	338132	6742966		10		8
<i>Synaphea oulopha</i>	1	338132	6743584		10	9/10/2012	8
<i>Synaphea oulopha</i>	1	338179	6743644		1	9/10/2012	8
<i>Synaphea oulopha</i>	1	338182	6743467		5	9/10/2012	8
<i>Synaphea oulopha</i>	1	338182	6743606		2	9/10/2012	8
<i>Synaphea oulopha</i>	1	338185	6743899		10	9/10/2012	8
<i>Synaphea oulopha</i>	1	338195	6743742		3	9/10/2012	8
<i>Synaphea oulopha</i>	1	338210	6743624		4		8
<i>Synaphea oulopha</i>	1	338210	6746953		5	13/11/2012	11
<i>Synaphea oulopha</i>	1	338234	6743734		2	9/10/2012	8
<i>Synaphea oulopha</i>	1	338293	6743633		1	9/10/2012	8
<i>Synaphea oulopha</i>	1	338317	6740809		7	12/10/2012	7a
<i>Synaphea oulopha</i>	1	338330	6744315		3	10/10/2012	1b
<i>Synaphea oulopha</i>	1	338358	6744299		1	9/10/2012	8
<i>Synaphea oulopha</i>	1	338383	6744286		1		8
<i>Synaphea oulopha</i>	1	338483	6744004		2	9/10/2012	8
<i>Synaphea oulopha</i>	1	338483	6744540		1	9/10/2012	8
<i>Synaphea oulopha</i>	1	338485	6744405		2	9/10/2012	8
<i>Synaphea oulopha</i>	1	338538	6743709		1	9/10/2012	8
<i>Synaphea oulopha</i>	1	338545	6743959				8
<i>Synaphea oulopha</i>	1	338552	6747792				8
<i>Synaphea oulopha</i>	1	338559	6747799				8
<i>Synaphea oulopha</i>	1	338568	6743966	WE043		26/10/2011	8
<i>Synaphea oulopha</i>	1	338569	6743990		2		8
<i>Synaphea oulopha</i>	1	338570	6744246		1		8
<i>Synaphea oulopha</i>	1	338572	6744274		2		8
<i>Synaphea oulopha</i>	1	338575	6744330	WE042		26/10/2011	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Synaphea oulopha</i>	1	338594	6744015		1	9/10/2012	8
<i>Synaphea oulopha</i>	1	338625	6743928				8
<i>Synaphea oulopha</i>	1	338670	6744074		1	9/10/2012	8
<i>Synaphea oulopha</i>	1	338679	6740971		5	15/11/2012	10
<i>Synaphea oulopha</i>	1	338766	6747979		40	9/10/2012	C
<i>Synaphea oulopha</i>	1	340191	6748434		1	9/11/2012	7a
<i>Synaphea oulopha</i>	1	340267	6748447		1	9/11/2012	7a
<i>Synaphea oulopha</i>	1	340270	6748373		2	9/11/2012	7a
<i>Synaphea oulopha</i>	1	340289	6748447		3	9/11/2012	7a
<i>Synaphea ?oulopha</i>	1	336650	6743957		1		13a
<i>Synaphea ?oulopha</i>	1	336882	6744083		1		13a
<i>Synaphea ?oulopha</i>	1	337837	6744612		1		11
<i>Synaphea ?oulopha</i>	1	337925	6744659		2		11
<i>Thelymitra stellata</i>	T	337097	6738933		2	12/10/12	8
<i>Thelymitra stellata</i>	T	337050	6738938		2	12/10/12	8
<i>Thelymitra stellata</i>	T	336699	6739422		1	11/10/12	7a
<i>Thelymitra stellata</i>	T	336350	6739816		1	11/10/12	8
<i>Thelymitra stellata</i>	T	335440	6740297		1	11/10/12	8
<i>Thelymitra stellata</i>	T	338115	6740831		2	12/10/12	7a
<i>Thelymitra stellata</i>	T	334276	6741425		1	24/10/11	7b
<i>Thelymitra stellata</i>	T	338215	6742086		1	23/10/12	8
<i>Thelymitra stellata</i>	T	338187	6742101		1	23/10/12	7a
<i>Thelymitra stellata</i>	T	338185	6742108		2	23/10/12	7a
<i>Thelymitra stellata</i>	T	337732	6742129		1	23/10/12	8
<i>Thelymitra stellata</i>	T	337750	6742141		2	23/10/12	8
<i>Thelymitra stellata</i>	T	337739	6742153		1	23/10/12	8
<i>Thelymitra stellata</i>	T	338139	6742375		2	9/10/12	8
<i>Thelymitra stellata</i>	T	338112	6742406		1	9/10/12	7a
<i>Thelymitra stellata</i>	T	336940	6742403		1	8/11/12	13a
<i>Thelymitra stellata</i>	T	338695	6743787		3	9/10/12	8
<i>Thelymitra stellata</i>	T	338572	6743031		1	8/10/12	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Thelymitra stellata</i>	T	338387	6743039		1	9/10/12	8
<i>Thelymitra stellata</i>	T	338707	6743087		2	8/10/12	8
<i>Thelymitra stellata</i>	T	338588	6743115		1	8/10/12	8
<i>Thelymitra stellata</i>	T	338576	6743118		4	8/10/12	8
<i>Thelymitra stellata</i>	T	338707	6743141		1	8/10/12	8
<i>Thelymitra stellata</i>	T	338598	6743202		1	8/10/12	8
<i>Thelymitra stellata</i>	T	338657	6743209		1	8/10/12	8
<i>Thelymitra stellata</i>	T	338655	6743211		3	27/10/11	8
<i>Thelymitra stellata</i>	T	338681	6743212		1	27/10/11	8
<i>Thelymitra stellata</i>	T	338657	6743229		1	27/10/11	8
<i>Thelymitra stellata</i>	T	338650	6743230		1	27/10/11	8
<i>Thelymitra stellata</i>	T	338396	6743227		1	9/10/12	11
<i>Thelymitra stellata</i>	T	338657	6743241		2	27/10/11	8
<i>Thelymitra stellata</i>	T	338695	6743247		1	27/10/11	8
<i>Thelymitra stellata</i>	T	338565	6743277		1	27/10/11	8
<i>Thelymitra stellata</i>	T	338623	6743279		1	5/10/12	8
<i>Thelymitra stellata</i>	T	338632	6743281		1	5/10/12	8
<i>Thelymitra stellata</i>	T	338658	6743282		2	27/10/11	8
<i>Thelymitra stellata</i>	T	338642	6743282		1	5/10/12	8
<i>Thelymitra stellata</i>	T	338611	6743302		1	27/10/11	8
<i>Thelymitra stellata</i>	T	338587	6743311		1	27/10/11	8
<i>Thelymitra stellata</i>	T	338592	6743320		1	9/10/12	8
<i>Thelymitra stellata</i>	T	338621	6743325		2	27/10/11	8
<i>Thelymitra stellata</i>	T	338579	6743326		4	27/10/11	8
<i>Thelymitra stellata</i>	T	338568	6743336		3	27/10/11	8
<i>Thelymitra stellata</i>	T	338653	6743348		2	27/10/11	8
<i>Thelymitra stellata</i>	T	338569	6743360		1	27/10/11	8
<i>Thelymitra stellata</i>	T	338648	6743370		1	27/10/11	8
<i>Thelymitra stellata</i>	T	338664	6743407		3	9/10/12	8
<i>Thelymitra stellata</i>	T	338662	6743412		1	27/10/11	8
<i>Thelymitra stellata</i>	T	338545	6743468		1	9/10/12	11

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Thelymitra stellata</i>	T	338809	6743539		4	9/10/11	8
<i>Thelymitra stellata</i>	T	338451	6743534		1	9/10/12	8
<i>Thelymitra stellata</i>	T	338426	6743554		3	9/10/12	8
<i>Thelymitra stellata</i>	T	338488	6743558		1	9/10/12	8
<i>Thelymitra stellata</i>	T	338426	6743561		10	9/10/12	8
<i>Thelymitra stellata</i>	T	338485	6743568		1	9/10/12	8
<i>Thelymitra stellata</i>	T	338541	6743572		2	9/10/12	8
<i>Thelymitra stellata</i>	T	338480	6743580		2	9/10/12	8
<i>Thelymitra stellata</i>	T	338476	6743581		2	9/10/12	8
<i>Thelymitra stellata</i>	T	338482	6743584		1	9/10/12	8
<i>Thelymitra stellata</i>	T	338486	6743590		2	9/10/12	8
<i>Thelymitra stellata</i>	T	338182	6743606		4	9/10/12	8
<i>Thelymitra stellata</i>	T	338508	6743663		6	9/10/12	8
<i>Thelymitra stellata</i>	T	338510	6743667		1	9/10/12	8
<i>Thelymitra stellata</i>	T	338541	6743673		1	9/10/12	8
<i>Thelymitra stellata</i>	T	338420	6744050		4	9/10/12	8
<i>Thelymitra stellata</i>	T	338778	6743871		1	8/10/12	8
<i>Thelymitra stellata</i>	T	338711	6743912		1	9/10/12	8
<i>Thelymitra stellata</i>	T	338599	6743937		3	9/10/12	8
<i>Thelymitra stellata</i>	T	338602	6743952		2	9/10/12	8
<i>Thelymitra stellata</i>	T	338575	6743985		1	9/10/12	8
<i>Thelymitra stellata</i>	T	338539	6743994		1	9/10/12	8
<i>Thelymitra stellata</i>	T	338540	6744000		1	9/10/12	8
<i>Thelymitra stellata</i>	T	337778	6743990		1	10/10/12	8
<i>Thelymitra stellata</i>	T	338425	6744044		7	9/10/12	8
<i>Thelymitra stellata</i>	T	338664	6744073		1	9/10/12	8
<i>Thelymitra stellata</i>	T	338670	6744074		2	9/10/12	8
<i>Thelymitra stellata</i>	T	338536	6744101		1	9/10/12	8
<i>Thelymitra stellata</i>	T	337950	6744098		1	10/10/12	8
<i>Thelymitra stellata</i>	T	338448	6744118		1	9/10/12	8
<i>Thelymitra stellata</i>	T	337162	6744232		1	10/10/12	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Thelymitra stellata</i>	T	336980	6744508		1	10/10/12	7a
<i>Thelymitra stellata</i>	T	337714	6746127		1	12/12/12	8
<i>Thelymitra stellata</i>	T	337719	6746148		1	12/12/12	8
<i>Thelymitra stellata</i>	T	337724	6746151		1	12/10/12	8
<i>Thelymitra stellata</i>	T	337719	6746151		3	12/10/12	8
<i>Thelymitra stellata</i>	T	337760	6746153		1	12/10/12	8
<i>Thelymitra stellata</i>	T	337726	6746159		6	12/12/12	8
<i>Thelymitra stellata</i>	T	337803	6746188		3	12/10/12	8
<i>Thelymitra stellata</i>	T	337818	6746189		1	12/10/12	8
<i>Thelymitra stellata</i>	T	337807	6746192		2	12/10/12	8
<i>Thelymitra stellata</i>	T	337741	6746198		4	12/12/12	8
<i>Thelymitra stellata</i>	T	337770	6746199		1	12/10/12	8
<i>Thelymitra stellata</i>	T	337804	6746209		5	12/10/12	8
<i>Thelymitra stellata</i>	T	337811	6746210		3	12/10/12	8
<i>Thelymitra stellata</i>	T	337815	6746212		1	12/10/12	8
<i>Thelymitra stellata</i>	T	337754	6746212		3	12/10/12	8
<i>Thelymitra stellata</i>	T	337807	6746215		1	12/12/12	8
<i>Thelymitra stellata</i>	T	337820	6746216		6	12/10/12	8
<i>Thelymitra stellata</i>	T	337811	6746223		2	12/12/12	8
<i>Thelymitra stellata</i>	T	337758	6746226		1	12/12/12	8
<i>Thelymitra stellata</i>	T	336126	6747113		1	22/10/12	8
<i>Thelymitra stellata</i>	T	336109	6747116		2	22/10/12	8
<i>Thelymitra stellata</i>	T	336126	6747119		1	22/10/12	8
<i>Thelymitra stellata</i>	T	336075	6747120		1	22/10/12	8
<i>Thelymitra stellata</i>	T	336049	6747144		7	22/10/12	8
<i>Thelymitra stellata</i>	T	336058	6747148		5	22/10/12	8
<i>Thelymitra stellata</i>	T	335648	6747155		1	11/10/12	8
<i>Thelymitra stellata</i>	T	335659	6747164		3	11/10/12	8
<i>Thelymitra stellata</i>	T	335668	6747169		2	11/10/12	8
<i>Thelymitra stellata</i>	T	335673	6747171		3	11/10/12	8
<i>Thelymitra stellata</i>	T	335661	6747173		1	11/10/12	8

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Thelymitra stellata</i>	T	335717	6747176		2	11/10/12	8
<i>Thelymitra stellata</i>	T	335669	6747183		5	11/10/12	8
<i>Thelymitra stellata</i>	T	335658	6747183		2	11/10/12	8
<i>Thelymitra stellata</i>	T	335673	6747188		2	11/10/12	8
<i>Thelymitra stellata</i>	T	335650	6747190		1	11/10/12	8
<i>Thelymitra stellata</i>	T	335324	6747192		1	22/10/12	8
<i>Thelymitra stellata</i>	T	335836	6747201		1	11/10/12	8
<i>Thelymitra stellata</i>	T	335764	6747201		1	11/10/12	8
<i>Thelymitra stellata</i>	T	335678	6747200		1	22/10/12	8
<i>Thelymitra stellata</i>	T	335776	6747205		3	11/10/12	8
<i>Thelymitra stellata</i>	T	335348	6747202		1	22/10/12	8
<i>Thelymitra stellata</i>	T	338052	6747242		1		8
<i>Thelymitra stellata</i>	T	335325	6747204		1	22/10/12	8
<i>Thelymitra stellata</i>	T	335303	6747205		2	22/10/12	8
<i>Thelymitra stellata</i>	T	335337	6747208		1	22/10/12	8
<i>Thelymitra stellata</i>	T	335337	6747214		2	22/10/12	8
<i>Thelymitra stellata</i>	T	335343	6747220		2	22/10/12	8
<i>Thelymitra stellata</i>	T	335338	6747220		1	22/10/12	8
<i>Thelymitra stellata</i>	T	335346	6747225		2	22/10/12	8
<i>Thelymitra stellata</i>	T	335359	6747233		1	22/10/12	8
<i>Thelymitra stellata</i>	T	335897	6747252		1	22/10/12	8
<i>Thelymitra stellata</i>	T	335320	6747257		4	22/10/12	8
<i>Thelymitra stellata</i>	T	335173	6747335		1	22/10/12	8
<i>Thelymitra stellata</i>	T	335180	6747342		3	22/10/12	8
<i>Thelymitra stellata</i>	T	338763	6747800		1	10/10/12	8
<i>Thelymitra stellata</i>	T	337903	6747858		1	12/10/12	8
<i>Thelymitra stellata</i>	T	338717	6747914		1	12/10/12	8
<i>Thelymitra stellata</i>	T	338729	6747919		3	12/10/12	8
<i>Thelymitra ?stellata</i>	T	337779	6742453		1	8/11/12	7b
<i>Thelymitra ?stellata</i>	T	337067	6744625		1	10/10/12	7a
<i>Thelymitra ?stellata</i>	T	337069	6744677		1	10/10/12	7a

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>Thelymitra ?stellata</i>	T	337217	6744718		2	9/10/12	7a
<i>Thelymitra ?stellata</i>	T	337740	6746163		2	12/10/12	8
<i>Thryptomene</i> sp. Mingenew (Diels & Pritzel 332)	3	340699	6747127		20	4/10/12	4
<i>Thryptomene</i> sp. Mingenew (Diels & Pritzel 332)	3	340992	6747350	WEC127		4/10/12	4
<i>Thryptomene</i> sp. Mingenew (Diels & Pritzel 332)	3	340306	6748420		25	9/11/12	7a
<i>Thryptomene</i> sp. Mingenew (Diels & Pritzel 332)	3	335074	6750504	WEC092	30	3/10/12	4
<i>Thryptomene</i> sp. Mingenew (Diels & Pritzel 332)	3	337718	6750570	SITE03	20	3/10/12	5
<i>Thryptomene</i> sp. Mingenew (Diels & Pritzel 332)	3	335184	6750800	WEC094	5	3/10/12	4
<i>Thryptomene</i> sp. Mingenew (Diels & Pritzel 332)	3	341135	6750890	SITE04	100	3/10/12	4
<i>Thryptomene</i> sp. Mingenew (Diels & Pritzel 332)	3	334722	6750839	WEC121	20	2/10/12	4D
<i>Verticordia luteola</i> var. <i>luteola</i>	3	332073	6740661		1	25/11/11	13a
<i>Verticordia luteola</i> var. <i>luteola</i>	3	331798	6740758		20	25/11/11	13a
* <i>Arctotheca calendula</i>	Introduced	335121	6750643	WE091		3/10/12	4
* <i>Arctotheca calendula</i>	Introduced	333937	6749011	WE097		12/09/12	14
* <i>Arctotheca calendula</i>	Introduced	334653	6750841	SITE01		2/10/12	4D
* <i>Arctotheca calendula</i>	Introduced	335074	6750504	WE092		3/10/12	4
* <i>Arctotheca calendula</i>	Introduced	335144	6750477	WE093		3/10/12	4
* <i>Arctotheca calendula</i>	Introduced	338243	6739383	WE112			1a
* <i>Arctotheca calendula</i>	Introduced	337808	6739503	WE001		26/09/11	1a
* <i>Arctotheca calendula</i>	Introduced	331705	6741485	WE024		25/10/11	14
* <i>Arctotheca calendula</i>	Introduced	334119	6748240	WE031		26/10/11	10
* <i>Arctotheca calendula</i>	Introduced	338203	6744279	WE020		30/09/11	1b
* <i>Avena barbata</i>	Introduced	334653	6750841	SITE01		2/10/12	4D

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
* <i>Avena barbata</i>	Introduced	335121	6750643	WE091		3/10/12	4
* <i>Brassica tournefortii</i>	Introduced	335144	6750477	WE093		3/10/12	4
* <i>Brassica tournefortii</i>	Introduced	335184	6750800	WE094		3/10/12	4
* <i>Briza maxima</i>	Introduced	340699	6747127	WE121		4/10/12	4
* <i>Briza maxima</i>	Introduced	335074	6750504	WE092		3/10/12	4
* <i>Briza maxima</i>	Introduced	335121	6750643	WE091		3/10/12	4
* <i>Briza maxima</i>	Introduced	335184	6750800	WE094		3/10/12	4
* <i>Bromus diandrus</i>	Introduced	334653	6750841	SITE01		2/10/12	4D
* <i>Bromus diandrus</i>	Introduced	335144	6750477	WE093		3/10/12	4
* <i>Cuscuta epithimum</i>	Introduced	340699	6747127	WE121		4/10/12	4
* <i>Echium plantagineum</i>	Introduced	334653	6750841	SITE01		2/10/12	4D
* <i>Echium plantagineum</i>	Introduced	334701	6750526	SITE02		3/10/12	PC1D
* <i>Echium plantagineum</i>	Introduced	335144	6750477	WE093		3/10/12	4
* <i>Ehrharta brevifolia</i>	Introduced	338243	6739383	WE112			1a
* <i>Ehrharta calycina</i>	Introduced	337808	6739503	WE001		26/09/11	1a
* <i>Ehrharta longiflora</i>	Introduced	335184	6750800	WE094		3/10/12	4
* <i>Ehrharta longiflora</i>	Introduced	335121	6750643	WE091		3/10/12	4
* <i>Ehrharta longiflora</i>	Introduced	335074	6750504	WE092		3/10/12	4
* <i>Ehrharta longiflora</i>	Introduced	340154	6748470	WE119		3/10/12	7a
* <i>Ehrharta longiflora</i>	Introduced	335144	6750477	WE093		3/10/12	4
* <i>Ehrharta longiflora</i>	Introduced	341260	6748366	WE117		5/10/12	5
* <i>Erodium cicutarium</i>	Introduced	335121	6750643	WE091		3/10/12	4
* <i>Erodium cicutarium</i>	Introduced	334653	6750841	SITE01		2/10/12	4D
* <i>Erodium cicutarium</i>	Introduced	340783	6747271	WE122		4/10/12	6
* <i>Erodium cicutarium</i>	Introduced	335144	6750477	WE093		3/10/12	4
* <i>Hypochaeris glabra</i>	Introduced	335184	6750800	WE094		3/10/12	4
* <i>Hypochaeris glabra</i>	Introduced	335121	6750643	WE091		3/10/12	4
* <i>Hypochaeris glabra</i>	Introduced	341260	6748366	WE117		5/10/12	5
* <i>Hypochaeris glabra</i>	Introduced	340783	6747271	WE122		4/10/12	6
* <i>Hypochaeris glabra</i>	Introduced	340992	6747350	WE127		4/10/12	4
* <i>Hypochaeris glabra</i>	Introduced	340671	6747304	WE120		4/10/12	4

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
* <i>Hypochaeris glabra</i>	Introduced	335074	6750504	WE092		3/10/12	4
* <i>Hypochaeris glabra</i>	Introduced	335144	6750477	WE093		3/10/12	4
* <i>Hypochaeris glabra</i>	Introduced	334119	6748240	WE031		26/10/11	10
* <i>Hypochaeris glabra</i>	Introduced	337808	6739503	WE001		26/09/11	1a
* <i>Hypochaeris glabra</i>	Introduced	331909	6741361	WE023		25/10/11	10
* <i>Hypochaeris glabra</i>	Introduced	331705	6741485	WE024		25/10/11	14
* <i>Hypochaeris glabra</i>	Introduced	333677	6746827	WE034		26/10/11	13b
* <i>Hypochaeris glabra</i>	Introduced	338203	6744279	WE020		30/09/11	1b
* <i>Isolepis marginata</i>	Introduced	337808	6739503	WE001		26/09/11	1a
* <i>Lysimachia arvensis</i>	Introduced	335074	6750504	WE092		3/10/12	4
* <i>Lysimachia arvensis</i>	Introduced	335121	6750643	WE091		3/10/12	4
* <i>Lysimachia arvensis</i>	Introduced	340783	6747271	WE122		4/10/12	6
* <i>Lysimachia arvensis</i>	Introduced	338203	6744279	WE020		30/09/11	1b
* <i>Monoculus monstrosus</i>	Introduced	334653	6750841	SITE01		2/10/12	4D
* <i>Parentucellia latifolia</i>	Introduced	340699	6747127	WE121		4/10/12	4
* <i>Parentucellia latifolia</i>	Introduced	334653	6750841	SITE01		2/10/12	4D
* <i>Parentucellia latifolia</i>	Introduced	337808	6739503	WE001		26/09/11	1a
* <i>Pentameris airoides subsp. airoides</i>	Introduced	340699	6747127	WE121		4/10/12	4
* <i>Pentameris airoides subsp. airoides</i>	Introduced	340671	6747304	WE120		4/10/12	4
* <i>Pentameris airoides subsp. airoides</i>	Introduced	335184	6750800	WE094		3/10/12	4
* <i>Pentameris airoides subsp. airoides</i>	Introduced	338243	6739383	WE112			1a
* <i>Pentameris airoides subsp. airoides</i>	Introduced	340783	6747271	WE122		4/10/12	6
* <i>Pentameris airoides subsp. airoides</i>	Introduced	335121	6750643	WE091		3/10/12	4
* <i>Pentameris airoides subsp. airoides</i>	Introduced	337808	6739503	WE001		26/09/11	1a

Taxon	Conservation Code	Easting	Northing	Location	Plant Count	Observation Date	Vegetation Type (VT)
<i>*Pentameris airoides subsp. airoides</i>	Introduced	338203	6744279	WE020		30/09/11	1b
<i>*Pentameris airoides subsp. airoides</i>	Introduced	333677	6746827	WE034		26/10/11	13b
<i>*Pentameris airoides subsp. airoides</i>	Introduced	338107	6742291	WE059		21/11/11	8
<i>*Petrorhagia dubia</i>	Introduced	334653	6750841	SITE01		2/10/12	4D
<i>*Trifolium campestre var. campestre</i>	Introduced	340783	6747271	WE122		4/10/12	6
<i>*Ursinia anthemoides</i>	Introduced	335074	6750504	WE092		3/10/12	4
<i>*Ursinia anthemoides</i>	Introduced	335184	6750800	WE094		3/10/12	4
<i>*Ursinia anthemoides</i>	Introduced	338243	6739383	WE112			1a
<i>*Ursinia anthemoides</i>	Introduced	335144	6750477	WE093		3/10/12	4
<i>*Ursinia anthemoides</i>	Introduced	340154	6748470	WE119		3/10/12	7a
<i>*Ursinia anthemoides</i>	Introduced	335121	6750643	WE091		3/10/12	4
<i>*Ursinia anthemoides</i>	Introduced	341260	6748366	WE117		5/10/12	5
<i>*Ursinia anthemoides</i>	Introduced	340671	6747304	WE120		4/10/12	4
<i>*Ursinia anthemoides</i>	Introduced	334382	6740263	WE007		27/09/11	14
<i>*Ursinia anthemoides</i>	Introduced	337808	6739503	WE001		26/09/11	1a
<i>*Vulpia myuros</i>	Introduced	340783	6747271	WE122		4/10/12	6
<i>*Vulpia myuros</i>	Introduced	335121	6750643	WE091		3/10/12	4
<i>*Vulpia myuros</i>	Introduced	335074	6750504	WE092		3/10/12	4
<i>*Vulpia myuros</i>	Introduced	334653	6750841	SITE01		2/10/12	4D
<i>*Vulpia myuros</i>	Introduced	335184	6750800	WE094		3/10/12	4
<i>*Vulpia myuros</i>	Introduced	340671	6747304	WE120		4/10/12	4
<i>*Vulpia myuros</i>	Introduced	335144	6750477	WE093		3/10/12	4
<i>*Vulpia myuros</i>	Introduced	341469	6748497	SITE10		5/10/12	11
<i>*Vulpia myuros</i>	Introduced	331705	6741485	WE024		25/10/11	14
<i>*Wahlenbergia capensis</i>	Introduced	337808	6739503	WE001		26/09/11	1a
<i>*Wahlenbergia capensis</i>	Introduced	334498	6740034	WE006		27/09/11	13a

Appendix J: List of Vascular Plant Taxa Omitted or Grouped Together Within the Data Matrix for Analysis

Taxon	Amalgamation/Deletion
<i>Acacia ?fagonioides</i>	Amalgamated
<i>Acacia fagonioides</i>	
<i>Acacia lasiocarpa</i> var. <i>?bracteolata</i>	Amalgamated
<i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i>	
<i>Amphipogon caricinus</i> var. <i>caricinus</i>	Amalgamated
<i>Amphipogon caricinus</i>	
<i>Banksia fraseri</i> var. <i>?fraseri</i>	Amalgamated
<i>Banksia fraseri</i> var. <i>fraseri</i>	
<i>Drosera macrantha</i> subsp. <i>macrantha</i>	Amalgamated
<i>Drosera macrantha</i>	
<i>Drosera ?menziesii</i>	Amalgamated
<i>Drosera menziesii</i> subsp. <i>menziesii</i>	
<i>Eucalyptus macrocarpa</i> x <i>pyriformis</i>	Amalgamated
<i>Eucalyptus ?macrocarpa</i> x <i>pyriformis</i>	
<i>Goodenia hassallii</i>	Amalgamated
<i>Goodenia</i> aff. <i>hassallii</i>	
<i>Hakea orthorrhyncha</i> var. <i>filiformis</i>	Amalgamated
<i>Hakea orthorrhyncha</i>	
<i>Levenhookia ?stipitata</i>	Amalgamated
<i>Levenhookia stipitata</i>	
<i>Lomandra micrantha</i> subsp. <i>?micrantha</i>	Amalgamated
<i>Lomandra micrantha</i> subsp. <i>micrantha</i>	
<i>Melaleuca leuropoma</i>	Amalgamated
<i>Melaleuca</i> aff. <i>leuropoma</i>	
<i>?Mesomelaena preissi</i>	Amalgamated
<i>Mesomelaena preissii</i>	
<i>Thryptomene ?racemulosa</i>	Amalgamated
<i>Thryptomene racemulosa</i>	
<i>?Amphipogon</i> sp.	Deleted – insufficient material for identification
<i>Cassytha</i> sp.	Deleted – insufficient material for identification
<i>?Schoenus</i> sp.	Deleted – insufficient material for identification
<i>?Thysanotus</i> sp.	Deleted – insufficient material for identification

Appendix K: Vascular Plant Taxa Recorded within Each Vegetation Type within the West Erregulla Study Area

	1a	1b	2	3	4	5	6	7a	7b	8	9	10	11	12	13a	13b	14
<i>Acacia aciphylla</i>						X											
<i>Acacia acuaria</i>									X	X		X	X				
<i>Acacia acuminata</i>					X												
<i>Acacia auronitens</i>								X				X					
<i>Acacia barbinervis</i> subsp. <i>borealis</i>									X						X	X	
<i>Acacia blakelyi</i>					X							X	X		X	X	
<i>Acacia comans</i>								X	X	X		X					
<i>Acacia dilatata</i>								X	X	X						X	X
<i>Acacia ericksoniae</i>				X													
<i>Acacia fagonioides</i>									X							X	
<i>Acacia ?fagonioides</i>										X					X		
<i>Acacia ?idiomorpha</i>											X						
<i>Acacia isoneura</i> subsp. <i>isoneura</i>						X											
<i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i>	X				X				X						X	X	X
<i>Acacia lasiocarpa</i> var. <i>?bracteolata</i>		X						X		X						X	
<i>Acacia neurophylla</i> subsp. <i>neurophylla</i>					X	X											
<i>Acacia pulchella</i>															X		
<i>Acacia saligna</i>					X												X
<i>Acacia sessilis</i>										X							
<i>Acacia stenoptera</i>									X						X	X	
<i>Acanthocarpus canaliculatus</i>		X															
<i>Acanthocarpus</i> sp. <i>Ajana</i> (C.A. Gardner 8596)					X				X	X		X	X	X			
<i>Actinotus leucocephalus</i>									X	X		X	X	X	X	X	X
<i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i>															X	X	
<i>Alexgeorgea nitens</i>															X		
<i>Allocasuarina campestris</i>				X	X	X	X	X	X	X	X	X	X	X		X	X
<i>Allocasuarina grevilleoides</i>										X							
<i>Allocasuarina humilis</i>								X	X	X		X		X	X	X	X
<i>Allocasuarina microstachya</i>								X	X	X		X	X	X			X
<i>Amphipogon caricinus</i>					X			X	X	X	X	X	X				X

	1a	1b	2	3	4	5	6	7a	7b	8	9	10	11	12	13a	13b	14
? <i>Amphipogon</i> sp.									X	X		X	X				
<i>Amphipogon turbinatus</i>									X	X		X	X		X	X	
<i>Anarthria polyphylla</i>																	X
<i>Andersonia lehmanniana</i>								X	X						X		
<i>Anigozanthos humilis</i> subsp. <i>humilis</i>									X			X		X	X	X	X
<i>Anigozanthos pulcherrimus</i>															X		
<i>Anthocercis genistoides</i>	X									X							
* <i>Arctotheca calendula</i>	X	X			X							X					X
<i>Arthropodium dyeri</i>					X												
<i>Astroloma glaucescens</i>								X	X	X		X					X
<i>Astroloma microdonta</i>								X	X			X					
<i>Astroloma pedicellatum</i> ms		X		X	X			X		X	X	X	X			X	
<i>Astroloma serratifolium</i>												X					
<i>Astroloma xerophyllum</i>									X						X		
<i>Austrostipa compressa</i>									X				X			X	X
<i>Austrostipa elegantissima</i>		X			X			X									
<i>Austrostipa hemipogon</i>															X	X	
<i>Austrostipa macalpinei</i>	X				X			X	X	X		X	X	X	X	X	X
<i>Austrostipa</i> sp. Marchagee (B.R. Maslin 1407)	X	X															
<i>Austrostipa variabilis</i>					X												
* <i>Avena barbata</i>					X												
<i>Babingtonia camphorosmae</i>								X	X		X	X		X	X	X	X
<i>Baeckea crispiflora</i> var. <i>tenuior</i>				X				X		X							
<i>Baeckea grandiflora</i>								X	X	X		X	X	X	X	X	
<i>Banksia attenuata</i>												X		X		X	
<i>Banksia bipinnatifida</i> subsp. <i>multifida</i>									X							X	
<i>Banksia carlinoides</i>								X	X	X		X		X	X	X	X
<i>Banksia dallanneyi</i> subsp. <i>media</i>									X			X		X	X	X	X
<i>Banksia fraseri</i> var. <i>fraseri</i>					X			X	X	X	X	X	X				
<i>Banksia leptophylla</i> var. <i>melletica</i>															X	X	
<i>Banksia prionotes</i>																X	
<i>Banksia scabrella</i>								X	X			X		X	X	X	

	1a	1b	2	3	4	5	6	7a	7b	8	9	10	11	12	13a	13b	14
<i>Banksia sessilis</i> var. <i>flabellifolia</i>										X				X	X	X	
<i>Banksia shuttleworthiana</i>								X	X	X		X	X	X	X	X	X
<i>Beaufortia elegans</i>									X	X		X		X	X	X	
<i>Blennospora drummondii</i>					X												
<i>Boronia coerulescens</i> subsp. <i>spinescens</i>									X	X		X	X				
<i>Boronia cymosa</i>								X	X	X	X	X	X				X
<i>Boronia ramosa</i> subsp. <i>anethifolia</i>								X	X					X	X		
<i>Borya sphaerocephala</i>				X	X			X	X	X	X		X				X
<i>Bossiaea eriocarpa</i>															X		X
<i>Brachyscome iberidifolia</i>			X														
<i>Brachyscome perpusilla</i>		X															
* <i>Brassica tournefortii</i>					X												
* <i>Briza maxima</i>					X												
* <i>Bromus diandrus</i>					X												
<i>Burchardia congesta</i>					X			X	X	X		X	X	X	X		X
<i>Caladenia flava</i>					X			X	X		X						X
<i>Calandrinia calyptrata</i>	X	X															
<i>Calandrinia corrigioloides</i>	X																
<i>Calandrinia</i> sp. Blackberry (D.M. Porter 171)		X	X		X												
<i>Calectasia hispida</i>									X						X		
<i>Calectasia narragara</i>										X					X		
<i>Calothamnus longissimus</i>								X	X	X	X		X				
<i>Calothamnus quadrifidus</i> subsp. <i>angustifolius</i>	X				X			X	X	X	X	X	X	X	X	X	X
<i>Calothamnus sanguineus</i>								X	X	X		X		X	X	X	X
<i>Calotis hispidula</i>		X															
<i>Calytrix depressa</i>								X	X		X						X
<i>Calytrix flavescens</i>								X	X		X	X					
<i>Calytrix fraseri</i>								X							X	X	
<i>Calytrix gracilis</i>										X	X						
<i>Calytrix leschenaultii</i>								X									
<i>Calytrix oldfieldii</i>								X									
<i>Calytrix sapphirina</i>												X		X	X	X	X

	1a	1b	2	3	4	5	6	7a	7b	8	9	10	11	12	13a	13b	14
<i>Calytrix strigosa</i>					X							X	X			X	
<i>Cassysa flava</i>					X			X	X	X		X		X	X	X	
<i>Cassysa glabella</i> forma <i>bicallosa</i>								X	X	X	X	X	X	X	X	X	
<i>Cassysa</i> ? <i>pomiformis</i>								X	X	X	X	X	X		X	X	X
<i>Cassysa</i> ? <i>racemosa</i>				X				X									
<i>Cassysa</i> sp.														X			
<i>Caustis dioica</i>								X	X	X		X		X	X	X	X
<i>Centrolepis aristata</i>											X						
<i>Centrolepis pilosa</i>														X		X	
<i>Centrolepis polygyna</i>																	X
<i>Chamaescilla corymbosa</i>										X							
<i>Chamaescilla versicolor</i>				X	X			X		X							X
<i>Cheilanthes adiantoides</i>					X					X							
<i>Chordifex sinuosus</i>								X	X			X			X	X	X
<i>Chorizema aciculare</i> subsp. <i>laxum</i>								X	X	X		X					X
<i>Chorizema racemosum</i>				X													
<i>Clematicissus angustissima</i>							X										
<i>Comesperma acerosum</i>									X						X		
<i>Comesperma calymega</i>									X							X	
<i>Comesperma volubile</i>				X						X	X						
<i>Conospermum boreale</i> subsp. ? <i>ascendens</i>									X	X		X	X	X	X	X	
<i>Conostephium preissii</i>												X			X		
<i>Conostylis aculeata</i> subsp. <i>breviflora</i>	X							X						X	X	X	X
<i>Conostylis androstemma</i>								X	X	X	X	X	X				
<i>Conostylis candicans</i>																X	X
<i>Conostylis canteriata</i>								X	X			X		X	X	X	X
<i>Conostylis crassinervia</i> subsp. <i>absens</i>															X		
<i>Conostylis dielsii</i> subsp. <i>dielsii</i>								X	X	X	X	X	X				X
<i>Conostylis hiemalis</i>									X						X		
<i>Conostylis prolifera</i>					X												
<i>Conostylis resinosa</i>														X			
<i>Crassula colorata</i> var. <i>acuminata</i>	X	X	X		X									X		X	X

	1a	1b	2	3	4	5	6	7a	7b	8	9	10	11	12	13a	13b	14
<i>Cristonia biloba</i>								X	X	X		X			X	X	
<i>Cryptandra intermedia</i> (atypical variant)				X													
<i>Cryptandra myriantha</i>					X			X	X	X	X	X	X		X		X
<i>Cryptandra nutans</i>										X							
<i>Cryptandra pungens</i>								X	X	X	X	X	X				
<i>Cryptandra spyridioides</i>									X			X					
* <i>Cuscuta epithymum</i>					X												
<i>Dampiera alata</i>				X							X						
<i>Dampiera altissima</i>					X												
<i>Dampiera juncea</i>																	X
<i>Dampiera lavandulacea</i>								X		X							
<i>Dampiera lindleyi</i>				X				X	X	X	X					X	X
<i>Dampiera oligophylla</i>					X				X	X		X	X	X		X	
<i>Dampiera spicigera</i>					X			X	X	X		X	X			X	
<i>Dampiera teres</i>					X					X	X						X
<i>Dampiera teres</i> (broad-leaf variant)								X	X	X		X					X
<i>Darwinia speciosa</i>								X	X			X		X		X	X
<i>Daucus glochidiatus</i>		X															
<i>Daviesia angulata</i>																	X
<i>Daviesia daphnoides</i>								X	X	X		X					
<i>Daviesia divaricata</i> subsp. <i>divaricata</i> ms												X	X	X		X	
<i>Daviesia hakeoides</i> subsp. <i>subnuda</i>								X	X	X	X	X	X				
<i>Daviesia incrassata</i> subsp. <i>teres</i>									X	X					X		
<i>Daviesia nudiflora</i>									X			X	X	X	X	X	
<i>Daviesia oxyclada</i>								X	X	X						X	X
<i>Daviesia pedunculata</i>								X	X	X		X		X	X		
<i>Daviesia triflora</i>										X							
<i>Daviesia ?umbonata</i>									X	X			X				
<i>Desmocladius asper</i>	X	X			X										X	X	X
<i>Desmocladius lateriticus</i>								X	X							X	
<i>Desmocladius parthenicus</i>									X				X	X	X		
<i>Desmocladius semiplanus</i>									X						X	X	X

	1a	1b	2	3	4	5	6	7a	7b	8	9	10	11	12	13a	13b	14
<i>Dianella revoluta</i>	X	X							X	X							
<i>Dichopogon preissii</i>				X													
<i>Diplolaena eneabbensis</i>								X	X	X					X		X
<i>Diplopeltis huegelii</i> subsp. <i>lehmannii</i>		X													X	X	
<i>Diuris laxiflora</i>																	X
<i>Diuris setacea</i>										X	X						
<i>Dodonaea divaricata</i>		X															
<i>Dodonaea ericoides</i>								X		X	X						
<i>Drosera eneabba</i>								X						X			
<i>Drosera erythrorhiza</i>								X	X					X			X
<i>Drosera ?leucoblata</i>												X					
<i>Drosera macrantha</i> subsp. <i>macrantha</i>				X						X		X		X	X		X
<i>Drosera menziesii</i> subsp. <i>menziesii</i>								X				X					X
<i>Drosera ?menziesii</i>												X				X	
<i>Drosera ?porrecta</i>					X				X			X		X	X		X
<i>Drosera pilos</i>								X		X							
<i>Ecdeiocolea monostachya</i>					X	X		X	X	X	X	X	X	X			X
* <i>Echium plantagineum</i>					X												
* <i>Ehrharta brevifolia</i>	X																
* <i>Ehrharta calycina</i>	X																
* <i>Ehrharta longiflora</i>					X	X		X									
<i>Elythranthera brunonis</i>								X		X	X						X
<i>Enchylaena tomentosa</i>		X															
<i>Eremaea beaufortoides</i> var. <i>microphylla</i>								X	X			X		X	X	X	X
<i>Eremaea ectadioclada</i>									X					X	X	X	
<i>Eremaea violacea</i> subsp. <i>violacea</i>												X	X			X	
* <i>Erodium cicutarium</i>					X		X										
<i>Eucalyptus accedens</i>	X	X	X	X													
<i>Eucalyptus arachnaea</i> subsp. <i>arachnaea</i>				X													
<i>Eucalyptus conveniens</i>								X	X	X			X				
<i>Eucalyptus loxophleba</i> subsp. <i>loxophleba</i>			X				X										
<i>Eucalyptus macrocarpa</i> x <i>pyriformis</i>									X								

	1a	1b	2	3	4	5	6	7a	7b	8	9	10	11	12	13a	13b	14
<i>Eucalyptus pyriformis</i>													X				
<i>Eucalyptus</i> sp. (unidentified 2)													X				
<i>Eucalyptus todtiana</i>														X	X	X	
<i>Gastrolobium bennettsianum</i>				X													
<i>Gastrolobium callistachys</i>		X			X												
<i>Gastrolobium plicatum</i>		X						X	X	X	X	X					
<i>Gastrolobium spinosum</i>	X								X	X			X				
<i>Geleznovia verrucosa</i>								X	X	X		X	X	X			
<i>Glischrocaryon aureum</i>		X		X	X			X	X	X	X						
<i>Gnephosis angianthoides</i>					X												
<i>Gnephosis drummondii</i>					X			X									X
<i>Gnephosis tenuissima</i>													X				X
<i>Gompholobium knightianum</i>									X								
<i>Gompholobium marginatum</i>										X							
<i>Gompholobium muticum</i>										X			X				
<i>Gompholobium pungens</i>	X																
<i>Gompholobium tomentosum</i>															X	X	X
<i>Gonocarpus nodulosus</i>					X												
<i>Gonocarpus pithyoides</i>															X		
<i>Goodenia berardiana</i>		X															
<i>Goodenia coerulea</i>								X	X	X		X	X		X	X	X
<i>Goodenia hassallii</i>								X	X	X							
<i>Goodenia</i> aff. <i>hassallii</i>										X							
<i>Goodenia micrantha</i>											X						
<i>Goodenia trichophylla</i>								X	X		X						X
<i>Grevillea biformis</i> subsp. <i>biformis</i>										X		X	X	X			
<i>Grevillea biternata</i>					X					X	X						
<i>Grevillea eriostachya</i>												X	X				
<i>Grevillea shuttleworthiana</i> subsp. <i>canarina</i>												X		X			
<i>Grevillea umbellulata</i>				X				X		X							X
<i>Guichenotia angustifolia</i>				X							X						
<i>Guichenotia micrantha</i>										X							

	1a	1b	2	3	4	5	6	7a	7b	8	9	10	11	12	13a	13b	14
<i>Guichenotia sarotes</i>								X		X	X						
<i>Haemodorum brevisepalum</i>																	X
<i>Haemodorum discolor</i>										X			X				
<i>Haemodorum spicatum</i>												X			X		
<i>Hakea auriculata</i>								X	X	X	X	X					
<i>Hakea brownii</i>									X								
<i>Hakea circumalata</i>								X	X	X	X	X	X	X			X
<i>Hakea costata</i>									X					X	X	X	X
<i>Hakea cygna</i> subsp. <i>cygna</i>												X	X	X		X	
<i>Hakea incrassata</i>								X	X	X	X	X	X	X			X
<i>Hakea lissocarpa</i>	X		X		X			X	X	X	X	X				X	X
<i>Hakea meisneriana</i>										X							
<i>Hakea orthorrhyncha</i> var. <i>filiformis</i>					X												
<i>Hakea polyanthema</i>									X			X	X	X	X	X	X
<i>Hakea prostrata</i>											X				X		
<i>Hakea psilorrhyncha</i>															X		
<i>Hakea smilacifolia</i>													X				
<i>Hakea spathulata</i>					X			X	X	X	X	X					X
<i>Hakea stenocarpa</i>								X	X	X		X					X
<i>Hakea trifurcata</i>					X			X	X	X				X	X	X	X
<i>Halgania</i> sp. Wongan Hills (K.F. Kenneally 2393)									X	X							
<i>Harperia lateriflora</i>									X							X	X
<i>Hemiandra rubriflora</i>									X								
<i>Hemigenia drummondii</i>					X												
<i>Hemiphora bartlingii</i>																X	
<i>Hibbertia acerosa</i>								X							X	X	X
<i>Hibbertia crassifolia</i>								X	X	X	X	X		X	X	X	X
<i>Hibbertia huegelii</i>															X		
<i>Hibbertia hypericoides</i>				X	X			X	X	X	X	X	X	X	X	X	X
<i>Hibbertia spicata</i> subsp. <i>spicata</i>		X						X	X	X	X	X			X		
<i>Hibbertia subvaginata</i>															X	X	
<i>Homalosciadium homalocarpum</i>					X												

	1a	1b	2	3	4	5	6	7a	7b	8	9	10	11	12	13a	13b	14
<i>Hovea pungens</i>	X														X		
<i>Hyalosperma cotula</i>													X	X		X	X
<i>Hybanthus floribundus</i> subsp. <i>floribundus</i>									X								
<i>Hydrocotyle hispidula</i>																	X
<i>Hypocalymma hirsutum</i>								X	X	X	X	X		X	X	X	X
<i>Hypocalymma xanthopetalum</i>								X				X			X		X
* <i>Hypochaeris glabra</i>	X	X			X	X	X					X				X	X
* <i>Isolepis marginata</i>	X																
<i>Isopogon divergens</i>								X	X	X		X					
<i>Isopogon tridens</i>												X					
<i>Isotoma hypocrateriformis</i>		X						X	X	X	X	X	X			X	X
<i>Isotropis cuneifolia</i>															X	X	X
<i>Isotropis drummondii</i>									X	X							
<i>Jacksonia angulata</i>								X			X						X
<i>Jacksonia foliosa</i>								X	X	X							
<i>Jacksonia hakeoides</i>	X				X				X			X			X	X	X
<i>Jacksonia macrocalyx</i>									X	X		X	X				
<i>Jacksonia nutans</i>									X			X		X		X	
<i>Jacksonia restioides</i>								X	X	X		X					
<i>Jacksonia sternbergiana</i>					X										X		
<i>Johnsonia pubescens</i> subsp. <i>pubescens</i>									X						X		
<i>Lagenophora huegelii</i>		X															
<i>Lambertia multiflora</i> var. <i>multiflora</i>									X	X					X		X
<i>Lasiopetalum drummondii</i>									X			X		X	X		X
<i>Lasiopetalum ogilvieanum</i>															X		
<i>Lasiopetalum</i> sp. Watheroo (K. Shepherd & C. Wilkins KS 220)									X								
<i>Laxmannia omnifertilis</i>								X	X								
<i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i>					X				X			X			X	X	X
<i>Lechenaultia biloba</i>									X								
<i>Lechenaultia hirsuta</i>															X		
<i>Lechenaultia linarioides</i>					X												
<i>Lepidobolus chaetocephalus</i>									X								

	1a	1b	2	3	4	5	6	7a	7b	8	9	10	11	12	13a	13b	14
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>					X			X	X	X	X	X	X	X		X	X
<i>Lepidosperma brunonianum</i> sens. lat.								X	X	X		X	X				
<i>Lepidosperma</i> aff. <i>costale</i>									X								X
<i>Lepidosperma pubisquameum</i>								X	X	X		X					X
<i>Lepidosperma</i> aff. <i>scabrum</i>								X	X		X	X	X				X
<i>Lepidosperma</i> sp. A2 Inland Flat (G.J. Keighery 7000)				X				X		X	X						
<i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A)								X	X	X	X						
<i>Lepidosperma tenue</i>		X			X	X		X	X	X	X			X		X	X
<i>Leporella fimbriata</i>																	X
<i>Leptomeria empetriformis</i>								X	X			X					
<i>Leptosema aphyllum</i>																	X
<i>Leptospermum oligandrum</i>					X				X			X		X	X		
<i>Leptospermum spinescens</i>									X			X	X	X	X		
<i>Leucopogon glaucifolius</i>																	X
<i>Leucopogon hamulosus</i>													X				
<i>Leucopogon hispidus</i>									X			X		X	X	X	
<i>Leucopogon leptanthus</i>								X			X	X					
<i>Leucopogon planifolius</i>												X	X				
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)								X	X			X		X	X		X
<i>Leucopogon</i> sp. Burma Road (M. Hislop 2032)											X						
<i>Leucopogon</i> sp. Northern ciliate (R. Davis 3393)												X			X	X	X
<i>Leucopogon</i> sp. Yandanooka (M. Hislop 2507)								X		X	X						
<i>Levenhookia octomaculata</i>															X	X	X
<i>Levenhookia pusilla</i>								X	X	X		X					X
<i>Levenhookia stipitata</i>								X				X	X	X	X	X	X
<i>Lissanthe powelliae</i>											X						
<i>Lobelia rarifolia</i>									X		X						
<i>Lobelia rhytidisperma</i>									X			X	X			X	X
<i>Logania spermacoea</i>												X	X				
<i>Lomandra hastilis</i>															X	X	
<i>Lomandra micrantha</i> subsp. <i>micrantha</i>					X			X									X
<i>Lyginia imberbis</i>															X	X	

	1a	1b	2	3	4	5	6	7a	7b	8	9	10	11	12	13a	13b	14
<i>*Lysimachia arvensis</i>		X			X		X										
<i>Lysinema pentapetalum</i>									X			X		X	X		X
<i>Macrozamia fraseri</i>	X														X		
<i>Marianthus bicolor</i>										X	X						
<i>Marianthus ringens</i>				X													
<i>Melaleuca acutifolia</i>			X	X													
<i>Melaleuca aspalathoides</i>					X			X	X	X	X	X	X	X			X
<i>Melaleuca concreta</i>				X	X			X		X	X						X
<i>Melaleuca aff.leuropoma</i>								X	X		X			X	X	X	X
<i>Melaleuca leuropoma</i>					X				X			X	X	X	X	X	X
<i>Melaleuca marginata</i>				X			X			X	X						
<i>Melaleuca radula</i>				X	X	X		X	X	X	X		X				X
<i>Melaleuca tinkeri</i>								X		X	X						
<i>Melaleuca trichophylla</i>								X	X					X			X
<i>Melaleuca viminea</i> subsp. <i>viminea</i>						X											
<i>Mesomelaena preissii</i>								X		X		X	X				
<i>Mesomelaena pseudostygia</i>					X			X	X	X	X	X	X	X	X	X	X
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>										X		X	X	X			
<i>Mesomelaena tetragona</i>								X	X			X				X	X
<i>Micromyrtus rogeri</i>								X		X	X						
<i>Millotia myosotidifolia</i>	X																
<i>Mirbelia floribunda</i>								X			X						
<i>Mirbelia trichocalyx</i>										X		X				X	
<i>Monotaxis bracteata</i>									X			X					X
<i>Muehlenbeckia adpressa</i>			X														
<i>Neurachne alopecuroidea</i>		X		X	X	X		X	X	X	X	X	X	X	X	X	X
<i>Nuytsia floribunda</i>															X		
<i>Olearia ?dampieri</i>		X		X	X												
<i>Olearia rudis</i>	X	X															
<i>Opercularia vaginata</i>	X				X			X	X	X	X	X	X	X	X	X	X
<i>Orthrosanthus laxus</i> var. <i>laxus</i>		X															
<i>Paracaleana dixonii</i>								X				X					

	1a	1b	2	3	4	5	6	7a	7b	8	9	10	11	12	13a	13b	14
<i>*Parentucellia latifolia</i>	X				X												
<i>Patersonia graminea</i>					X			X	X	X	X	X	X				
<i>Patersonia occidentalis</i>															X	X	
<i>*Pentameris airoides</i> subsp. <i>airoides</i>	X	X			X		X			X						X	
<i>Persoonia filiformis</i>								X	X			X					
<i>Petrophile brevifolia</i>								X	X	X		X	X	X		X	X
<i>Petrophile chrysantha</i>				X				X	X	X	X						
<i>Petrophile drummondii</i>					X										X		
<i>Petrophile macrostachya</i>									X			X		X		X	
<i>Petrophile megalostegia</i>								X		X		X		X		X	X
<i>Petrophile scabriuscula</i>									X			X		X	X	X	
<i>Petrophile seminuda</i>											X						X
<i>Petrophile shuttleworthiana</i>								X	X	X							X
<i>Pileanthus filifolius</i>									X			X	X	X	X	X	
<i>Pimelea angustifolia</i>												X		X		X	
<i>Pimelea imbricata</i> var. <i>piliger</i>											X						
<i>Pimelea leucantha</i>															X		
<i>Pimelea sulphurea</i>								X	X	X		X					
<i>Plantago debilis</i>		X															
<i>Platysace juncea</i> sens. <i>lat.</i>								X				X	X				
<i>Platysace xerophila</i>															X		
<i>Podolepis capillaris</i>								X									
<i>Podolepis lessonii</i>		X			X												
<i>Podotheca gnaphalioides</i>	X				X			X		X		X			X	X	X
<i>Polianthion wichurae</i>								X	X	X					X		
<i>Poranthera microphylla</i>								X									
<i>Pterochaeta paniculata</i>								X	X	X	X	X	X	X		X	X
<i>Pterostylis vittata</i>										X							
<i>Ptilotus declinatus</i>													X				
<i>Ptilotus manglesii</i>		X			X				X							X	X
<i>Ptilotus stirlingii</i>													X				
<i>Quoya verbascina</i>															X		

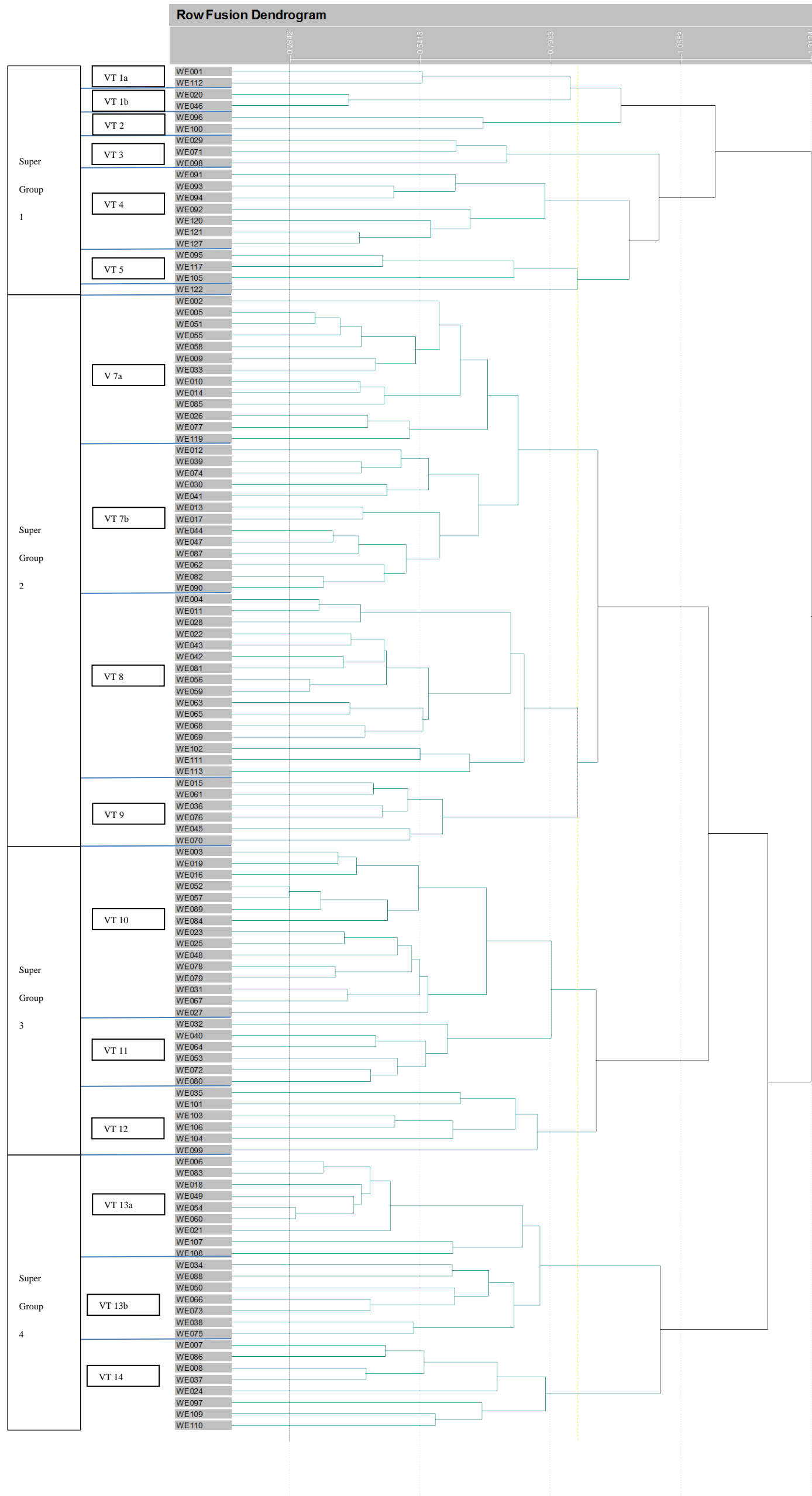
	1a	1b	2	3	4	5	6	7a	7b	8	9	10	11	12	13a	13b	14
<i>Rhagodia preissii</i> subsp. <i>preissii</i>	X	X	X														
<i>Rhodanthe laevis</i>		X															
<i>Rhodanthe manglesii</i>		X			X												
<i>Rhodanthe polycephala</i>							X										
<i>Rytidosperma acerosum</i>					X												
<i>Rytidosperma setaceum</i>		X															
<i>Santalum acuminatum</i>		X			X					X							
<i>Scaevola canescens</i>					X			X	X	X		X	X	X		X	X
<i>Scaevola glandulifera</i>										X							
<i>Scaevola phlebopetala</i>															X		
<i>Scaevola virgata</i>				X						X							
<i>Schoenus andrewsii</i>																	X
<i>Schoenus armeria</i>								X	X	X	X				X		X
<i>Schoenus badius</i>								X				X				X	X
<i>Schoenus brevisetis</i>								X	X	X		X			X	X	X
<i>Schoenus clandestinus</i>								X	X	X	X	X	X	X		X	X
<i>Schoenus curvifolius</i>								X							X	X	
<i>Schoenus insolitus</i>									X						X	X	
<i>Schoenus minutulus</i>											X						
<i>Schoenus nanus</i>								X									
<i>Schoenus pleiostemoneus</i>																	X
? <i>Schoenus</i> sp.								X	X			X					
<i>Schoenus</i> sp. A3 Ciliate Sheaths (K.R. Newbey 9402)									X						X		
<i>Schoenus unispiculatus</i>								X	X		X					X	
<i>Scholtzia laxiflora</i>					X	X		X	X			X	X		X	X	X
<i>Senecio pinnatifolius</i> var. <i>latilobus</i>	X																
<i>Siloxerus filifolius</i>																X	X
<i>Sowerbaea laxiflora</i>					X												X
<i>Sphaerolobium pulchellum</i>										X							
<i>Stachystemon axillaris</i>															X	X	
<i>Stackhousia dielsii</i>												X	X				
<i>Stenanthemum humile</i>									X						X		

	1a	1b	2	3	4	5	6	7a	7b	8	9	10	11	12	13a	13b	14
<i>Stenanthemum intricatum</i>								X	X			X				X	
<i>Stenanthemum notiale</i> subsp. <i>notiale</i>												X	X	X	X	X	X
<i>Stenanthemum</i> aff. <i>notiale</i> subsp. <i>notiale</i>									X	X		X	X		X		
<i>Stenanthemum</i> ? <i>tridentatum</i>		X															
<i>Stirlingia latifolia</i>															X		
<i>Stirlingia simplex</i>																	X
<i>Stylidium adpressum</i>									X			X					
<i>Stylidium androsaceum</i>					X			X								X	X
<i>Stylidium caricifolium</i>										X	X						
<i>Stylidium crossocephalum</i>									X			X			X	X	
<i>Stylidium dichotomum</i>								X	X				X			X	X
<i>Stylidium diuroides</i> subsp. <i>paucifoliatum</i>								X	X			X					
<i>Stylidium drummondianum</i>								X	X	X	X						
<i>Stylidium emarginatum</i>								X									
<i>Stylidium flagellum</i>														X			X
<i>Stylidium maitlandianum</i>												X			X		
<i>Stylidium petiolare</i>				X				X									X
<i>Stylidium purpureum</i> ms									X						X	X	X
<i>Stylidium repens</i>									X			X			X	X	
<i>Stylidium rigidulum</i>									X			X			X		X
<i>Stylidium</i> sp. Kalbarri (A. Carr 145)								X	X			X	X	X	X		
<i>Stylidium stenosepalum</i>								X	X								
<i>Stylidium torticarpum</i>		X		X	X					X	X						
<i>Synaphea aephynsa</i>								X	X	X							
<i>Synaphea oulopha</i>										X	X						
<i>Synaphea spinulosa</i> subsp. <i>spinulosa</i>								X				X					
<i>Tetratheca confertifolia</i>										X							
<i>Tetratheca paucifolia</i>											X						
<i>Thryptomene racemulosa</i>		X			X	X		X	X		X		X			X	X
<i>Thryptomene</i> sp. Mingenew (Diels & Pritzel 332)					X												
<i>Thysanotus asper</i>												X					
<i>Thysanotus dichotomus</i>								X	X	X		X	X				

	1a	1b	2	3	4	5	6	7a	7b	8	9	10	11	12	13a	13b	14
<i>Thysanotus manglesianus</i>	X			X	X	X		X		X				X	X		X
<i>Thysanotus patersonii</i>	X							X				X	X				X
<i>Thysanotus pyramidalis</i>							X										
<i>Thysanotus</i> sp.																	X
<i>Thysanotus</i> sp.									X	X	X						
<i>Thysanotus sparteus</i>									X	X		X	X				
<i>Thysanotus ?tenellus</i>												X					
<i>Thysanotus thyrsoideus</i>									X			X			X	X	
<i>Trachymene cyanopetala</i>		X						X									
<i>Trachymene ornata</i>					X			X									
<i>Trachymene pilosa</i>	X	X	X		X			X	X	X		X		X	X	X	X
<i>Tribonanthes australis</i>																	X
<i>Trichocline spathulata</i>				X													
<i>Tricoryne elatior</i>										X		X			X	X	
<i>Tricoryne humilis</i>								X	X	X		X	X				
* <i>Trifolium campestre</i> var. <i>campestre</i>							X										
<i>Triodia danthonioides</i>					X												
<i>Tripterococcus brunonis</i>									X								
<i>Trymalium angustifolium</i>										X							
* <i>Ursinia anthemoides</i>	X				X	X		X									X
<i>Velleia rosea</i>		X															
<i>Velleia trinervis</i>		X						X									
<i>Verticordia blepharophylla</i>															X		X
<i>Verticordia brachypoda</i>											X						
<i>Verticordia chrysantha</i>									X								
<i>Verticordia chrysanthella</i>					X			X		X	X	X					
<i>Verticordia densiflora</i> var. <i>densiflora</i>					X	X		X	X			X		X	X	X	X
<i>Verticordia endlicheriana</i> var. <i>manicula</i>											X						
<i>Verticordia grandis</i>												X	X	X	X	X	
<i>Verticordia huegelii</i>											X						
<i>Verticordia laciniata</i>								X	X			X			X	X	
<i>Verticordia monadelpha</i> var. <i>monadelpha</i>									X								

	1a	1b	2	3	4	5	6	7a	7b	8	9	10	11	12	13a	13b	14
<i>Verticordia nobilis</i>									X					X			
<i>Verticordia pennigera</i>								X	X			X				X	X
<i>Verticordia picta</i>								X									
* <i>Vulpia myuros</i>					X		X										X
* <i>Wahlenbergia capensis</i>	X														X		
<i>Wahlenbergia gracilentia</i>	X	X								X						X	X
<i>Waitzia acuminata</i> var. <i>albicans</i>					X												
<i>Waitzia acuminata</i> var. <i>acuminata</i>					X					X		X	X	X			X
<i>Waitzia suaveolens</i> var. <i>suaveolens</i>										X		X					
<i>Xanthorrhoea ?brunonis</i>									X							X	
<i>Xanthorrhoea drummondii</i>										X			X				
<i>Xanthosia huegelii</i>								X	X						X		
<i>Xylomelum angustifolium</i>												X		X		X	

Appendix L: Summary Dendrogram of Relationships Between Quadrats, 2011 – 2012 Quadrat Data



Appendix M: Summary Matrix of Taxon Presence Within Quadrats

		Two-way Table																				SG 1	SG 2	SG 3	SG 4
		1a	1b	2	3	4	5	6	7a	7b	8	9	10	11	12	13a	13b	14							
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T				
1a	WEC01																								
1b	WEC02																								
2	WEC03																								
3	WEC04																								
4	WEC05																								
5	WEC06																								
6	WEC07																								
7a	WEC08																								
7b	WEC09																								
8	WEC10																								
9	WEC11																								
10	WEC12																								
11	WEC13																								
12	WEC14																								
13a	WEC15																								
13b	WEC16																								
14	WEC17																								

Appendix N: Significant Indicator Taxa of the 12-Group Classification of Vegetation Types

	1a	1b	2	3	4	5	7a	7b	8	9	10	11	12	13a	13b	14
<i>Anthocercis genistoides</i> *	45	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
<i>Eucalyptus accedens</i> *	35	35	9	4	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gastrolobium spinosum</i> ***	68	0	0	0	0	0	0	0	4	0	0	2	0	0	0	0
<i>Gompholobium pungens</i> ***	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Olearia rudis</i> ***	67	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Acanthocarpus canaliculatus</i> ***	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Desmocladius asper</i> *	11	44	0	0	1	0	0	0	0	0	0	0	0	2	1	3
<i>Dianella revoluta</i> **	15	59	0	0	0	0	0	0	1	0	0	0	0	0	0	0
<i>Dodonaea divaricata</i> ***	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gastrolobium plicatum</i> ***	0	25	0	0	0	0	7	18	6	17	3	0	0	0	0	0
<i>Glischrocaryon aureum</i> *	0	23	0	10	2	0	14	0	10	16	0	0	0	0	0	0
<i>Orthrosanthus laxis</i> var. <i>laxis</i> ***	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Ptilotus manglesii</i> *	0	46	0	0	4	0	0	2	0	0	0	0	0	0	4	6
<i>Rhagodia preissii</i> subsp. <i>preissii</i> **	10	40	40	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Stylidium torticarpum</i> *	0	44	0	5	4	0	0	0	0	19	0	0	0	0	0	0
<i>Velleia trinervis</i> ***	0	87	0	0	0	0	2	0	0	0	0	0	0	0	0	0
<i>Acacia ericksoniae</i> ***	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0
<i>Baeckea crispiflora</i> var. <i>tenuior</i> **	0	0	0	55	0	0	1	0	0	0	0	0	0	0	0	0
<i>Comesperma volubile</i> **	0	0	0	44	0	0	0	0	0	11	0	0	0	0	0	0
<i>Gastrolobium bennettsianum</i> **	0	0	0	67	0	0	0	0	0	0	0	0	0	0	0	0
<i>Melaleuca concreta</i> *	0	0	0	40	3	0	0	0	1	28	0	0	0	0	0	1
<i>Melaleuca radula</i> *	0	0	0	28	5	7	0	0	14	3	0	1	0	0	0	2
<i>Austrostipa elegantissima</i> *	0	19	0	0	40	0	0	0	0	0	0	0	0	0	0	0
<i>Austrostipa variabilis</i> **	0	0	0	0	43	0	0	0	0	0	0	0	0	0	0	0
<i>Grevillea biternata</i> *	0	0	0	0	34	0	0	0	0	12	0	0	0	0	0	0
<i>Acacia aciphylla</i> ***	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0

	1a	1b	2	3	4	5	7a	7b	8	9	10	11	12	13a	13b	14
<i>Acacia neurophylla</i> subsp. <i>neurophylla</i> **	0	0	0	0	2	87	0	0	0	0	0	0	0	0	0	0
<i>Allocasuarina campestris</i> *	0	0	0	2	8	16	5	2	11	11	1	11	2	0	0	0
<i>Allocasuarina microstachya</i> *	0	0	0	0	0	0	24	7	0	0	7	1	8	0	0	8
<i>Boronia cymosa</i> ***	0	0	0	0	0	0	30	9	20	1	3	7	0	0	0	0
<i>Daviesia oxyclada</i> *	0	0	0	0	0	0	23	3	0	0	0	0	0	0	2	2
<i>Lepidosperma</i> sp. P1 small head (M.D. Tindale 166A)*	0	0	0	0	0	0	32	4	11	2	0	0	0	0	0	0
<i>Neurachne alopecuroidea</i> **	0	3	0	1	11	3	11	8	5	11	4	5	0	1	8	8
<i>Banksia carlinoides</i> **	0	0	0	0	0	0	7	25	1	0	1	0	1	0	1	20
<i>Calothamnus sanguineus</i> ***	0	0	0	0	0	0	1	28	0	0	0	0	3	22	21	0
<i>Caustis dioica</i> *	0	0	0	0	0	0	5	23	0	0	4	0	1	10	6	4
<i>Hakea incrassata</i> ***	0	0	0	0	0	0	20	24	4	3	3	3	1	0	0	2
<i>Hakea stenocarpa</i> *	0	0	0	0	0	0	1	31	1	0	0	0	0	0	0	2
<i>Hibbertia hypericoides</i> ***	0	0	0	1	0	0	11	13	8	6	10	0	13	6	7	2
<i>Petrophile brevifolia</i> ***	0	0	0	0	0	0	9	34	1	0	2	1	1	0	3	1
<i>Schoenus brevisetis</i> ***	0	0	0	0	0	0	15	28	1	0	4	0	0	4	1	1
<i>Banksia fraseri</i> var. <i>fraseri</i> ***	0	0	0	0	1	0	24	5	29	4	1	1	0	0	0	0
<i>Hakea auriculata</i> **	0	0	0	0	0	0	11	7	30	1	2	0	0	0	0	0
<i>Petrophile shuttleworthiana</i> *	0	0	0	0	0	0	4	7	32	0	0	0	0	0	0	1
<i>Dodonaea ericoides</i> **	0	0	0	0	0	0	19	0	17	34	0	0	0	0	0	0
<i>Lepidosperma</i> sp. A2 Inland Flat (G.J. Keighery 7000)**	0	0	0	23	0	0	1	0	1	52	0	0	0	0	0	0
<i>Leucopogon</i> sp. Yandanooka (M. Hislop 2507)***	0	0	0	0	0	0	1	0	0	88	0	0	0	0	0	0
<i>Melaleuca marginata</i> *	0	0	0	33	0	0	0	0	0	33	0	0	0	0	0	0
<i>Melaleuca tinkeri</i> ***	0	0	0	0	0	0	13	0	2	61	0	0	0	0	0	0
<i>Micromyrtus rogeri</i> *	0	0	0	0	0	0	1	0	10	29	0	0	0	0	0	0
<i>Mirbelia floribunda</i> *	0	0	0	0	0	0	14	0	0	42	0	0	0	0	0	0

	1a	1b	2	3	4	5	7a	7b	8	9	10	11	12	13a	13b	14
<i>Acacia auronitens</i> *	0	0	0	0	0	0	3	0	0	0	48	0	0	0	0	0
<i>Astroloma microdonta</i> *	0	0	0	0	0	0	1	8	0	0	23	0	0	0	0	0
<i>Astroloma serratifolium</i> *	0	0	0	0	0	0	0	0	0	0	40	0	0	0	0	0
<i>Banksia shuttleworthiana</i> ***	0	0	0	0	0	0	3	18	3	0	26	1	7	0	1	0
<i>Conospermum boreale</i> subsp. ? <i>ascendens</i> **	0	0	0	0	0	0	0	0	0	0	32	1	19	2	3	0
<i>Ecdeiocolea monostachya</i> ***	0	0	0	0	5	14	8	10	12	3	14	14	3	0	0	0
<i>Eremaea violacea</i> subsp. <i>violacea</i> *	0	0	0	0	0	0	0	0	0	0	40	3	0	0	2	0
<i>Isopogon tridens</i> *	0	0	0	0	0	0	0	0	0	0	47	0	0	0	0	0
<i>Melaleuca leuropoma</i> ***	0	0	0	0	2	0	0	5	0	0	22	5	2	13	11	5
<i>Mesomelaena pseudostygia</i> **	0	0	0	0	3	0	4	13	3	0	13	11	7	3	11	1
<i>Monotaxis bracteata</i> *	0	0	0	0	0	0	0	6	0	0	38	0	0	0	0	2
<i>Pileanthus filifolius</i> ***	0	0	0	0	0	0	0	4	0	0	40	10	1	2	3	0
<i>Pimelea angustifolia</i> *	0	0	0	0	0	0	0	0	0	0	23	0	12	0	2	0
<i>Stylidium adpressum</i> *	0	0	0	0	0	0	0	3	0	0	41	0	0	0	0	0
<i>Boronia coerulescens</i> subsp. <i>spinescens</i> *	0	0	0	0	0	0	0	1	5	0	3	38	0	0	0	0
<i>Dampiera spicigera</i> ***	0	0	0	0	1	0	0	0	2	0	22	42	0	0	1	0
<i>Grevillea biformis</i> subsp. <i>biformis</i> **	0	0	0	0	0	0	0	0	1	0	11	46	2	0	0	0
<i>Hakea circumalata</i> ***	0	0	0	0	0	0	3	5	3	1	11	31	3	0	0	0
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i> ***	0	0	0	0	3	0	4	4	2	2	14	19	8	0	6	1
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i> *	0	0	0	0	0	0	0	0	0	0	5	47	7	0	0	0
<i>Schoenus clandestinus</i> ***	0	0	0	0	0	0	13	13	5	4	11	15	7	0	5	6
<i>Beaufortia elegans</i> ***	0	0	0	0	0	0	0	6	0	0	1	0	40	18	3	0
<i>Drosera erythrorhiza</i> *	0	0	0	0	0	0	1	1	0	0	0	0	32	0	0	2
<i>Leptospermum oligandrum</i> *	0	0	0	0	4	0	0	1	0	0	25	0	33	1	0	0
<i>Acacia stenoptera</i> *	0	0	0	0	0	0	0	1	0	0	0	0	0	30	3	0
<i>Alexgeorgea nitens</i> **	0	0	0	0	0	0	0	0	0	0	0	0	0	44	0	0
<i>Allocasuarina humilis</i> **	0	0	0	0	0	0	6	16	4	0	1	0	2	17	11	9

	1a	1b	2	3	4	5	7a	7b	8	9	10	11	12	13a	13b	14
<i>Anigozanthos humilis</i> subsp. <i>humilis</i> ***	0	0	0	0	0	0	0	1	0	0	1	0	1	47	15	1
<i>Banksia dallannei</i> subsp. <i>media</i> ***	0	0	0	0	0	0	0	10	0	0	1	0	1	35	25	1
<i>Banksia sessilis</i> var. <i>flabellifolia</i> *	0	0	0	0	0	0	0	0	0	0	0	0	11	30	2	0
<i>Calytrix sapphirina</i> **	0	0	0	0	0	0	0	0	0	0	0	0	7	46	5	1
<i>Conostylis canteriata</i> *	0	0	0	0	0	0	1	9	0	0	2	0	1	25	16	5
<i>Conostylis hiemalis</i> ***	0	0	0	0	0	0	0	1	0	0	0	0	0	71	0	0
<i>Desmocladius semiplanus</i> *	0	0	0	0	0	0	0	4	0	0	0	0	0	34	6	1
<i>Eremaea ectadioclada</i> *	0	0	0	0	0	0	0	2	0	0	0	0	2	49	2	0
<i>Eucalyptus todtiana</i> **	0	0	0	0	0	0	0	0	0	0	0	0	7	48	11	0
<i>Gompholobium tomentosum</i> *	0	0	0	0	0	0	0	0	0	0	0	0	0	41	22	1
<i>Hakea psilorrhyncha</i> **	0	0	0	0	0	0	0	0	0	0	0	0	0	44	0	0
<i>Hibbertia subvaginata</i> *	0	0	0	0	0	0	0	0	0	0	0	0	0	55	3	0
<i>Isotropis cuneifolia</i> *	0	0	0	0	0	0	0	0	0	0	0	0	0	37	2	2
<i>Lambertia multiflora</i> var. <i>multiflora</i> *	0	0	0	0	0	0	0	3	0	0	0	0	0	51	0	0
<i>Lasiopetalum drummondii</i> **	0	0	0	0	0	0	0	1	0	0	0	0	14	46	0	1
<i>Leucopogon</i> sp. Arrowsmith (M. Hislop 2509)***	0	0	0	0	0	0	2	15	0	0	2	0	1	39	0	5
<i>Leucopogon</i> sp. Northern ciliate (R. Davis 3393)*	0	0	0	0	0	0	0	0	0	0	0	0	0	35	6	5
<i>Lyginia imberbis</i> *	0	0	0	0	0	0	0	0	0	0	0	0	0	36	26	0
<i>Lysinema pentapetalum</i> *	0	0	0	0	0	0	0	2	0	0	0	0	3	29	0	1
<i>Patersonia occidentalis</i> **	0	0	0	0	0	0	0	0	0	0	0	0	0	44	3	0
<i>Quoya verbascina</i> ***	0	0	0	0	0	0	0	0	0	0	0	0	0	89	0	0
<i>Stachystemon axillaris</i> *	0	0	0	0	0	0	0	0	0	0	0	0	0	34	3	0
<i>Xanthosia huegelii</i> *	0	0	0	0	0	0	3	1	0	0	0	0	0	39	0	0
<i>Calytrix depressa</i> *	0	0	0	0	0	0	1	1	0	10	0	0	0	0	0	35
<i>Drosera menziesii</i> subsp. <i>menziesii</i>	0	0	0	0	0	0	2	0	0	0	7	0	0	0	2	24
<i>Harperia lateriflora</i> *	0	0	0	0	0	0	0	5	0	0	0	0	0	0	2	50

	1a	1b	2	3	4	5	7a	7b	8	9	10	11	12	13a	13b	14
<i>Jacksonia angulata</i> *	0	0	0	0	0	0	2	0	0	9	0	0	0	0	0	45
<i>Opercularia vaginata</i> ***	3	0	0	0	7	0	12	7	6	0	7	9	0	6	1	14

Appendix C

Fauna assessment



WEST ERREGULLA EXPLORATION PROGRAM

Warrego Energy

3D Seismic Survey

Level 1 Fauna Assessment



WEST ERREGULLA EXPLORATION PROGRAM (EP469 & EP419)

LEVEL 1 FAUNA ASSESSMENT

Warrego Energy

September 2013

2740AA_01_v3

Report Ref: EP2012/097



Coffey Environments Australia Pty Ltd ABN 65140765902
Suite 2, 53 Burswood Road, Burswood WA 6100 Australia
PO Box 4223 Victoria Park WA 6979 Australia
T (+61) (8) 9355 7100 F (+61) (8) 9355 7111
coffey.com

© Coffey Environments Australia Pty Ltd 2013

Project director	Martine Scheltema		
Project manager	Natassja Raymond		
Version:	Details:	Approved:	Date:
2740AA_01_v1	v1 to client	M. Scheltema	29/06/12
2740AA_01_v2	v2 to client	M. Scheltema	10/01/13
2740AA_01_v3	v3 to client	M. Scheltema	24/09/13

EXECUTIVE SUMMARY

Warrego Energy (Warrego) intends to undertake exploration activities at its West Erregulla Project, herein referred to as the Project, approximately 300 km north of Perth and 50 km southeast of Dongara, within the Geraldton Sandplains bioregion. The proposed exploration activities consist of a three dimensional seismic survey and appraisal drilling program within Exploration Permit (EP) 469 and a portion of EP 419. Exploration activities are scheduled to commence in the last quarter of 2013.

Coffey Environments was commissioned to undertake a Level 1 fauna assessment (fauna assessment) to identify the fauna ecological values of the survey area. The survey was undertaken in accordance with the Guidance for the Assessment of Environmental Factors No. 56 (EPA, 2004), Terrestrial Fauna Surveys for Environmental Impact Assessment (EPA, 2002) and Technical Guide – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA, 2010). Coffey Environments also undertook a Black Cockatoo habitat assessment in accordance with the EPBC Act Referral Guidelines for Three Threatened Black Cockatoo Species (DSEWPac, 2012b).

Six fauna habitat types were identified within the survey area, comprising cleared land, mixed shrubland with/without woodland species, laterite breakaway, open Eucalyptus forest, minor drainage lines and planted Eucalypt habitats.

A total of 304 vertebrate fauna species, 20 of which are conservation significant, have previously been recorded within the region and so have the potential to occur within the survey area. Coffey Environments undertook an assessment to determine the likelihood of these species occurring within the survey area based on the availability of suitable habitat, known distribution of each species and currency of species records. Of the 20 species of conservation significance, only six were considered 'likely' to occur (Carnaby's Black Cockatoo, Peregrine Falcon, Australian Bustard, Rufous Fieldwren, Rainbow Bee-eater, Gilled Slender-Bluetongue and Western Carpet Python), and another six were considered as 'possibly' occurring within the survey area (White-browed Babbler, Fork-tailed Swift, Great Egret, Cattle Egret, Western Brush Wallaby and Woma).

It is Coffey Environments' assessment that the survey area may be considered to have high ecological functional value, given a large portion of habitat within the survey area was of Very Good quality (i.e., area of vacant crown land) and the presence of suitable foraging and roosting habitat for Carnaby's Black Cockatoo. Furthermore while remnant areas of habitat present within cleared land are unlikely to provide habitat for a fauna assemblage that would be typical of the region (i.e. before disturbance), it is likely that the Very Good quality habitat present within the vacant crown land supports a level of biodiversity value at the genetic, species and ecosystem level typical of the region.

Potential impacts of the Project on terrestrial fauna present within the survey area included; loss or degradation of fauna habitat; fauna injuries and mortalities from interactions with project vehicles, machinery and infrastructure; increased predation by introduced fauna; altered fauna behaviour associated with noise, vibration and light emissions and increased risk of fire.

Coffey Environments assessed the significance of these potential impacts on the Carnaby's Black Cockatoo to assist in determining whether the Project requires approval from the minister under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This involved consulting the EPBC Act Referral Guidelines for Three Threatened Black Cockatoo Species

(DSEWPaC, 2012b) and the EPBC Policy Act Statement 1.1 Matters of National Environmental Significance (DEWHA, 2006).

In consideration of the EPBC Act Referral Guidelines for Three Threatened Black Cockatoo Species (DSEWPaC, 2012b) and given the Project is going to result in clearing of more than 1 ha of quality foraging habitat, the Project will require referral to the Department of Sustainability, Environment, Water, Populations and Communities for assessment under the EPBC Act.

The EPBC Policy Act Statement 1.1 (DEWHA, 2006) sets out a number of significant impact criteria for Critically Endangered or Endangered species. Coffey Environments determined that the Project only had a 'real chance or possibility' of triggering one of the nine criteria, specifically, 'adversely affecting habitat critical to the survival of the species', given that clearing of foraging (and potentially roosting) habitat is largely unavoidable. The impact of clearing on the species however, is believed to be of limited significance, given the:

- Availability of similar habitat in the local and regional area (i.e., to the west of the survey area and as approximately 17.67% of the sub region is held in conservation reserves).
- Scale (~150 ha or 2% of the survey area) and nature (e.g., width of clearing, coarse grid spacing) of the proposed clearing.

It is recommended that Warrego Energy refers the Project under the EPBC Act 1999 due to the impact to Carnaby's Black Cockatoo foraging (and potentially roosting) habitat. It is also recommended that Warrego consider the inclusion of the following management practices/recommendations, in the development of the Project and the preparation of their environmental management plan:

- Minimise clearing, with a particular focus on avoiding large habitat trees (particularly areas of open Eucalypt forest and planted Eucalypt habitats) as much as possible.
- Align the Project footprint with existing areas of disturbance, where possible.
- Maintain ecological linkages between areas of habitat to mitigate fragmentation impacts.
- Implement Project speed limits (i.e., maximum speed of 60 km/h off public thoroughfares).
- Restrict night-time vehicle movements.
- Restrict off-road driving.
- Design all excavations to incorporate effective fauna egress to avoid entrapment, injury and death of local fauna.
- Fence all excavations.
- Inspect all excavations regularly to identify any trapped fauna and provide assistance if necessary. Inspections are particularly useful early in the morning and prior to the commencement of backfilling to ensure that the excavations are clear of fauna.
- Record all fauna injuries and mortalities so that they can be reported in the environmental reports, where required.
- Develop an Environmental Education and Awareness induction for all staff, informing them of the conservation values present within the survey area and their management responsibilities.
- Undertake progressive rehabilitation as soon as possible.

- Utilise native flora species identified from the survey area in rehabilitation and revegetation.
- Manage domestic waste and water storages appropriately to minimise the proliferation of introduced fauna (e.g. store putrescible waste in closed bins and remove regularly from site).
- Develop and implement a feral animal control program in consultation with the DEC and pastoralists.
- Direct any lighting to working areas, where possible.
- Develop and implement a fire prevention and control strategy.
- Ensure appropriate fire response equipment and appropriately trained staff are available at all times during operation.
- Be aware of any 'harvest and vehicle movement bans' issued by local government during prohibited/restricted burning times (usually over the Summer period between October and April).
- Develop and implement a biosecurity management plan (including weeds and dieback).

This page has been left blank intentionally.

CONTENTS

EXECUTIVE SUMMARY	1
1. INTRODUCTION	1
1.1 Background	1
1.2 Scope of Works	1
2. EXISTING ENVIRONMENT	3
2.1 Project Location	3
2.2 Physical Environment	3
2.2.1 Climate	3
2.2.2 Surface Hydrology	6
2.2.3 Geology, Soils and Landforms	6
2.3 Biological Context of the Survey Area	6
2.3.1 Bioregional Data	6
2.3.2 Vegetation	6
2.3.3 Fauna Species of Conservation Significance	7
2.3.4 Previous Biological Assessments	7
3. METHODOLOGY	9
3.1 Desktop Assessment	9
3.2 Field Investigation	9
3.3 Assessment of Fauna Habitat Quality	10
3.4 Limitations	10
4. RESULTS	13
4.1 Fauna Habitats	13
4.2 Potential Vertebrate Fauna in the Survey Area	22
4.3 Fauna Observations	22
4.4 Conservation Significant Fauna	22
4.5 Biodiversity Value	31
4.6 Ecological Functional Value at the Ecosystem Level	31
5. POTENTIAL IMPACTS	33
5.1 Loss or Degradation of Fauna Habitat	33
5.2 Fauna Injuries and Mortalities from Interactions with Project Vehicles, Machinery and Infrastructure	33
5.3 Increased Predation by Introduced Fauna	34
5.4 Altered Fauna Behaviour Associated with Noise, Vibration and Light Emissions	34
5.5 Increased Risk of Fire	35
6. SIGNIFICANCE OF POTENTIAL IMPACTS ON CARNABY'S BLACK COCKATOO	37
6.1 Assessment Against Significant Impact Criteria	37
7. CONCLUSION AND RECOMMENDATIONS	43

7.1	Conclusion	43
7.2	Recommendations	44
8.	REFERENCES	47

Figures

1	Regional location	4
2	Climate data for Eneabba	5
3a	Fauna habitat – Overview	17
3b	Fauna habitat – Map 1 of 4	18
3c	Fauna habitat – Map 2 of 4	19
3d	Fauna habitat – Map 3 of 4	20
3e	Fauna habitat – Map 4 of 4	21

Tables

1	Fauna assessment limitations and constraints	11
2	Habitat types in the survey area	13
3	Conservation significant fauna predicted to occur in the survey area	22
4	Description of distribution, habitat and likelihood of conservation significant fauna occurring in the survey area	24

Appendices

A	Vertebrate Fauna Species Recorded During Previous Surveys Conducted in the Vicinity of the Survey Area
B	Conservation Codes for Western Australian Fauna

1. INTRODUCTION

1.1 Background

Warrego Energy (Warrego) intends to undertake exploration activities at its West Erregulla Project, herein referred to as the Project, approximately 300 km north of Perth and 50 km southeast of Dongara, within the Geraldton Sandplains bioregion. The proposed exploration activities consist of a three dimensional seismic survey and appraisal drilling program within Exploration Permit (EP) 469 and a portion of EP 419. Exploration activities are scheduled to commence in the last quarter of 2013.

Exploration activities will include drilling of an appraisal well and a 3D seismic survey, which involves traversing the exploration area in a grid pattern, sending, receiving and processing acoustic signals in order to map the underlying geology. The appraisal well and seismic survey will be used to collect data pertaining to the commercial potential of a tight-gas reserve. The Project is located approximately 20 km from both the Dampier-Bunbury and Parmelia pipelines, through which it is proposed that product will be transported (Woodman, 2012).

The Project is located within the Geraldton Sandplain Bioregion (Lesueur Sandplains sub-region) and overlies farmland and crown land consisting of remnant bushland. Vegetation known to be habitat for the Commonwealth Government listed (Endangered) Carnaby's Black Cockatoo exists within the area.

Warrego has contracted Coffey Environments (Coffey) to undertake a Level 1 vertebrate fauna assessment (fauna assessment) of the proposed seismic survey area, including a targeted assessment for Carnaby's Black Cockatoo.

1.2 Scope of Works

Coffey undertook a Level 1 fauna assessment to identify the fauna ecological values of the seismic survey area. The survey was undertaken in accordance with the Guidance for the Assessment of Environmental Factors No 56 (EPA, 2004), Terrestrial Fauna Surveys for Environmental Impact Assessment (EPA, 2002) and Technical Guide – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA, 2010).

The Level 1 fauna assessment involved:

- Reviewing the DEC NatureMap online database to identify potential vertebrate fauna in the region.
- A search of the DEC's Threatened and Priority Species database to identify potential scheduled and threatened species within the region.
- A search of the Commonwealth's Government database of fauna of national environmental significance to identify species potentially occurring within the area that are protected under the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* or international migratory bird agreements (JAMBA/CAMBA).
- A review of previous fauna surveys conducted in the area to provide a regional context and develop a list of species recorded previously in nearby surveys.
- A field investigation of the survey area to identify:

- The major fauna habitats present within the survey area.
- The likelihood for the occurrence of the predicted fauna assemblage based on desktop studies.
- The likely presence of conservation significant fauna.
- The presence of significant fauna habitat.
- Black Cockatoo habitat assessment in accordance with EPBC Act Referral Guidelines for Three Threatened Black Cockatoo Species (DSEWPaC, 2012b) to identify foraging and roosting/breeding habitat.
- Identifying potential impacts/risks to fauna from vegetation clearing within the survey area.
- A risk assessment of the impacts of development on fauna assemblages and conservation significant fauna.
- Provide recommendations on:
 - Any additional species-specific searches that may be required for protected species.
 - Any follow-up fauna surveys required to identify species of conservation significance or faunal assemblages that are important and likely to be impacted upon by the clearing.
 - Strategies to minimise or prevent impact on significant fauna and fauna-habitat, including specially protected fauna.

The Level 1 fauna assessment does not include any trapping of fauna.

2 EXISTING ENVIRONMENT

2.1 Project Location

The Project is located within Western Australia's Northern Sandplains region, 50 km southeast of Dongara and 300 km north of Perth (Warrego, 2012; Woodman, 2012) (see Figure 1). The Project straddles two shire boundaries (Shire of Mingenew and the Shire of Three Springs) and overlies crown land and private farmland.

The Project will occur within permits EP 469 and EP 419 and the boundaries of the survey area defined in Figure 1.

The closest conservation areas to the Project are the Wilson Nature Reserve and the Yardanogo Nature Reserve, which are located approximately 20 km to the southeast and 25 km west of EP 469 respectively (Figure 1). The nearest residential property is located approximately 5 km to the west of the well site options.

The Project is located within the Lesueur Sandplain sub-region (GS3) of the Geraldton Sandplains bioregion under the Interim Biogeographic Regionalisation of Australia (IBRA) (Woodman, 2012).

2.2 Physical Environment

This section describes the climate, landforms, soil and geology of the survey area and surrounds.

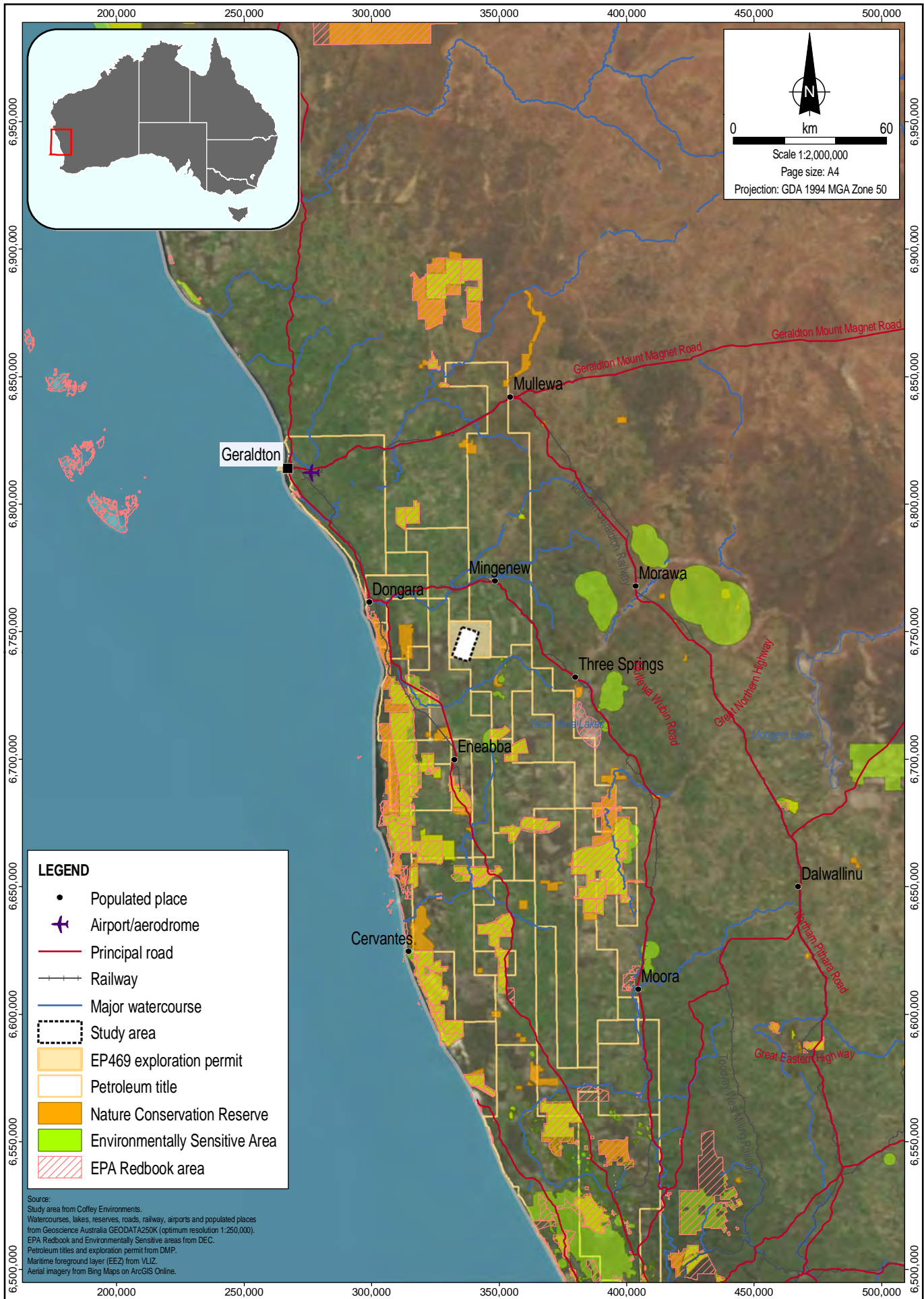
2.2.1 Climate

The climate of the region within which the Project occurs is classified as Mediterranean, with dry warm summers and cool wet winters (Woodman, 2012). The nearest weather station to the Project is located at Eneabba.

Climate data from Eneabba weather station, approximately 43 km south of the Project, shows the warmest period in the region is between December and March with average maximum temperatures (1972 to 2012) ranging from 33.6 to 36.3°C (Figure 2). The lowest minimum average temperature occurs between July and September, with average minimum temperatures ranging from 9.0 to 9.6°C during these months (BOM, 2012).

Average rainfall in the region (1964 to 2012) is highest during the cooler months between May and August. Mean monthly rainfall during these months ranges from 69.1 mm to 101.1 mm. The driest months are between November and March, with rainfall ranging from 7.3 mm to 14.4 mm. The overall average annual rainfall at Eneabba is 493.3 mm.

Figure 2 shows the seasonal average maximum and minimum temperatures and the rainfall data for Eneabba.



0 km 60

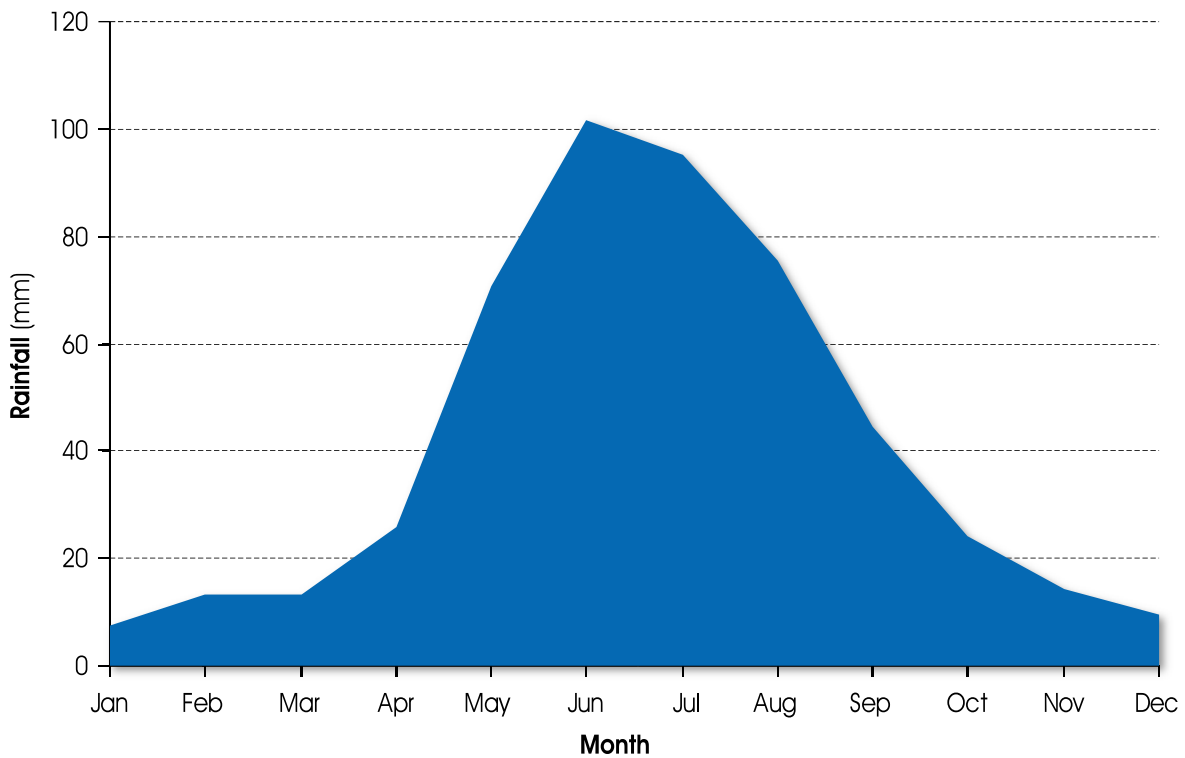
Scale 1:2,000,000
Page size: A4
Projection: GDA 1994 MGA Zone 50

LEGEND

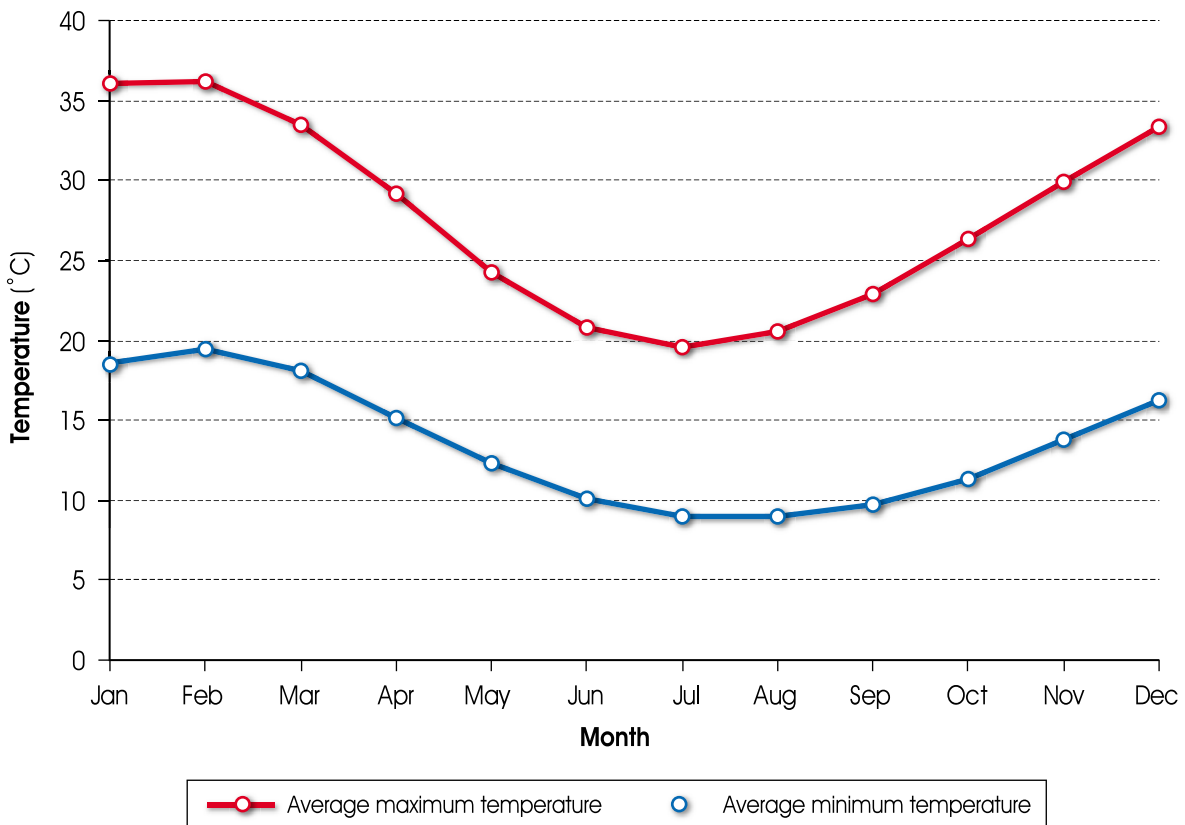
- Populated place
- ✈ Airport/aerodrome
- Principal road
- +— Railway
- Major watercourse
- Study area
- EP469 exploration permit
- Petroleum title
- Nature Conservation Reserve
- Environmentally Sensitive Area
- EPA Redbook area

Source:
Study area from Coffey Environments.
Watercourses, lakes, reserves, roads, railway, airports and populated places from Geoscience Australia GEODATA250K (optimum resolution 1:250,000).
EPA Redbook and Environmentally Sensitive areas from DEC.
Petroleum titles and exploration permit from DMP.
Maritime foreground layer (EEZ) from VLIZ.
Aerial imagery from Bing Maps on ArcGIS Online.

Average Monthly Rainfall Recorded for Eneabba Weather Station



Average Maximum and Minimum Temperatures Recorded at Eneabba Weather Station



2.2.2 Surface Hydrology

The northern and southern limits of the Project are bound by two regional drainage systems, the Irwin and Lockier Rivers to the north and the Arrowsmith River to the south. Numerous small watercourses also dissect the area that either drain westward from the Arrowsmith Region onto the Swan Coastal Plain, or north or south towards either of the two major drainage systems (RPS, 2011).

2.2.3 Geology, Soils and Landforms

The Lesueur Sandplain sub-region comprises coastal Aeolian and limestone, Jurassic siltstones and sandstones (often heavily lateritised) of central Perth Basin (Desmond and Chant, 2001).

The Project also lies in the Northern Sandplains Region (Irwin Botanical District) with yellow sands inland and leached sandy soils overlaying laterite near the coast, as described by Beard (1990). This region is almost completely underlain by sedimentary rocks of siliceous nature. The principal exception to this is a block of Proterozoic metamorphic rocks with some granite, between Greenough and Murchison Rivers (Beard, 1990). The sedimentary rocks form a series of plateaux, including the Dandaragan Plateau, on which the Project is located (Beard, 1990; Woodman, 2012). These plateaux have been eroded by the sea on the west and dissected by rivers, but substantial stretches of the plateau surfaces are still preserved and form extensive monotonous sandplains. Sandy soils are found throughout except upon Proterozoic rocks where red loams are found (Beard, 1990).

2.3 Biological Context of the Survey Area

This section describes the biological context of the survey area and surrounds

2.3.1 Bioregional Data

The Lesueur Sandplain sub-region is known to contain a large number of distinct, species rich and geographically restricted floristic communities (Mt Lesueur and Coomallo area), as well as a number of rare flora, vertebrates and stygofauna of cave communities in Beekeepers Nature Reserve. This area is known Australia-wide and internationally as having a particularly high floristic diversity and level of endemism (Desmond and Chant, 2001).

Approximately 17.67% of the sub region is in conservation reserves. One wetland of national significance (Lake – Louge Indoon System) and two wetlands of subregional significance (White and Green Lakes, Saline Lakes of Coolimba – Jurien) are located within the sub-region (Desmond and Chant, 2001).

The sub-region has been extensively cleared in the eastern portion of the region and has known salinity issues (Desmond and Chant, 2001).

2.3.2 Vegetation

The vegetation of the Lesueur Sandplain subregion consists mainly of shrub-heaths rich in endemics on a mosaic of lateritic mesas, sandplains, coastal sands and limestone, with heath on lateritised sandplains along the north-eastern margins of the subregion (Desmond and Chant, 2001; Woodman, 2012).

The vegetation of the Northern Sandplains Region is broadly described as scrub on heath on sandplains near the coast with *Acacia-Casuarina* thickets further inland and *Acacia* shrub with scattered trees of *Eucalyptus loxophleba* on hard-setting loams (Beard, 1990).

Woodman Environmental conducted a Level 2 flora survey in 2011 as part of the Environmental Impact Assessment process for the Project. The survey identified the presence of vegetation known to be utilised by the Endangered listed Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) for foraging (e.g., *Banksia* spp., *Hakea* spp., and *Grevillea* spp.) and breeding (e.g., *Eucalyptus loxophleba* subsp. *loxophleba*) (Woodman, 2012; DSEWPaC, 2012b).

2.3.3 Fauna Species of Conservation Significance

The Commonwealth Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC); Department of Environment and Conservation (DEC) and Western Australian Museum (WAM) have reported a number of fauna species at risk in the Lesueur Sandplain sub-region. This report assesses the potential for these species to be found in the survey area and the potential impact of the proposed development on these species.

2.3.4 Previous Biological Assessments

There have been numerous environmental assessments conducted within the area surrounding the Project. The findings from the following surveys and assessments have been utilised for this assessment:

- ATA, 2004. Fauna Assessment of Koolanooka South. ATA Environmental.
- ATA. 2006. Vertebrate Fauna Assessment, Shire of Greenough TPS No.1A Amendment No.4. Unpublished report by ATA Environmental for Bayform Holdings Pty Ltd.
- Bamford 2012. Fauna Assessment of Tiwest's Dongara Project. Bamford Consulting Ecologists.
- CALM, 1989. A spring reconnaissance survey of the flora and fauna of the Southern Beekeepers Reserve. Burbidge and Boscacci, Department of Conservation and Land Management.
- Dames and Moore Pty Ltd. 1993. Oakajee Proposed Industrial Site: flora and fauna assessment. Unpublished report for Landcorp.
- Desmond, A.J. and Heriot, S.M. 2002. Fauna monitoring of the Chapman River wildlife corridor, Geraldton. Department of Conservation and Land Management, Geraldton.
- Ecologia. 1994. Coastal Road Jurien to Green Head Biological Survey Report.
- Ecologia. 2002. Northwest Coastal Highway Geraldton Bypass: Fauna assessment survey. Unpublished report by Ecologia Environmental for the Department of Planning and Infrastructure, Western Australia.
- GHD. 2011. Report for Lots 3012 and 3013 Olive Street, Geraldton: Flora and Fauna Survey. Unpublished report Geraldton-Greenough.
- How, R.A., Pearson, D.J. and Dunlop, J.N. 1983. Herpetofauna of the Geraldton Region, Western Australia. Records of the Western Australian Museum 10: 215-234.
- RCCWA. 2009. Roadside vegetation and conservation values in the City of Geraldton-Greenough. Roadside Conservation Committee Western Australia.
- Skull, S. and Cockerton, G. (Landscape Services Pty Ltd) and Bamford, M. (Bamford Consulting Ecologists). 1998. Oakajee pipeline route flora and fauna study: desktop review.

This page has been left blank intentionally.

3. METHODOLOGY

This Level 1 fauna assessment was undertaken in accordance with the Environmental Protection Authority (EPA) Position Statement No. 3 Terrestrial Biological Surveys as an Element of Biodiversity Protection (EPA, 2002), Coffey Environments' interpretation of the EPA Guidance for Assessment of Environmental Factors: Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia, No. 56 (EPA, 2004) and EPA (2010) Technical Guide – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment.

Coffey Environments also undertook a Black Cockatoo habitat assessment in accordance with the EPBC Act Referral Guidelines for Three Threatened Black Cockatoo Species (DSEWPaC, 2012b).

This fauna assessment does not include a survey for short-range endemic (SRE) invertebrates. However, the site investigation confirmed that the survey area did not contain unique or locally uncommon habitats and so it is unlikely to support SRE fauna restricted to the survey area.

3.1 Desktop Assessment

A desktop search of the DEC Threatened Fauna Database and NatureMap database (35 km buffer) and the EPBC online database for protected matters were used to develop a list of potential bird, reptile, mammal and amphibian species in the general survey area. The NatureMap search area was used to eliminate results from the marine environments and to maximise the similarity in fauna habitats encompassed by the search area. General texts were also used to provide supplementary information including Tyler and Doughty (2009) for frogs, Storr *et al.* (1983, 1990, 1999, 2002) for reptiles, Johnstone and Storr (1998, 2004) and Storr and Johnstone (1988) for birds, Van Dyck and Strahan (2008) for mammals and consultant staff's personal experience.

A number of published and unpublished reports for fauna surveys conducted in the vicinity of the survey area were also used to develop the list of potential species present in the survey area, focussing where appropriate on fauna survey data from within 35 km of the survey area. Previous surveys are discussed in section 2.3.4.

3.2 Field Investigation

Dr Graeme Finlayson and Natassja Raymond undertook the first site assessment from 6 to 8 June 2012. The site assessment included an inspection of the major fauna habitats within the majority of the survey area and adjacent areas. The primary purpose of this survey was to identify fauna habitats and assess the potential for conservation significant terrestrial fauna species to occur within the survey area.

Habitat was assessed by traversing the area in a vehicle and by foot and recording a series of habitat reference points. At each reference point habitat type and condition was recorded. Habitat assessments were assisted by previous floristic community mapping conducted by Woodman (2012).

Following minor alterations to the survey area, a second site assessment was conducted by Natassja Raymond and Dr Paul Mitrovski from 3 to 4 December 2012 of additional survey areas to ensure habitats within any areas of the survey area that had not previously been visited could be classified and mapped.

3.3 Assessment of Fauna Habitat Quality

The fauna habitat quality was assessed based on the size of the habitat, the level of habitat connectivity, availability of specific resources (e.g., tree hollows) and overall vegetation quality. Coffey Environments rated the fauna habitat quality using the following criteria:

High quality fauna habitat (H) – These areas closely approximate the vegetation mix and quality that would have been in the area prior to any disturbance. The habitat has connectivity with other habitats and is likely to contain the most natural vertebrate fauna assemblage.

Very good fauna habitat (VG) – These areas show minimal signs of disturbance (e.g., grazing, clearing, fragmentation, and weeds) and generally retain many of the characteristics of the habitat if it had not been disturbed. The habitat has connectivity with other habitats and fauna assemblages in these areas are likely to be minimally effected by disturbance.

Good fauna habitat (G) – These areas showed signs of disturbance (e.g., grazing, clearing, fragmentation, and weeds) but generally retain many of the characteristics of the habitat if it had not been disturbed. The habitat has connectivity with other habitats and fauna assemblages in these areas are likely to be affected by disturbance.

Disturbed fauna habitat (D) – These areas showed signs of significant disturbance. Many of the trees, shrubs and undergrowth are cleared. These areas may be in the early succession and regeneration stages. Areas may show signs of significant grazing contain weeds or have been damaged by vehicle or machinery. Habitats are fragmented or have limited connectivity with other fauna habitats. Fauna assemblages in these areas are likely to differ significantly from what might be expected in the area had the disturbance not occurred.

Highly degraded fauna habitat (HD) – These areas often have a significant loss of vegetation, an abundance of weeds, and a large number of vehicle tracks or are completely cleared. There is limited or no fauna habitat connectivity. Faunal assemblages in these areas are likely to be significantly different to what might have been in the area pre-disturbance.

3.4 Limitations

A comprehensive (Level 2) fauna trapping survey has not been undertaken for this assessment. Conclusions and management recommendations have been made based on data collated from various surveys and reports for adjacent areas and the bioregion and Coffey Environments' assessment of the habitat value of the survey area.

Repeated surveys at multiple sites over several years are necessary to describe the spatial and temporal variations in the faunal assemblage within a survey area. However, it is Coffey Environments' opinion that given the nature of the proposed impact, previous anthropogenic activity on site and the availability of survey data within similar habitats within the bioregion, adequate data has been collected to assess any potential impacts of the Project on terrestrial vertebrate fauna.

The EPA Guidance for Assessment of Environmental Factors: *Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia*, No. 56 (EPA, 2004) suggests that fauna surveys may be limited by many variables. Limitations associated with each of these variables are assessed in Table 1.

Table 1 Fauna assessment limitations and constraints

Possible Limitations	Constraint	Comment
Competency and experience of the consultant carrying out the survey	No	Zoologists undertaking this survey have appropriate training and experience in conducting Level 1 fauna assessments.
Scope	No	All components required for a Level 1 fauna assessment have been completed.
Proportion of fauna identified, recorded and/or collected	(N/A)	A fauna trapping survey has not been undertaken within the survey area and is not part of the scope of this Level 1 fauna assessment.
Sources of information	No	Information on fauna was available from appropriate database searches and both published and unpublished reports.
Proportion of the task achieved	No	The assessment fulfils all of the objectives.
Timing/weather/season/cycle	No	The field investigation was undertaken in weather conditions that were appropriate for this type of assessment.
Disturbances which affected results of the survey	No	No disturbances were identified in the survey area that were considered likely to impact this assessment.
Intensity of survey effort	No	The intensity of the assessment is sufficient for a Level 1 fauna assessment.
Completeness	No	All major habitat types were visited.
Resources	No	Adequate resources were available.
Remoteness and/or access problems	No	Access to all areas was adequate.
Availability of contextual information for the region	No	DEC Threatened and Priority species lists, EPBC Act Protected Matters Search, NatureMap data and results of previous surveys in both the surrounding area and the bioregion were available to provide comparison at both a local and regional level in similar habitats.

This page has been left blank intentionally.

4. RESULTS

4.1 Fauna Habitats

The survey area (approximately 9,601 ha) contains six fauna habitat types comprising; cleared land (with and without scattered trees/shrubs) (33% of the survey area), low open shrubland with/without scattered woodland species (3 types) (64% of the survey area), laterite breakaway (1% of the survey area), open Eucalyptus forest (1% of the survey area), minor drainage (2% of the survey area) and planted Eucalypts (less than 1% of the survey area).

A description of each habitat is provided in Table 2, with the distribution shown in Figures 3a to 3e. The condition of the fauna habitat ranged from Highly Degraded to Very Good quality. Cleared land and planted Eucalypt habitats were Highly Degraded, while habitats present within the area of vacant crown land, which was largely undisturbed, were of Very Good quality. Areas of remnant habitat within cleared land generally had a lower quality than similar habitats within the vacant crown land, due to the level of connectivity and disturbance (including grazing pressure and presence of weeds).

The following plates are representative of the habitats available in the survey area. A description of each habitat, key aspects of the vegetation available and comment on the quality and value to vertebrate fauna species are recorded below. An assessment of the value of each habitat type to Carnaby's Black Cockatoo has also been discussed.

Table 2 Habitat types in the survey area


	<p>1. Cleared Land</p> <p>Agricultural land either crops or pasture. Highly Degraded fauna habitat quality.</p> <p>This habitat provides little value to native vertebrate fauna species.</p>
---	--

Table 2 Habitat types in the survey area (cont'd)



	<p>2. Planted Eucalypts</p> <p>Isolated trees planted along roadsides. Highly Degraded fauna habitat quality.</p> <p>Given its isolated nature, this habitat has little value to native vertebrate fauna species, with the exception that it may provide suitable roosting habitat for the Carnaby's Black Cockatoo.</p>
	<p>3. Mixed shrubland with/without woodland species</p> <p>Mixed shrubland with or without low open woodland, on flats, in depressions and on slopes. Species comprising this habitat include <i>Eucalyptus tottiana</i>, <i>Eucalyptus conveniens</i>, <i>Allocasuarina humilis</i>, <i>Allocasuarina campestris</i>, <i>Banksia scabrella</i>, <i>Calothamnus sanguineus</i>, <i>Banksia dallanneyi</i>, <i>Banksia attenuate</i>, <i>Conostylis canteriata</i>, <i>Hakea trifurcate</i>, <i>Hakea circumalata</i>, <i>Grevillea biform</i> and <i>Melaleuca leuropoma</i>.</p>
	<p>This fauna habitat was of Very Good quality within areas of vacant crown land. However remnant areas of this habitat outside the vacant crown land (i.e., within/surrounded by cleared land) ranged from Highly Degraded to Good quality. This habitat contained a number of flora species that are foraging habitat for Carnaby's Black Cockatoo. The Eucalyptus species present would also provide suitable roosting habitat.</p>

Table 2 **Habitat types in the survey area (cont'd)**



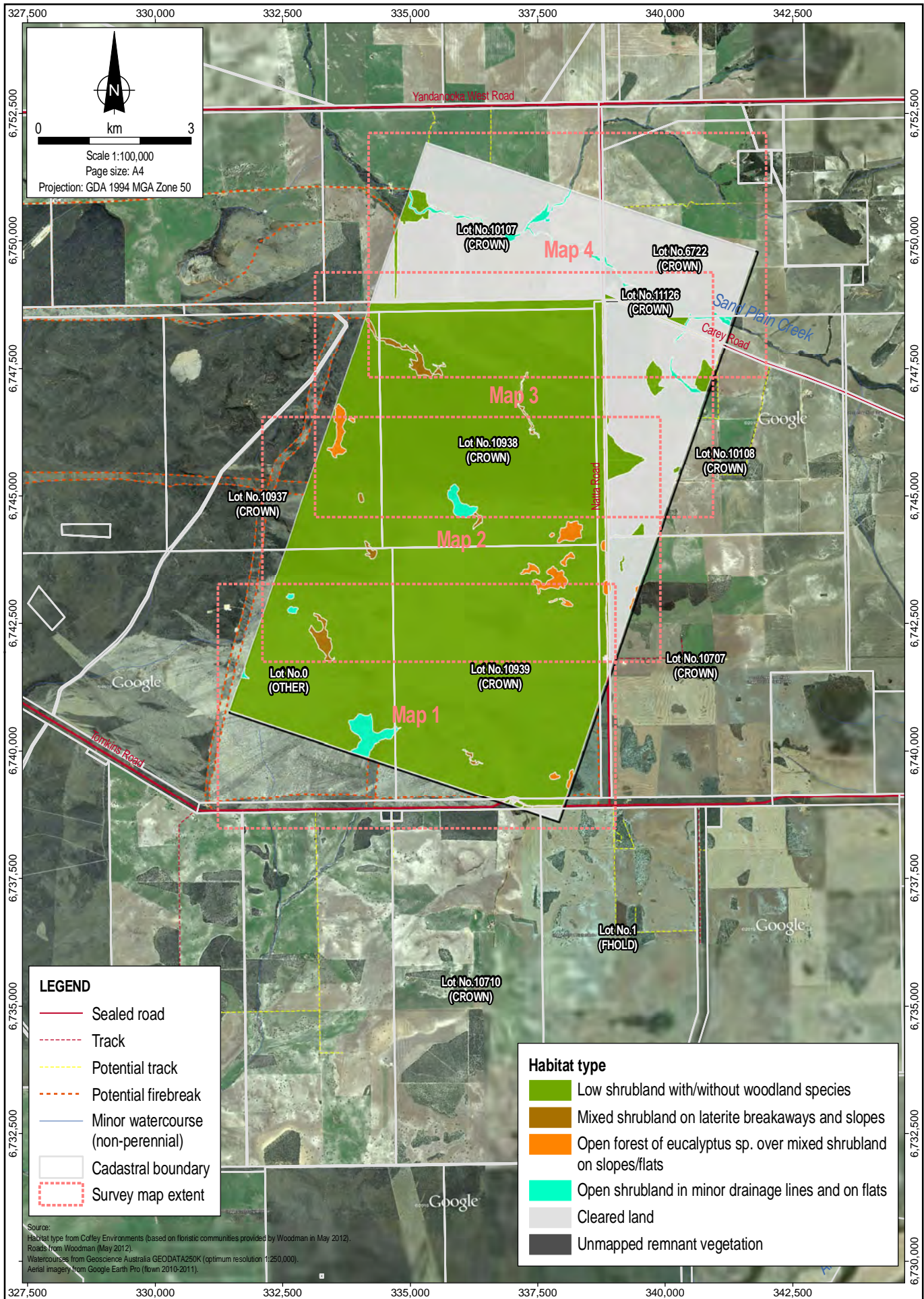
	<p>4. Laterite Breakaway</p> <p>The Laterite Breakaways contain a mixture of shrubland with/without open mallee woodland on clear rises or ridges in the landscape.</p> <p>This habitat was of Very Good quality and contains of Black Cockatoo foraging species (<i>Hakea auriculata</i>, <i>Banksia fraseri</i>).</p>
	<p>5. Open Eucalyptus Forest</p> <p>The Open Eucalypt Forest occurs as patches throughout the survey area with <i>Eucalyptus accedens</i> the dominant species.</p> <p>This fauna habitat was of Very Good quality within areas of crown land. However, remnant areas of this habitat outside the vacant crown land (i.e., within/surrounded by cleared land) ranged from Good to Highly Degraded quality.</p> <p>This habitat provides suitable roosting habitat for the Carnaby's Black Cockatoo. These younger age class trees may also provide suitable breeding habitat in the future.</p>

Table 2 **Habitat types in the survey area (cont'd)**

	<p>6. Minor Drainage</p> <p>Consisting of open shrubland in minor drainage lines and flats, this fauna habitat was of Very Good quality within the area of vacant crown land. However remnant areas of this habitat outside vacant crown land/within cleared land ranged from Good to Highly Degraded quality.</p> <p>This habitat included suitable foraging species for Carnaby's Black Cockatoos, including <i>Banksia carlinoides</i> and <i>Hakea lissocarpa</i>.</p>
---	---



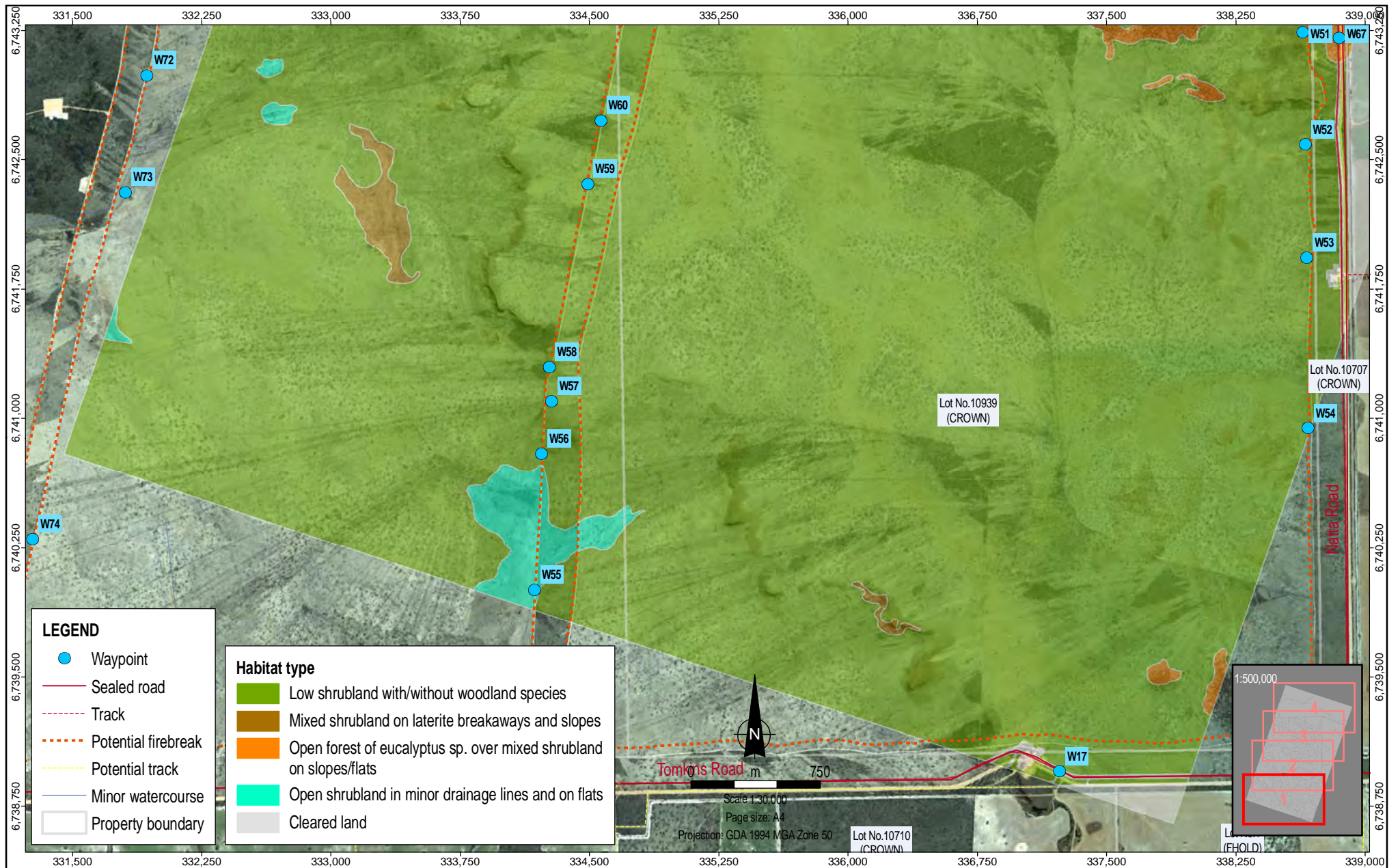
LEGEND

- Sealed road
- - - Track
- - - Potential track
- - - Potential firebreak
- Minor watercourse (non-perennial)
- Cadastral boundary
- Survey map extent

Habitat type

- Low shrubland with/without woodland species
- Mixed shrubland on laterite breakaways and slopes
- Open forest of eucalyptus sp. over mixed shrubland on slopes/flats
- Open shrubland in minor drainage lines and on flats
- Cleared land
- Unmapped remnant vegetation

Source:
 Habitat type from Coffey Environments (based on floristic communities provided by Woodman in May 2012).
 Roads from Woodman (May 2012).
 Watercourses from Geoscience Australia GEODATA250K (optimum resolution 1:250,000).
 Aerial imagery from Google Earth Pro (flown 2010-2011).



Source:
Habitat type from Coffey Environments (based on floristic communities provided by Woodman in May 2012).
Roads from Woodman (May 2012).
Watercourses from Geoscience Australia GEODATA250K (optimum resolution 1:250,000).
Aerial imagery from Google Earth Pro (flown 2005).

coffey environments

Date: 28.06.2012
MXD: 2740AA_EP2012_097_GIS003 v0_2
File Name: 2740AA_EP2012_097_F004_GIS

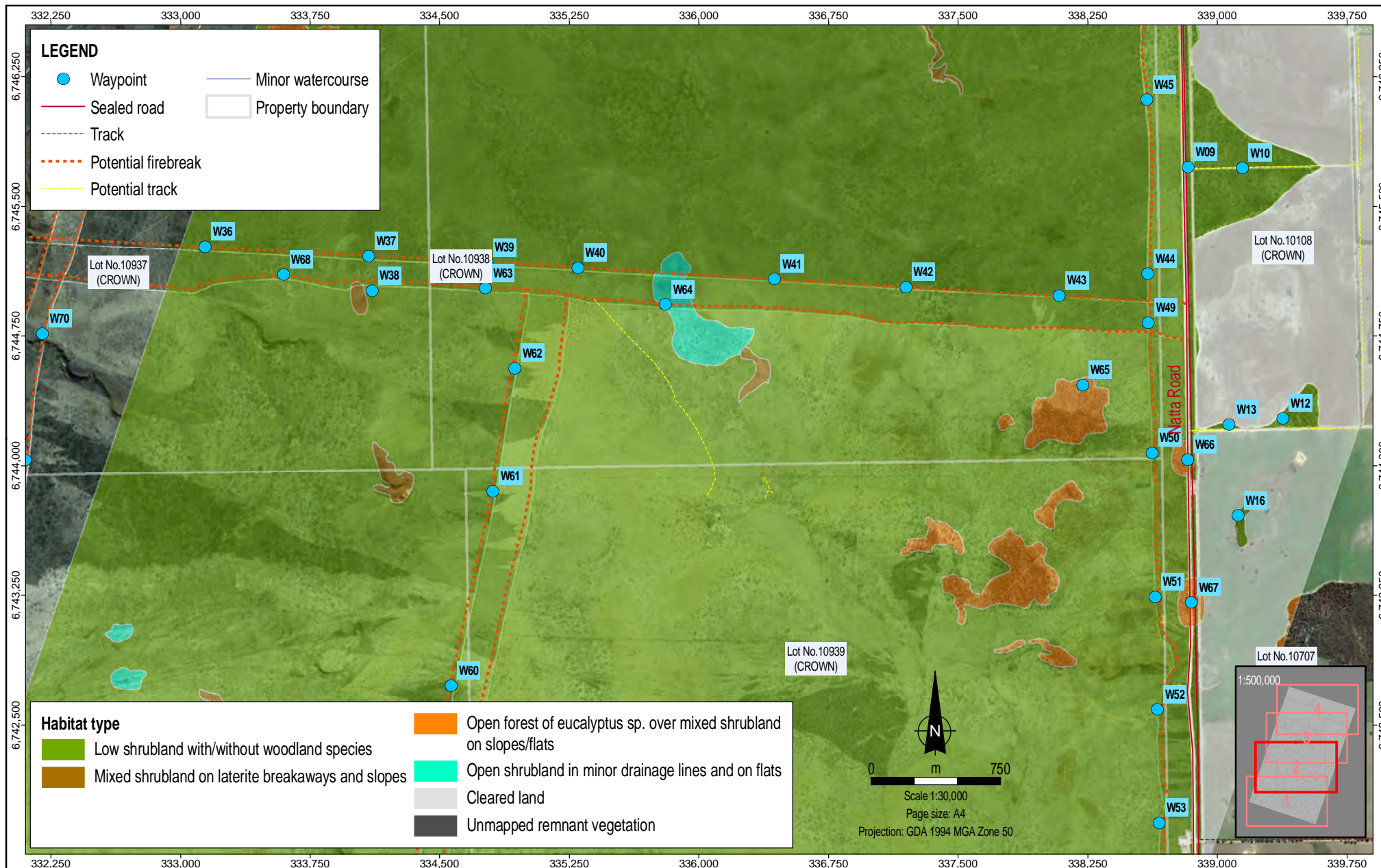
Warrego Energy

Level 1 Fauna Survey



Fauna habitat - Map 1 of 4

Figure No: **4**



Source:
Habitat type from Coffey Environments (based on floristic communities provided by Woodman in May 2012).
Roads from Woodman (May 2012).
Watercourses from Geoscience Australia GEODATA250K (optimum resolution 1:250,000).
Aerial imagery from Google Earth Pro (flown 2005).



Date:
28.06.2012
MXD:
2740AA_EP2012_097_GIS004_v0_2
File Name:
2740AA_EP2012_097_F005_GIS

Warrego Energy

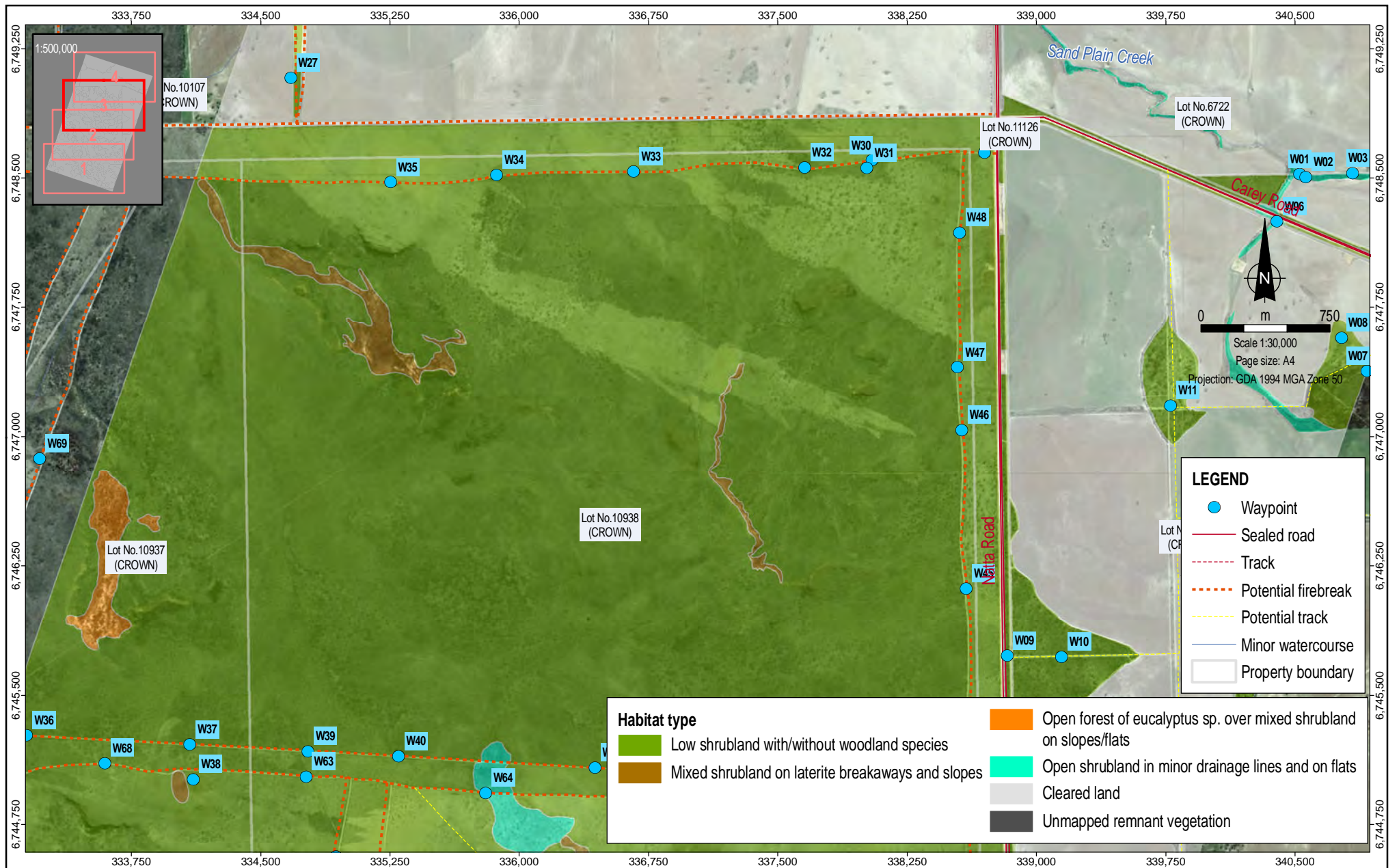
Level 1 Fauna Survey



Fauna habitat - Map 2 of 4

Figure No:

5



Source:
 Habitat type from Coffey Environments (based on floristic communities provided by Woodman in May 2012).
 Roads from Woodman (May 2012).
 Watercourses from Geoscience Australia GEODATA250K (optimum resolution 1:250,000).
 Aerial imagery from Google Earth Pro (flown 2005).

coffey environments

Date: 28.06.2012
 MXD: 2740AA_EP2012_097_GIS005_v0_2
 File Name: 2740AA_EP2012_097_F006_GIS

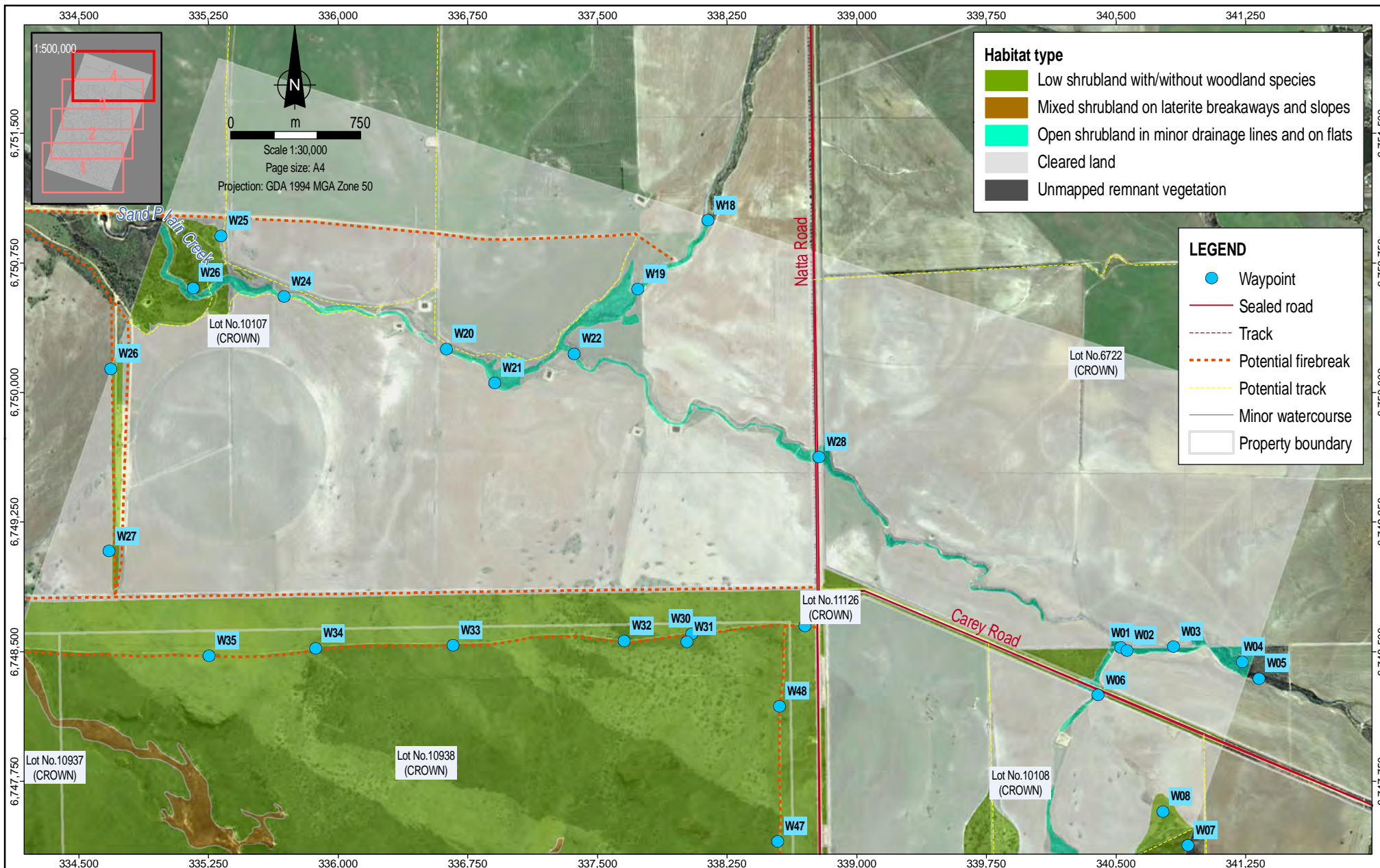
Warrego Energy

Level 1 Fauna Survey



Fauna habitat - Map 3 of 4

Figure No: **6**



Source:
Habitat type from Coffey Environments (based on floristic communities provided by Woodman in May 2012).
Roads from Woodman (May 2012).
Watercourses from Geoscience Australia GEODATA250K (optimum resolution 1:250,000).
Aerial imagery from Google Earth Pro (flown 2005).



Date:
28.06.2012
MXD:
2740AA_EP2012_097_GIS006_v0_2
File Name:
2740AA_EP2012_097_F007_GIS

Warrego Energy
Level 1 Fauna Survey



Fauna habitat - Map 4 of 4

Figure No:
7

4.2 Potential Vertebrate Fauna in the Survey Area

The desktop assessment identified a total of 302 species that have previously been recorded in the region, comprising 168 birds, 29 mammals, 94 reptiles and 11 amphibians. This list included a number of exclusively marine birds that are not likely to exist within the survey area. Although these species have been included in the fauna species list in Appendix A, they will not be discussed in this report.

4.3 Fauna Observations

A number of opportunistic fauna sightings (or evidence of) were recorded during the field investigations including three amphibians, nineteen birds, ten mammals and one reptile (see Appendix A). Two of these species (i.e., Horse and the Yellow-billed Spoonbill) had not been identified during the desktop assessment, increasing the total potential species list to 304 species.

4.4 Conservation Significant Fauna

Based upon the results of the desktop assessment, a number of conservation significant species have been identified as potentially occurring within the vicinity of the survey area, comprising:

- Three species listed as Threatened under the EPBC Act
- Thirteen species scheduled under the *WA Wildlife Conservation Act 1950*.
- Nine species listed as Priority Fauna by DEC.
- Five species listed as migratory species under the EPBC Act.

Conservation significant fauna species potentially present in the survey area are listed in Table 3. A brief description of each conservation significant species, its ecology and distribution and the likelihood of occurrence are provided in Table 4. Conservation codes for Western Australian fauna are provided in Appendix B.

Table 3 Conservation significant fauna predicted to occur in the survey area

Common Name	WC Act/DEC Status	EPBC Act Status	Potential to Exist Within Survey Area ¹
Birds			
Baudin's Black Cockatoo (<i>Calyptorhynchus baudinii</i>)	Schedule 1	Vulnerable	Unlikely
Carnaby's Black Cockatoo (<i>Calyptorhynchus latirostris</i>)	Schedule 1	Endangered	Likely
Malleefowl (<i>Leipoa ocellata</i>)	Schedule 1	Vulnerable	Unlikely
Peregrine Falcon (<i>Falco peregrinus</i>)	Schedule 4	—	Likely
Australian Bustard (<i>Ardeotis australis</i>)	Priority 4	—	Likely
Rufous Fieldwren (<i>Calamanthus campestris</i> subsp. <i>Montanellis</i>)	Priority 4	—	Likely
White-browed Babbler (<i>Pomatostomus superciliosus</i> subsp. <i>ashbyi</i>)	Priority 4	—	Possible

Table 3 Conservation significant fauna predicted to occur in the survey area (cont'd)

Common Name	WC Act/DEC Status	EPBC Act Status	Potential to Exist Within Survey Area
Birds (cont'd)			
White-bellied Sea Eagle (<i>Haliaeetus leucogaster</i>)	Schedule 3	Migratory	Unlikely
Rainbow Bee-eater (<i>Merops ornatus</i>)	Schedule 3	Migratory	Likely
Fork-tailed Swift (<i>Apus pacificus</i>)	Schedule 3	Migratory	Possible
Great Egret (<i>Ardea alba</i>)	Schedule 3	Migratory	Possible
Cattle Egret (<i>Ardea ibis</i>)	Schedule 3	Migratory	Possible
Mammals			
Western Brush Wallaby (<i>Macropus irma</i>)	Priority 4	—	Possible
Reptiles			
<i>Egernia stokesii</i>	Schedule 1	—	Unlikely
Gilled Slender-Bluetongue (<i>Cyclodomorphus branchialis</i>)	Schedule 1	—	Likely
Woma (<i>Aspidites ramsayi</i>)	Schedule 4 Priority 1	—	Possible
<i>Lerista macropisthopus</i>	Priority 2	—	Unlikely
Black Striped Snake (<i>Neelaps calonotos</i>)	Priority 3	—	Unlikely
Lined skink (<i>Lerista lineate</i>)	Priority 3	—	Unlikely
Western Carpet Python (<i>Morelia spilota imbricata</i>)	Schedule 4 Priority 4	—	Likely

1. Likelihood of Occurrence:

- Present – Observed within the site during Level 1 Fauna Assessment.
- Likely – Suitable habitat present, species recently recorded in the region.
- Possible – Suitable habitat present, limited species records in the region.
- Unlikely – Absence of suitable habitat, known distribution outside the survey area.
- Absent – Species recognised as Extinct (Ex/S2), or locally extinct.

Table 4 Description of distribution, habitat and likelihood of conservation significant fauna occurring in the survey area

Species	Status	Description	Distribution and Habitat	Likelihood of Occurrence
Birds				
Baudin's Black Cockatoo <i>Calyptorhynchus baudinii</i>	VU / S1	The Baudin's Black Cockatoo is similar to the Carnaby's Black Cockatoo however is distinguished as having a much longer bill which is finely curved and narrow and used to remove seeds from deep capsules of Marri trees and tearing wood to expose grubs.	The Baudin's Black Cockatoo is most common in the far southwest of WA where it breeds, from the southern forests north to Collie and east to Kojonup. Baudin's Cockatoo is typically found in vagrant flocks and utilises the taller, more open Jarrah and Marri woodlands, where it feeds mainly on Marri seeds and various Proteaceae species. When seasonally present on the coastal plain, This species is more likely to occur in the vicinity of eastern areas of the coastal plain.	The survey area is not within the range of the Baudin's Black Cockatoo as outlined by Morcombe (2004), Simpson and Day (2004), Pizzey and Knight (1997) and DSEWPac (2011). Records of the species appear in DEC database searches as occurring within 25 km of the survey area. However, as all these records were prior to 1980 and the Baudin's Black Cockatoo is difficult to distinguish from the Carnaby's Black Cockatoo, which is known to exist within the area. Baudin's Black Cockatoo is considered unlikely to occur within the survey area.
Carnaby's Black Cockatoo <i>Calyptorhynchus latirostris</i>	EN / S1	This large black cockatoo has white tail feather margins, white cheek patches and a short bill. Males have a black bill and a reddish eye-ring with less distinct feather margins than the female, which has a whitish bill and grey eye-ring.	This species inhabits the south-west of WA. Its preferred habitat is the woodland where it preferentially feeds on plants of the Proteaceae family. Preferred nesting trees include, the smooth-barked Salmon Gum (<i>Eucalyptus salmonophloia</i>), which contain deep hollows (Johnstone and Storr, 1998). Nesting also occurs in Marri (<i>C. calophylla</i>) and Tuart (<i>E. gomphocephala</i>).	Records of Carnaby's Black Cockatoo exist from the Southern Beekeepers Reserves (CALM, 1989), coastal areas between Jurien and Green Head (Ecologia, 1994), Dongara (Bamford and Metcalf, 2012) and from Mt Adams Road (DEC, 2012a), within 5 km of the survey area. Carnaby's Black Cockatoo are highly likely to occur within the survey area.

Table 4 Description of distribution, habitat and likelihood of conservation significant fauna occurring in the survey area (cont'd)

Species	Status	Description	Distribution and Habitat	Likelihood of Occurrence
<i>Birds (cont'd)</i>				
Malleefowl <i>Leipoa ocellata</i>	VU / S1	Malleefowl weigh 1.5 to 2.1 kg and can stand up to 67 cm tall. They have a grey neck, head and breast with a black stripe over crown to nape. Their upper parts are barred white; blotched brown, black and grey.	Malleefowl are restricted to mainly southern arid and semiarid zones mainly in scrubs and thickets of mallee and other dense litter-forming shrublands. Much of their range has been cleared for agriculture.	Malleefowl have been recorded at Koolanooka, near Morowa (ATA, 2004), approximately 50 km east of the survey area and appears in threatened species database searches within 25 km of the survey area. Given the survey area is on the edge of the Malleefowl's distribution and has a lack of suitable habitat, the survey area is unlikely to support Malleefowl.
Peregrine Falcon <i>Falco peregrinus</i>	S4	The Peregrine Falcon has a black head, white chin, which extends to a half collar, yellow legs and eye ring, slate coloured upper parts, while the underparts are white or buff and along with the wings have fine black barring.	The Peregrine Falcon inhabits areas near cliffs along coastlines or rivers and near ranges or wooded watercourses. This species of Falcon is found throughout the state with the exception of most deserts and the Nullarbor Plain.	This species has been recorded near Geraldton (Ecologia, 2002) and near Arrowsmith (DEC, 2012a) within 20 km of the survey area. As the species is nomadic, it is considered likely to occur within the survey area at least intermittently.
Australian Bustard <i>Ardeotis Australia</i>	P4	The Australian Bustard is a large, heavily built ground bird that weighs 3.4 to 4.1 kg in females and 7.3 kg in males. Males have head and long nape feathers that are black while their face and throat are white with fine black bars. Females have a blackish brown cap, which is narrower, and their black breast band is also narrower and often ill defined.	Australian Bustards are tall birds that live on open grassy plains and low shrubby areas in northern Australia. Although not flightless, Bustards spend the greater proportion of the time on the ground and tend to run from danger. They are omnivorous and tend to seek out foraging areas following rainfall, which may also herald breeding. Predation by introduced species, hunting, and habitat loss has caused the population to decline.	Records of this species exist from within 20 km of the survey area (DEC, 2012b), and from the wider region (Dames and Moore, 1993; Ecologia, 1994). As suitable habitat for the Australian Bustard exist within the survey area, the species is likely to occur.

Table 4 Description of distribution, habitat and likelihood of conservation significant fauna occurring in the survey area (cont'd)

Species	Status	Description	Distribution and Habitat	Likelihood of Occurrence
Birds (cont'd)				
Rufous Fieldwren <i>Calamanthus campestris</i> subsp. <i>Montanellis</i>	P4	Small grey-brown bird with fine dark streaks and a buff wash on forehead (Pizzey and Knight, 1997)	The Rufous Fieldwren inhabits mostly saltbush, bluebush, and scattered low shrubs on sandplain, gibber and saltmarsh in inland or dry country in southern and western Australia. The species is secretive, sedentary and has lot much habitat (Morcombe, 2004).	The Rufous Fieldwren was recorded in 2012 less than 10 km for the survey area (Bamford and Metcalf, 2012) and from between Dongara and Eneabba (DEC, 2012a). As potentially suitable habitat exist within the survey area the species is considered likely to exist within the survey area.
White-browed Babbler <i>Pomatostomus superciliosus</i> subsp. <i>ashbyi</i>	P4	Dull-brown in colour with a dark eye and a small white eyebrow, dark brown crown and a white throat that shades into brown lower underparts.	The White-browed Babbler tends to prefer a range of dry scrubby woodlands; mulga, other acacias, scrub along watercourses, saltbush.	Records of the White-browed Babbler exist near Mingenew (DEC, 2012a;b) approximately 25 km north-east of the survey area. It is possible that the species occurs within the survey area.
White-bellied Sea Eagle <i>Haliaeetus leucogaster</i>	M	The White-bellied Sea Eagle is a large eagle. Males grow 73 to 78 cm in length and weigh up to 2.2 kg while females grow 82 to 84 cm in length and weigh up to 3.3 kg. Adults have a head, neck, and terminal third of tail and underparts that is white. Back and most of wing is brownish grey or slaty grey.	White-bellied Sea Eagles are most commonly found around the coastline; however, they have been reported many kilometres inland, often along watercourses.	Records of these species in the vicinity of the survey area are predominantly in coastal parts. As the survey area is some distance from the coast it is unlikely that the White-bellies Sea Eagle occurs within the survey area.
Rainbow Bee-eater <i>Merops ornatus</i>	M	The Rainbow Bee-eater is a small bird weighing 20 to 25 g and growing up to 24 cm in length. Adults have a pale green forehead extending back as a line over the eye. The crown and nape are orange-brown or cinnamon rufous with the crown sometimes washed with green. A black stripe runs from the bill through eye to ear coverts bordered below with pale blue. Their lower back is pale blue and becomes darker on tail coverts. The tail is black.	The Rainbow Bee-eater is found across the better-watered parts of Western Australia. It prefers lightly wooded habitats, preferably on sandy soils near water. Rainbow Bee-eaters are scarce to very common across their range depending on suitable habitat conditions.	Numerous records of the Rainbow Bee-eater occur within the vicinity of the survey area. The species is found over a wide range of habitats especially on sandy soils and is therefore considered likely to occur within the survey area.

Table 4 Description of distribution, habitat and likelihood of conservation significant fauna occurring in the survey area (cont'd)

Species	Status	Description	Distribution and Habitat	Likelihood of Occurrence
<i>Birds (cont'd)</i>				
Fork-tailed Swift <i>Apus pacificus</i>	S3, M	The Fork-tailed Swift grows up to 19 cm in length and weighs 35 to 40 g. Adults are coloured blackish brown on the forehead, crown, hind neck, cheeks and ear coverts. The Fork-tailed Swift has a white rump.	This species breeds in the northeast and mid-east Asia and spends winters in Australia and southern New Guinea. It is a visitor to most parts of Western Australia, beginning to arrive in the Kimberley in late September, in the Pilbara in November and in the southwest land division in mid-December, and leaving by late April.	The Fork-tailed Swift has been recorded near Geraldton by GHD (2011) and RCCWA (2009). It is possible that the species occurs, within the survey area.
Great Egret <i>Ardea alba</i>	S3, M	The great egret is a large bird with all-white plumage that can reach one meter in height, weigh up to 950 g and a wingspan of 165 to 215 cm.	Egrets depend, to some extent upon surface water for foraging. The largest of the Australian egrets, the Great Egret is a large, white wader dependent upon floodwaters, rivers, shallow wetlands and intertidal mudflats.	The Great Egret has been recorded by GHD (2011) at Geraldton. As this is a migratory species, it is possible that the Great Egret pass over the survey area, or temporarily uses the area, however suitable habitat is scarce.
Cattle Egret <i>Ardea ibis</i>	S3, M	Cattle Egret is a stocky white bird with buff plumes in the breeding season. The species nests in colonies, usually near bodies of water and often with other wading birds. The nest is a platform of sticks in trees or shrubs.	The Cattle Egret is most widespread and common in north eastern Western Australia, across the Northern Territory, and in eastern Australia from Bundaberg, Queensland to Port Augusta, South Australia, including Tasmania. It occurs in grasslands, woodlands and wetlands, and is not common in arid areas. It also uses pastures and croplands, especially where drainage is poor.	The Cattle Egret has been recorded by GHD (2011) at Geraldton. As this is a migratory species, it is possible that the Cattle Egret pass over the survey area, or temporarily uses the area, however suitable habitat is scarce.

Table 4 Description of distribution, habitat and likelihood of conservation significant fauna occurring in the survey area (cont'd)

Species	Status	Description	Distribution and Habitat	Likelihood of Occurrence
Mammals				
Western Brush Wallaby <i>Macropus irma</i>	P4	The Western Brush Wallaby is generally gunmetal grey with a brownish tinge to the neck and back. A bold white stripe occurs from the mouth to ear and they have distinctive black gloves, toes and a black crest to the terminal half of their tail (Menkhorst and Knight, 2001).	The Western Brush Wallaby is distributed across the south-west of Western Australia from north of Kalbarri to Cape Arid. The optimum habitat is open forest or woodland, particularly favouring open, seasonally wet flats with low grasses and open scrubby thickets.	While preferred habitat is limited, the survey area exists within the range of the species. A record of the Western Brush Wallaby exists from the Beekeepers Nature Reserve (DEC, 2012b), approximately 25 km west of the survey area. It is possible that the species exist in the survey area.
Reptiles				
<i>Egernia stokesii</i>	VU	A moderately large skink (up to 27.5 cm). Black brown or reddish-brown with angular greyish-white spots on back, sides, base of tail and legs, arranged in irregular transverse bars. (Storr <i>et al</i> , 1999)	Inhabits arid and semiarid zones from Dirk Hartog Island and Peron Peninsula and the vicinity of Carnarvon in the north, and in the wheat belt from Mullewa south to Kellerberrin and east to Perenjori and Mukinbudin. This species is also found at Woolgorong Rock. Two different subspecies occur on the Houtman Abrolhos (<i>E.s. stokesii</i>) and on Baudin Island (<i>E. s. aethiops</i>). <i>E. s. stokesii</i> and <i>E. s. aethiops</i> inhabit low semiarid scrubs and shrub steepes, sheltering under slabs of limestone. <i>E. s. badia</i> inhabits semiarid scrubs and woodlands, sheltering un hollow logs and behind bark of fallen trees (Storr <i>et al</i> , 1999)	The nearest records of this species exist from Koolanooka, near Morowa (ATA, 2004), on the edge of the species distribution, approximately 50 km east of the survey area. Given the survey area is outside the known distribution of the species it is unlikely to support this species.
Gilled Slender Blue Tongue <i>Cyclodomorphus branchialis</i>	S1	Yellowish brown to greyish brown skink, with short, broad dark spots on many scales tending to align transversely, particularly on the tail and 3 prominent vertically elongate black bars on the sides of the neck (Wilson and Swan, 2010).	This species has a restricted distribution in semi arid shrublands from the Murchison River to near the Irwin River and is usually found in association with heavy red soils (Wilson and Swan, 2010).	The species is known from nearby records at the southern Beekeepers Reserves (CALM, 1989), from between Jurien and Green Head (Ecologia, 2004) and from Koolanooka (ATA, 2004). The species is considered likely to exist within the survey area.

Table 4 Description of distribution, habitat and likelihood of conservation significant fauna occurring in the survey area (cont'd)

Species	Status	Description	Distribution and Habitat	Likelihood of Occurrence
Reptiles (cont'd)				
Woma Python <i>Aspidites ramsayi</i>	S4, P1	Variable colouration but typically a yellowish brown to olive python with irregular darker bands.	The Woma Python is widely distributed in the interior of Australia but also includes an isolated population distribution in the south-west where decline is attributed to predation by feral animals and land clearing. Preferred habitat includes woodlands, heaths and shrublands, often with Spinifex.	The Woma has been historically recorded near Geraldton (How et al., 1983). It is possible this species occurs within the survey area, given the presence of suitable habitat and historic records.
<i>Lerista macropisthopus</i>	P2	<i>L. macropisthopus</i> is a large dark skink (up to 19 cm) with little or no pattern. Upper surface chocolate brown to greyish brown, without pattern except for slight darkening in loreal region and slight paling across back of head (Storr et al, 1999).	<i>L. macropisthopus</i> inhabits leaf litter beneath a wide variety of shrubs and trees on a wide variety of soils. The species has four sub-species all confined to WA which occur in the semi arid and arid south-western interior (<i>L. m. macropisthopus</i>), the arid central interior (<i>L. m. remota</i>), the arid and semiarid Midwest (<i>L. m. fusciceps</i>) and along and a little south of the lower Murchison (<i>L. m. galea</i>) (Storr et al, 1999).	The nearest record of <i>L. macropisthopus</i> to the survey area exists from near Geraldton (How et al., 1983). Based on the known distribution of the species, it is considered unlikely to occur with the survey area.
Black-striped Snake <i>Neelaps calonotos</i>	P3	A medium sized bright orange –red snake with cream centre to each scale, broad black crescent shaped band extending across next and black bar across head (Wilson and Swan, 2012).	Found in sandy coastal between Mandurah and Lancelin. Occurs on dunes and sand-plains vegetated with heath and eucalypt/Banksia woodlands (Wilson and Swan, 2012).	A record of this species exists from the Mt Adams road (DEC, 2012a) near survey area, however it has not been recorded in other surveys reviewed for this study and is generally confined to the coast. Therefore, it is considered unlikely to occur.
Lined skink (<i>Lerista lineata</i>)	P3	A small, slender skink (up 11 cm) with a brownish-grey back, darker and browner between black paravertebral lines. Wide black upper lateral stripe. Narrow greyish-white mid lateral stripe (Storr et al, 1999).	Inhabits white sands. Occurs on the lower west coast from Perth to Mandurah, also Busselton, Rottnest and Garden Island. Also occurs at Woodleigh Station. This species is confined to WA(Storr et al, 1999).	The species is known from few isolated populations. Based on the distribution outlines in Wilson and Swan (2012) and Storr (et al., 1999) <i>L. lineata</i> is unlikely to occur within the survey area. However a recent record of the species exists from Geraldton (GHD, 2011).

Table 4 Description of distribution, habitat and likelihood of conservation significant fauna occurring in the survey area (cont'd)

Species	Status	Description	Distribution and Habitat	Likelihood of Occurrence
Reptiles (cont'd)				
Carpet Python (<i>Morelia spilota imbricata</i>)	S4, P5	The Carpet Python is brown to blackish brown snake that grows up to 2.5. This species is covered with dark-edged pale patches, which have a tendency to be transversally elongated.	Collectively, all sub species of <i>Morelia spilota</i> , occupy the most diverse habitats of any Australian python (Wilson and Swan, 2010). The sub-species <i>M. s. imbricata</i> of the Carpet Python is limited to the south-western area of Western Australia, from Geraldton in the north to Esperance in the south and is also present on many off shore islands.	Records of the species are known from Geraldton (GHD, 2011; Desmond and Heriot, 2002); How <i>et al.</i> , 1983). The sub-species is known to inhabit sandy shrub and scrub habitats hence is considered likely to occur within the survey area.

4.5 Biodiversity Value

The EPA Position Statement No. 3 indicates an ecological assessment of a site must consider its biodiversity value at the genetic, species and ecosystem levels, and its ecological functional value at the ecosystem level (EPA, 2002). There is insufficient information available to assess biodiversity at the genetic level.

A number of introduced fauna species were recorded within the survey area or identified in the desktop assessment. As is the case with much of Australia, biodiversity within the survey area has been altered through predation and competition for resources by introduced fauna, primarily cats and foxes. Species of greatest abundance within the survey area are likely to be those that are more tolerant of disturbance and predation pressure, with those species that are less resilient being present only in low densities or being locally or even regionally extinct.

Other factors that may contribute to changes in species diversity and abundance include habitat disturbance, fragmentation and altered fire regimes. A large portion of fauna habitat in the survey area, namely the area of habitat within the vacant crown land was considered to be of Very Good quality with good connectivity to surrounding habitat of a similar condition to the west of the survey area. Areas of remnant vegetation within cleared land had a lower quality than similar habitats within the vacant crown land due to the level of disturbance and reduced connectivity.

It is Coffey Environments' assessment that while remnant areas of habitat present within cleared land are unlikely to provide habitat for an assemblage that would be typical of the region, it is likely that the area of vacant crown land supports a level of biodiversity value at the genetic, species and ecosystem level typical of the region.

4.6 Ecological Functional Value at the Ecosystem Level

While the vertebrate fauna assessment did not indicate that the terrestrial fauna assemblages present in the survey area were unique, no fauna trapping was conducted as part of this assessment. However, it could be assumed that the fauna assemblages present are likely to be present elsewhere within similar habitat of the surrounding landscape and not necessarily dependent on habitat of the survey area.

However, the survey area may be considered to have high ecological functional value, given:

- A large portion of habitat within the survey area was of Very Good quality (i.e., area of vacant crown land), showing minimal signs of disturbance, connectivity with other habitats and generally retaining many of the characteristics of the habitat had it not been disturbed.
- The presence of suitable Carnaby's Black Cockatoo habitat (including areas of remnant habitat within cleared land), including:
 - Foraging habitat: shrubland with/without woodland species, laterite breakaways and minor drainage habitats.
 - Roosting habitat: open Eucalyptus forest and planted Eucalypts habitats (planted roadside/property trees).

No suitable breeding habitat for Carnaby's was observed, although the open Eucalyptus forest and planted Eucalypts habitats contained younger age class trees which may provide suitable breeding habitat in the future. The Carnaby's Black Cockatoo is listed as an Endangered species under the Commonwealth EPBC Act. The decline of the Carnaby's Black Cockatoo is due

primarily to the loss and fragmentation of habitat, mainly for agricultural purposes during the 20th century (DSEWPaC, 2012a). The long-term survival of Carnaby's Black Cockatoo depends on the persistence of suitable breeding, roosting and foraging habitat capable of providing enough food to sustain the population (DSEWPaC, 2012a).

5. POTENTIAL IMPACTS

This section outlines the potential environment impacts of the Project on fauna within the survey area, relevant management currently being considered by Warrego and any additional management recommendations.

5.1 Loss or Degradation of Fauna Habitat

Loss or degradation of habitat associated with the Project will be the primary impact of the Project on terrestrial fauna within the survey area, potentially resulting in the direct loss of species and fragmentation effects and the associated change in assemblage structure. While the final Project footprint is still to be finalised, it is anticipated that it will not exceed 150 ha and that clearing within the Project footprint will be minimised.

The seismic survey involves the installation of source and receiver lines and traversing the survey area in a grid pattern using Vibroseis trucks to send receive and processes seismic signals in order to map the underlying geology. In addition to the potential clearing associated with the seismic survey, clearing will also be required for the location of the proposed appraisal well and associated infrastructure.

The extent of clearing required for the seismic survey lines is likely to vary across the survey area. The source lines generally require no vegetation at each source point to allow the Vibroseis trucks used during the survey to make effective contact with the ground. In some parts of the survey area, this may require clearing of the vegetation, while in other areas the trucks may be able to traverse the existing low level vegetation without direct clearing being required.

By minimising the width of clearing and using a coarse grid spacing, habitat fragmentation and edge effects can be minimised. Furthermore geophones along receiver lines could potentially be walked in rather than driven to minimise impacts to areas of environmental sensitivity.

In addition, Coffey Environments recommends the following mitigation measures:

- Minimise clearing, with a particular focus on avoiding large habitat trees (particularly areas of open Eucalypt forest and planted Eucalypts habitats) as much as possible.
- Align the Project footprint with existing areas of disturbance, where possible.
- Maintain ecological linkages between areas of habitat to mitigate fragmentation impacts.
- Refer the Project under the Commonwealth EPBC Act, given impacts to Carnaby's Black Cockatoo foraging habitat (and roosting habitat, where it can not be avoided).

5.2 Fauna Injuries and Mortalities from Interactions with Project Vehicles, Machinery and Infrastructure

The implementation of the Project will result in increased vehicle and machinery movements within the survey area, which may result in fauna injuries and mortalities. Ground dwelling, mobile or slow moving species are considered the most susceptible to impact, particularly reptile and small mammal taxa of the survey area. However, given the slow progression of the Vibroseis trucks, noise and vibration associated with the seismic survey is likely to assist in deterring animals away from the survey area and reduce the risk of fauna injuries and mortalities during the seismic survey.

The development of the appraisal well will also involve the establishment of a number of excavations, namely a turkeys nest (clean water), drill cutting sump and flare pit (in which any intercepted gas is ignited), which may incidentally trap fauna and lead to injuries and/or mortalities.

Coffey Environments recommends the following mitigation measures:

- Implement Project speed limits (i.e., maximum speed of 60 km/h off main/public thoroughfares).
- Restrict night-time vehicle movements.
- Design all excavations to incorporate effective fauna egress to avoid entrapment, injury and death of local fauna.
- Fence all excavations.
- Inspect all excavations regularly to identify any trapped fauna and provide assistance if necessary. Inspections are particularly useful early in the morning and prior to the commencement of backfilling to ensure that the excavations are clear of fauna.
- All fauna injuries and mortalities should be recorded so that they can be reported in the Annual Environment Report, where required.
- Develop an Environmental Education and Awareness induction for all staff, informing them of the conservation values present within the survey area and their management responsibilities.

5.3 Increased Predation by Introduced Fauna

An increase in human activity is often associated with an increase in the abundance of introduced species such as the house mouse (*Mus musculus*), feral cat (*Felis catus*) and fox (*Vulpes vulpes*). This increase may be due to a decline in habitat health, increased access, increased road kills and poor waste disposal practices.

The house mouse and cat have been recorded in fauna surveys previously conducted in the region and the fox was observed during this survey. The cat and fox are particularly damaging predators and any increase in their numbers could have a detrimental effect on local native fauna (Kinnear, 1993; Bamford, 1995).

Coffey Environments recommends the following mitigation measures:

- Undertake progressive rehabilitation as soon as possible.
- Manage domestic waste and water storages appropriately to minimise the proliferation of introduced fauna (e.g., store putrescible waste in closed bins and remove regularly from site).
- Develop and implement a feral animal control program in consultation with the DEC and pastoralists.

5.4 Altered Fauna Behaviour Associated with Noise, Vibration and Light Emissions

The implementation of the Project will result in noise, light and vibration emissions, which may adversely affect fauna behaviour. While these impacts can be very difficult to predict, they have

been known to force some animals to move out of the affected area/abandon habitats, affect communication, alter feeding behaviour and breeding patterns.

The seismic survey will only be undertaken during daylight hours and so no light emissions will be associated with this activity and vibration and noise emissions will be limited to daylight hours. The appraisal well is likely to operate 24 hours a day and so may have associated light and noise emissions.

Coffey Environments recommends the following mitigation measures:

- Direct light to working areas where possible.
- Restrict night-time vehicle movements.

5.5 Increased Risk of Fire

An increased human presence and use of vehicles and machinery in and around vegetation including cropped paddocks has an inherent risk of starting bushfires. Fires have the potential to cause serious degradation of fauna habitat and loss of individuals.

Coffey Environments recommends the following mitigation measures:

- Develop and implement a fire prevention and control strategy.
- Ensure appropriate fire response equipment and appropriately trained staff are available at all times during operation.
- Be aware of any 'harvest and vehicle movement bans' issued by local government during prohibited/restricted burning times (usually over the summer period between October and April).
- Restrict off-road driving.

This page has been left blank intentionally

6. SIGNIFICANCE OF POTENTIAL IMPACTS ON CARNABY'S BLACK COCKATOO

Under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) an action will require approval from the Minister if the action has, will have, or is likely to have, a significant impact on a matter of national environmental significance, which includes listed threatened species. The Carnaby's Black Cockatoo is listed as an Endangered species under the EPBC Act.

The survey area falls within the modelled distribution of the Carnaby's Black Cockatoo (both breeding and non-breeding range) and this species has been recorded on multiple occasions within the vicinity of the survey area (see Section 3.1). As discussed in Section 4.6, it is Coffey Environments' assessment that this species is likely to occur in the survey area given the presence of suitable habitat, including:

- Foraging habitat: shrubland with/without woodland species, laterite breakaways and minor drainage habitats (see Figures 3a to 3e).
- Roosting habitat: open Eucalyptus forest and planted Eucalypts habitats (planted roadside/property trees) (see Figures 3a to 3e).

While no suitable breeding habitat was observed during the field investigation, the open Eucalyptus forest and planted Eucalypts habitats contained younger age class trees which may provide suitable breeding habitat in the future.

While it is anticipated that Warrego will minimise clearing as much as possible, with a particular focus on avoiding roosting (and potentially future breeding) habitat, clearing of Carnaby's Black Cockatoo habitat is largely unavoidable given that all habitats in the survey area (with the exception of cleared land) contain suitable foraging and roosting species.

The Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) has prepared the EPBC Act Referral Guidelines for Three Threatened Black Cockatoo Species (2012b) to assist proponents in determining whether their proposed development needs to be referred to DSEWPaC for approval under the EPBC Act. In consideration of this guideline and given the Project is going to result in clearing of more than 1 ha of quality foraging (and potentially roosting) habitat, referral is recommended.

6.1 Assessment Against Significant Impact Criteria

In determining the significance of Project impacts, the EPBC Act Referral Guidelines for Three Threatened Black Cockatoo Species (DSEWPaC, 2012b) should be read in conjunction with the EPBC Policy Act Statement 1.1 Matters of National Environmental Significance (DEWHA, 2006), which sets out a number of significant impact criteria for Critically Endangered or Endangered species. Where an action has a '*real chance or possibility*' of triggering any of these criteria the action is considered to have a significant impact. These significant impact criteria have been assessed below.

1. Lead to a long-term decrease in the size of a population.

It is Coffey Environments' assessment that the Project has **no '*real chance or possibility*'** of leading to a long-term decrease in the size of a population, given the:

- Scale (~150 ha or 2% of the survey area) and nature of the proposed clearing (e.g., width of clearing, coarse grid spacing), as discussed in Section 5.1.
- Short-term nature of the Project. It is Coffey Environments understanding that both the seismic survey and appraisal well will operate for a period of three to six months.
- Absence of breeding habitat within the survey area.
- Availability of similar foraging and roosting habitat in the local and regional area (i.e., to the west of the survey area and as approximately 17.67% of the sub region is held in conservation reserves).

2. Reduce the area of occupancy of the species.

The survey area falls within the modelled distribution of the Carnaby's Black Cockatoo, including the north western extent of the modelled breeding range of the species (DSEWPaC, 2012b). To reduce the area of occupancy of this species the Project would have to significantly impact habitat on the edges of the species' known (breeding and/or non-breeding) distribution or impact a sufficiently large enough area leading to fragmentation effects.

It is Coffey Environments' assessment that the Project has **no 'real chance or possibility'** of reducing the area of occupancy of the species, given the:

- Scale (~150 ha or 2% of the survey area) and nature of the proposed clearing (e.g., width of clearing, coarse grid spacing) discussed in Section 5.1.
- Location of the survey area within the non-breeding modelled distribution of the species (which extends all directions from the survey area).
- Absence of breeding habitat within the survey area.

3. Fragment an existing population into two or more populations.

A large portion of habitat present within the survey area, namely the area of habitat within the vacant crown land, was considered to be of Very Good quality with good connectivity to surrounding habitat of a similar condition to the west of the survey area. While areas of remnant vegetation within cleared land had a lower quality than similar habitats within the vacant crown land, associated with their level of disturbance and reduced connectivity.

It is Coffey Environments' assessment that the Project has **no 'real chance or possibility'** of fragmenting an existing population into two or more populations, given the:

- Scale (~150 ha or 2% of the survey area) and nature of the proposed clearing (e.g., width of clearing, coarse grid spacing), discussed in Section 5.1.
- Aerial and highly mobile nature of the species. While little is known about the species home range, animals have previously been recorded traveling up to 1.4 and 2.5 km from their nest (DSEWPaC, 2012b).

This assessment would be further supported by the implementation of any of the following recommendations:

- Minimise clearing, with a particular focus on avoiding large habitat trees (particularly areas of open Eucalypt forest and planted Eucalypts habitats) as much as possible.
- Align the Project footprint with existing areas of disturbance, where possible.

- Maintain ecological linkages between areas of habitat to mitigate fragmentation impacts.

4. Adversely affect habitat critical to the survival of a species.

The Carnaby's Cockatoo Recovery Plan (DEC, 2012c) defines habitat critical for the recovery of the species as any identified breeding and nearby feeding habitat, former breeding habitat that has hollows intact, and vegetation that provides habitat for feeding, watering and regular night roosting.

No breeding habitat and thus known nesting trees nor known roosting trees are present within the survey area. However, the survey area contains suitable foraging and roosting habitat so clearing of critical habitat is largely unavoidable given all habitats (with the exception of cleared land) within the survey area contain suitable foraging and roosting species.

A large portion of habitat present within the survey area, namely the area of habitat within the vacant crown land, was considered to be of Very Good quality with good connectivity to surrounding habitat of a similar condition to the west of the survey area. While areas of remnant vegetation within cleared land had a lower quality than similar habitats within the vacant crown land, associated with their level of disturbance and reduced connectivity.

Given impacts to critical habitat are unavoidable, the Project will have an adverse affect on habitat critical to the survival of the species. However, it is Coffey Environments' assessment that these impacts will be of limited significance, given the:

- Availability of similar habitat in the local and regional area (i.e., to the west of the survey area and as approximately 17.67% of the sub region is held in conservation reserves).
- Scale (~150 ha or 2% of the survey area) and nature of the proposed clearing (e.g., width of clearing, coarse grid spacing), as discussed in Section 5.1.

This assessment would be further supported by the implementation of any of the following recommendations:

- Minimise clearing, with a particular focus on avoiding large habitat trees (particularly areas of open Eucalypt forest and planted Eucalypts habitats) as much as possible.
- Align the Project footprint with existing areas of disturbance, where possible.

5. Disrupt the breeding cycle of a population.

Whilst the survey area occurs within the modelled distribution of this species (both breeding and no-breeding range) no known nesting trees have been recorded within the survey area, nor was suitable breeding habitat observed during the field investigation. It is Coffey Environments' assessment that there is **no 'real chance or possibility'** that the Project will disrupt the breeding cycle of a population.

6. Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

Clearing associated with the Project will result in the degradation and loss of Carnaby's Black Cockatoo habitat. The Project footprint is not expected to exceed 150 ha and not all of this area will be cleared, as discussed in Section 5.1.

In consideration of the scale (~150 ha or 2% of the survey area) and nature of the proposed clearing (e.g., width of clearing, coarse grid spacing) it is Coffey Environments' assessment that

there is **no 'real chance or possibility'** that the Project will modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

This assessment would be further supported by the implementation of any of the following recommendations:

- Minimise clearing, with a particular focus on avoiding large habitat trees (particularly areas of open Eucalypt forest and planted Eucalypts habitats) as much as possible.
- Align the Project footprint with existing areas of disturbance, where possible.
- Maintain ecological linkages between areas of habitat to mitigate fragmentation impacts.
- Referral of the Project under the Commonwealth EPBC Act, given impacts to Carnaby's Black Cockatoo foraging habitat (and roosting habitat, where it cannot be avoided).

7. Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat.

The feral cat and fox are already believed to be established, given both previous records from the region and observations of the fox during the field investigation.

Warrego could, however, mitigate an increase in the abundance of invasive species by implementing the following mitigation measures:

- Undertake progressive rehabilitation as soon as possible.
- Manage domestic waste and water storages appropriately to minimise the proliferation of introduced fauna (e.g., store putrescible waste in closed bins and remove regularly from site).
- Develop and implement a feral animal control program in consultation with the DEC and pastoralists.

It is Coffey Environments' assessment that there is **no 'real chance or possibility'** that the Project will result in the establishment of any other invasive species that may be harmful to the Carnaby's Black Cockatoo.

8. Introduce disease that may cause the species to decline.

The only threat of disease posed by the Project that may impact the Carnaby's Black Cockatoo, albeit indirectly (i.e., through habitat loss/degradation), is the introduction of Phytophthora dieback. Phytophthora dieback feeds on the roots of plants causing rot-root in susceptible species and plant death. The pathogen is spread through the movement of infested soil and mud, especially by vehicles and footwear. It also moves in free water and via root-to-root contact between plants.

Phytophthora dieback is a significant threat to vulnerable plants and plant communities in areas receiving at least 400 mm annual rainfall. Although more prevalent in higher rainfall zones (greater than 800 mm annual rainfall) it also spreads through 'water gaining' sites such as wetlands and rivers, in the 400 to 600 mm rainfall zone.

Given, the average annual rainfall at Eneabba (the closest weather station) is 493.3 mm, the survey area may be susceptible to Phytophthora dieback. A Phytophthora dieback assessment has been undertaken over the survey area, with results pending.

However, it is Coffey Environments' assessment that there is **no 'real chance or possibility'** that the Project will introduce disease that may cause the Carnaby's Black Cockatoo to decline, given:

- Where Phytophthora dieback is found to be present within the survey area, there are no other diseases the Project is likely to introduce that would impact this species.
- Where Phytophthora dieback is not found to be present within the survey area, Warrego is committed to developing and implementing a biosecurity management plan, including ensuring all vehicles and equipment arrive on site free of soil and mud.

9. Interfere with the recovery of the species.

The objective of the Carnaby's Cockatoo Recovery Plan (DEC, 2012c) is to stop further decline in the distribution and abundance of Carnaby's Black Cockatoo by protecting the birds throughout their life stages and enhancing habitat critical for survival throughout their breeding and non-breeding range, ensuring that the reproductive capacity of the species remains stable or increases.

The recovery plan will be deemed to **not** be successful if, within a ten-year period, any of the following performance criteria occur:

- a. The area of occupancy declines by more than 10% below 60,525 km² using a grid size of 15 x 15 km².
- b. The number of breeding pairs of Carnaby's cockatoos at monitored breeding sites across the breeding range decreases by more than 10% averaged over three consecutive years (or similar change in amended methodology).
- c. The estimated number of adult and proportion of juvenile Carnaby's cockatoos at known night roost sites decreases by more than 10% averaged over three consecutive years.
- d. The extent of nesting habitat (trees with nesting hollows), feeding habitat (as defined by vegetation complexes), and night roosting habitat (as identified through community survey) decreases by more than 10% throughout the species' range.

The Project is unlikely to contribute to the recovery plan performance criteria 'a', 'b' and 'c', given:

- The Project has **no 'real chance or possibility'** of reducing the area of occupancy of the species, as discussed against significant impact criteria 2 (above).
- No known nesting trees (i.e., breeding sites) have been recorded within the survey area, nor was suitable breeding habitat observed during the field investigation.
- No known roost sites have been recorded within the survey area (although suitable roosting habitat was present).

While the Project may contribute to performance criteria 'd' given clearing of critical habitat (i.e., foraging and roosting) is largely unavoidable (see discussion against significant impact criteria 4, above), it is Coffey Environments' assessment that there is **no 'real chance or possibility'** that the Project itself will interfere with the recovery of the Carnaby's Black Cockatoo.

This page has been left blank intentionally.

7. CONCLUSION AND RECOMMENDATIONS

7.1 Conclusion

The methodology used for this Level 1 fauna assessment adequately addresses the EPA Position Statement No. 3 Terrestrial Biological Surveys as an Element of Biodiversity Protection (EPA, 2002) and Coffey Environments' interpretation of the EPA Guidance for Assessment of Environmental Factors: Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia, No. 56 (EPA, 2004) and the EPA (2010) Technical Guide – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment. Coffey also undertook a targeted Carnaby's Black Cockatoo habitat assessment in accordance with the EPBC Act Referral Guidelines for Three Threatened Black Cockatoo Species (DSEWPaC, 2012b)

The field investigation identified that six fauna habitat types were present within the survey area comprising; cleared land, mixed shrubland with/without woodland species, laterite breakaway, open Eucalyptus forest, minor drainage lines and planted Eucalypt habitats.

A total of 304 vertebrate fauna species, 20 of which are conservation significant, have previously been recorded within the region and so have the potential to occur within the survey area. Coffey Environments undertook an assessment to determine the likelihood of these species occurring within the survey area based on the availability of suitable habitat, known distribution of each species and currency of species records. Of the 20 species of conservation significance, only six were considered 'likely' to occur (Carnaby's Black Cockatoo, Peregrine Falcon, Australian Bustard, Rufous Fieldwren, Rainbow Bee-eater, Gilled Slender-Bluetongue and Western Carpet Python), and another six were considered as 'possibly' occurring within the survey area (White-browed Babbler, Fork-tailed Swift, Great Egret, Cattle Egret, Western Brush Wallaby and Woma).

It is Coffey Environments' assessment that the survey area may be considered to have high ecological functional value, given:

- A large portion of habitat within the survey area was of Very Good quality (i.e., area of vacant crown land), showing minimal signs of disturbance, connectivity with other habitats and generally retaining many of the characteristics of the habitat had it not been disturbed.
- The presence of suitable Carnaby's Black Cockatoo habitat (including areas of remnant habitat within cleared land), including:
 - Foraging habitat: shrubland with/without woodland species, laterite breakaways and minor drainage habitats.
 - Roosting habitat: open Eucalyptus forest and planted Eucalypts habitats (planted roadside/property trees).

Furthermore, while remnant areas of habitat present within cleared land are unlikely to provide habitat for a fauna assemblage that would be typical of the region (i.e., before disturbance), it is likely that the Very Good quality habitat present within the vacant crown land supports the same level of biodiversity value at the genetic, species and ecosystem level typical of the region.

Potential impacts of the Project on terrestrial fauna present within the survey area includes:

- Loss or degradation of fauna habitat.

- Fauna injuries and mortalities from interactions with project vehicles, machinery and infrastructure.
- Increased predation by introduced fauna.
- Altered fauna behaviour associated with noise, vibration and light emissions.
- Increased risk of fire.

Coffey Environments assessed the significance of these potential impacts on the Carnaby's Black Cockatoo to assist in determining whether the Project requires approval from the minister under the EPBC Act. This involved consulting the EPBC Act Referral Guidelines for Three Threatened Black Cockatoo Species (DSEWPaC, 2012b) and the EPBC Policy Act Statement 1.1 Matters of National Environmental Significance (DEWHA, 2006).

In consideration of the EPBC Act Referral Guidelines for Three Threatened Black Cockatoo Species (DSEWPaC, 2012b), given the Project is going to result in clearing of more than one hectare of quality foraging (and potentially roosting) habitat, referral is recommended.

The EPBC Policy Act Statement 1.1 (DEWHA, 2006) sets out a number of criteria for determining significant impacts on Critically Endangered or Endangered species. Coffey Environments determined that the Project only had a 'real chance or possibility' of triggering one of the nine criteria, specifically 'adversely affecting habitat critical to the survival of the species', given that clearing of foraging (and potentially roosting) habitat is largely unavoidable. The impact of clearing on the species however, is believed to be of limited significance, given the:

- Availability of similar habitat in the local and regional area (i.e., to the west of the survey area and as approximately 17.67% of the sub region is held in conservation reserves).
- Scale (~150 ha or 2% of the survey area) and nature of the proposed clearing (e.g., width of clearing, coarse grid spacing), as discussed in Section 5.1.

7.2 Recommendations

It is recommended that Warrego Energy refer the Project under the EPBC Act due to the Project's potential impact to Carnaby's Black Cockatoo foraging (and potentially roosting) habitat.

It is also recommended that Warrego considers the inclusion of the fauna management practices/recommendations outlined in this report in the development of the Project and the preparation of their environmental management plan, including:

- Minimise clearing, with a particular focus on avoiding large habitat trees (particularly areas of open Eucalypt forest and planted Eucalypts habitats) as much as possible.
- Align the Project footprint with existing areas of disturbance, where possible.
- Maintain ecological linkages between areas of habitat to mitigate fragmentation impacts.
- Implement Project speed limits (i.e., maximum speed of 60 km/h off public thoroughfares).
- Restrict night-time vehicle movements.
- Restrict off-road driving.
- Design all excavations to incorporate effective fauna egress to avoid entrapment, injury and death of local fauna.

- Fence all excavations.
- Inspect all excavations regularly to identify any trapped fauna and provide assistance if necessary. Inspections are particularly useful early in the morning and prior to the commencement of backfilling to ensure that the excavations are clear of fauna.
- Record all fauna injuries and mortalities so that they can be reported in the environmental reports, where required.
- Develop an Environmental Education and Awareness induction for all staff, informing them of the conservation values present within the survey area and their management responsibilities.
- Undertake progressive rehabilitation as soon as possible.
- Utilise native flora species identified from the survey area in rehabilitation and revegetation.
- Manage domestic waste and water storages appropriately to minimise the proliferation of introduced fauna (e.g. store putrescible waste in closed bins and remove regularly from site).
- Develop and implement a feral animal control program in consultation with the DEC and pastoralists.
- Direct any lighting to working areas, where possible.
- Develop and implement a fire prevention and control strategy.
- Ensure appropriate fire response equipment and appropriately trained staff are available at all times during operation.
- Be aware of any 'harvest and vehicle movement bans' issued by local government during prohibited/restricted burning times (usually over the Summer period between October and April).
- Develop and implement a biosecurity management plan (including weeds and dieback).

This page has been left blank intentionally.

8. REFERENCES

- ATA, 2004. Fauna Assessment of Koolanooka South. Report 2004/40, ATA Environmental, unpublished report prepared for Midwest Corporation.
- ATA. 2006. Vertebrate Fauna Assessment, Shire of Greenough TPS No.1A Amendment No.4. Unpublished report by ATA Environmental for Bayform Holdings Pty Ltd.
- Bamford. M. 1995. Predation by feral cats upon lizards. *Western Australia Naturalists*, 20: 191-196.
- Bamford.M and Metcalf.B. 2012. Fauna Assessment of Tiwest's Dongara Project, prepared for Tiwest Joint Venture, Western Australia.
- Beard, J. S. 1990. Plant life of Western Australia. Kangaroo Press. NSW
- BOM. 2012. Climate statistics for Australian Locations – Eneabba. A WWW database accessed on 31 May 2012 at: <http://reg.bom.gov.au/climate/data/>. Bureau of Meteorology. Canberra, ACT.
- CALM, 1989. A spring reconnaissance survey of the flora and fauna of the southern beekeepers reserve. Burbidge and Boscacci, Department of Conservation and Land Management
- Dames and Moore Pty Ltd. 1993. Oakajee Proposed Industrial Site: flora and fauna assessment. Unpublished report for Landcorp.
- DEC. 2012a. Threatened Fauna Database. Search of the DEC Threatened Fauna Database, Department of Conservation and Environment. Perth, Western Australia.
- DEC. 2012b. Naturemap. July, Department of Environment and Conservation, Perth, Western Australia.
- DEC. 2012c. Carnaby's Cockatoo Recovery Plan, Department of Environment and Conservation, Perth, Western Australia.
- DEWHA. 2006. Matters of National Environmental Significance. Significant Impact Guidelines 1.1, Environmental Protection and Biodiversity Conservation Act 1999.
- Desmond and Chant. 2001. Geraldton Sandplain 3 (GS3 – Lesueur Sandplain subregion). A biodiversity audit of Western Australia's 53 Biogeographical Subregions in 2002. A WWW publication accessed on 31 May 2012 at: http://www.dec.wa.gov.au/pdf/science/bio_audit/geraldton_sandplains03_p293-313.pdf. Department of Environment and Conservation. Perth, WA.
- Desmond, A.J. and Heriot, S.M. 2002. Fauna monitoring of the Chapman River wildlife corridor, Geraldton. Department of Conservation and Land Management, Geraldton.
- DSEWPaC. 2011. Environment Protection and Biodiversity Conservation Act 1999 draft referral guidelines for three threatened black cockatoo species: Carnaby's cockatoo (endangered), *Calyptorhynchus latirostris*, Baudin's cockatoo (vulnerable), *Calyptorhynchus baudinii*, and Forest red-tailed black cockatoo (vulnerable), *Calyptorhynchus banksii naso*. Draft referral guidelines for three threatened Black Cockatoo species.
- DSEWPaC. 2012a. Species Profile and Threats Database. December. Department of Sustainability, Environment, Water, Population and Communities. Canberra, ACT.
- DSEWPaC. 2012b. EPBC Act Referral Guidelines for Three Threatened Black Cockatoo species, Department of Sustainability, Environment, Water, Population and Communities. Canberra, ACT
- Ecologia. 1994. Coastal Road Jurien to Green Head Biological Survey Report

- Ecologia. 2002. Northwest Coastal Highway Geraldton Bypass: Fauna assessment survey. Unpublished report by Ecologia Environmental for the Department of Planning and Infrastructure, Western Australia.
- EPA. 2002. Terrestrial Biological Surveys as an Element of Biodiversity Protection: Position Statement No. 3, Environment Protection Authority, Perth, Western Australia.
- EPA. 2004. Guidance for the Assessment of Environmental Factors. Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia No. 56, Environmental Protection Authority, Perth, Western Australia.
- EPA. 2010. Technical Guide – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (eds B.M. Hyder, J. Dell and M.A. Cowan). Perth, Western Australia.
- GHD. 2011. Report for Lots 3012 and 3013 Olive Street, Geraldton: Flora and Fauna Survey. Unpublished report Geraldton-Greenough.
- How, R.A., Pearson, D.J. and Dunlop, J.N. 1983. Herpetofauna of the Geraldton Region, Western Australia. Records of the Western Australian Museum 10: 215-234.
- Johnstone R.E. and Storr G.M. 1998. Western Australian Birds: Volume 1 – Non-Passerines (Emu to Dollarbird). WA. Museum, Perth, Western Australia.
- Johnstone, R.E. and Storr, G.M. 2004. Western Australian Birds: Volume II –Passerines (Blue-winged Pitta to Goldfinch). WA Museum, Perth, Western Australia.
- Kinnear. J. 1993. Masterly Marauders. The cat and the fox. Landscape, 8:20-28.
- Morcombe, 2004. Field Guide to Australian Birds, Steve Parish Publishing, Queensland.
- Pizzey and Knight, 1997. The Field Guide to the Birds of Australia. Eighth Edition.
- RCCWA. 2009. Roadside vegetation and conservation values in the City of Geraldton-Greenough. Roadside Conservation Committee Western Australia.
- RPS. 2011. West Erregulla Groundwater Assessment. Report prepared by RPS Aquaterra for Warrego Energy. Perth, Western Australia.
- Simpson and Day, 2004. Field Guide to the Birds of Australia, 7th Edition, Viking Press, Victoria.
- Skull, S. and Cockerton, G. (Landscape Services Pty Ltd) and Bamford, M. (Bamford Consulting Ecologists). 1998. Oakajee pipeline route flora and fauna study: desktop review
- Storr G.M. and Johnstone R.E. 1988. Birds of the Swan Coastal Plain and adjacent seas and islands. Records of the Western Australia Museum, Supplement, No 28.
- Storr G.M., Smith L.A. and Johnstone R.E. 1983. Lizards of Western Australia II. Dragons and Monitors. WA Museum, Perth, Western Australia.
- Storr G.M., Smith L.A. and Johnstone R.E. 1990. Lizards of Western Australia. III. Geckoes and Pygopodids. WA Museum, Perth, Western Australia.
- Storr G.M., Smith L.A. and Johnstone R.E. 1999. Lizards of Western Australia. I. Skinks. 2nd edition. WA Museum, Perth, Western Australia.
- Storr G.M., Smith L.A. and Johnstone R.E. 2002. Snakes of Western Australia. WA Museum, Perth, Western Australia.
- Tyler, M.J. and Doughty, P. 2009. Field Guide to Frogs of Western Australia. Fourth Edition. WA Museum, Perth, Western Australia.
- Van Dyck, S. and Strahan R. (ed.). 2008. The Mammals of Australia. Third edition. Reed New Holland, Sydney.
- Wilson. S and Swan. G. 2010. A complete guide to reptiles of Australia, Third Edition. Australia.
- Woodman. 2012. West Erregulla Project - Flora and vegetation assessment. Report prepared for Warrego Energy Ltd by Woodman Environmental Consulting. Perth, Western Australia.

Vertebrate Fauna Survey - West Erregulla Exploration Program
Appendix A - Vertebrate fauna species recorded during previous surveys conducted in the vicinity of the survey area

Species	Common Name	Conservation Status			Database Search			1	2	3	4	5	6	7	8	9	10	11	12	Site Observations
		EPBC Act	WC Act	DEC	EPBC Protected Matters	DEC Threatened Species 25 km	NatureMap	GHD 2011	Desmond and Heriot 2002	Ecologia 2002	Bamford 1998	Dames and More 1993	RCCWA 2009	How et al 1983	ATA 2006	Bamford 2012	Calm 1989	Ecologia 1994	ATA 2004	
AMPHIBIAN																				
Hylidae																				
<i>Litoria moorei</i>	Motorbike Frog						X	X	X		X									
Limnodynastidae																				
<i>Heleioporus albopunctatus</i>	Western Spotted Frog						X		X			X	X							X
<i>Heleioporus eyrei</i>	Moaning Frog						X						X				X			X
<i>Heleioporus psammophilus</i>	Sand Frog						X						X							
<i>Limnodynastes dorsalis</i>	Western Banjo Frog						X	X	X	X		X	X				X			
<i>Neobatrachus kunapalari</i>	Kunapalari Frog						X													
<i>Neobatrachus pelobatooides</i>	Humming Frog						X	X	X				X							
<i>Neobatrachus sutor</i>	Shoemaker Frog												X							
Myobatrachidae																				
<i>Crinia pseudinsignifera</i>	Bleating Froglet						X							X						
<i>Myobatrachus gouldii</i>	Turtle Frog							X	X					X						
<i>Pseudophryne guentheri</i>	Crawling toadlet						X	X	X					X			X			X
BIRDS																				
Acanthizidae																				
<i>Acanthiza apicalis</i>	Inland Thornbill						X	X				X		X	X	X	X	X	X	
<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill						X	X		X		X			X	X	X	X	X	
<i>Acanthiza inornata</i>	Western Thornbill																X			
<i>Acanthiza robustirostris</i>	Slatybacked Thornbill																		X	
<i>Acanthiza uropygialis</i>	Chestnut-rumped Thornbill						X	X				X				X			X	
<i>Aphelocephala leucopsis</i>	Southern Whiteface						X													
<i>Aphelocephala leucopsis castaneiventris</i>							X													
<i>Calamanthus campestris subsp. Montanellii</i>	Rufous Fieldwren			P4		X	X									X				
<i>Gerygone fusca</i>	Western Greygong						X	X		X		X				X	X		X	
<i>Pyrrholaemus brunneus</i>	Redthroat						X												X	
<i>Sericornis frontalis</i>	White-browed Scrubwren						X	X		X		X				X	X	X	X	
<i>Smicromis brevirostris</i>	Weebill						X	X		X		X				X			X	
Accipitridae																				
<i>Accipiter cirrocephalus</i>	Collared Sparrowhawk						X	X		X						X	X			
<i>Accipiter fasciatus</i>	Brown Goshawk						X	X		X		X				X			X	
<i>Aquila audax</i>	Wedge-tailed Eagle						X	X		X		X				X			X	X
<i>Aquila morphnoides</i>	Little Eagle															X	X			
<i>Circus approximans</i>	Swamp Harrier						X	X												
<i>Circus assimilis</i>	Spotted Harrier											X								
<i>Elanus axillaris</i>	Black-shouldered Kite							X		X	X	X		X		X	X	X	X	
<i>Haliaeetus leucogaster</i>	White-bellied Sea-eagle	M	S3		X		X		X		X	X								
<i>Haliastur sphenurus</i>	Whistling Kite						X		X		X	X		X	X					
<i>Hieraaetus morphnoides</i>							X		X		X	X								
<i>Lophoictinia isura</i>	Square-tailed Kite															X				
<i>Pandion cristatus</i>	Eastern Osprey							X				X		X						
Aegothelidae																				
<i>Aegotheles cristatus</i>	Australian Owlet-nightjar						X					X					X		X	
Anatidae																				
<i>Anas castanea</i>	Chestnut Teal						X													
<i>Anas gracilis</i>	Grey Teal							X		X									X	
<i>Anas superciliosa</i>	Pacific Black Duck						X	X		X				X			X	X		
<i>Biziura lobata</i>	Musk Duck							X												
<i>Chenonetta jubata</i>	Australian Wood Duck						X	X												
<i>Cygnus atratus</i>	Black Swan							X			X									
<i>Tadorna tadornoides</i>	Australian Shelduck						X	X									X	X		X
Anhingidae																				
<i>Anhinga novaehollandiae</i>	Australasian Darter											X								
Apodidae																				
<i>Apus pacificus</i>	Fork-tailed Swift	M	S3		X		X					X								
Ardeidae																				
<i>Ardea ibis</i>	Cattle Egret	M	S3		X		X													
<i>Ardea modesta</i>	Eastern Great Egret	M	S3		X		X													
<i>Ardea pacifica</i>	White-necked Heron						X	X												
<i>Egretta novaehollandiae</i>	White-faced Heron									X	X	X					X			
<i>Nycticorax caledonicus</i>	Nankeen Night Heron							X												
Artamidae																				
<i>Artamus cinereus</i>	Black-faced Woodswallow						X	X		X		X				X	X	X	X	
<i>Artamus personatus</i>	Masked Woodswallow						X													
<i>Artamus minor</i>	Little Woodswallow																			X
<i>Artamus personatus</i>	Masked Woodswallow						X													

Vertebrate Fauna Survey - West Erregulla Exploration Program
Appendix A - Vertebrate fauna species recorded during previous surveys conducted in the vicinity of the survey area

Species	Common Name	Conservation Status			Database Search			1	2	3	4	5	6	7	8	9	10	11	12	Site Observations
		EPBC Act	WC Act	DEC	EPBC Protected Matters	DEC Threatened Species 25 km	NatureMap	GHD 2011	Desmond and Heriot 2002	Ecologia 2002	Bamford 1998	Dames and More 1993	RCCWA 2009	How et al 1983	ATA 2006	Bamford 2012	Calm 1989	Ecologia 1994	ATA 2004	
BIRDS (cont'd)																				
<i>Strepera versicolor</i>	Grey Currawong						X	X						X	X					
<i>Cracticus nigrogularis</i>	Pied Butcherbird						X	X						X	X	X				X
<i>Cracticus tibicen</i>	Australian Magpie						X	X						X	X	X				X
<i>Cracticus torquatus</i>	Grey Butcherbird						X	X						X	X	X				X
Cacatuidae																				
<i>Cacatua pastinator</i>	Western Corella						X					X			X		X	X		
<i>Cacatua sanguinea</i>	Little Corella						X													
<i>Calyptorhynchus banksii</i>	Red-tailed Black-Cockatoo																		X	
<i>Calyptorhynchus baudinii</i>	Baudin's Black-Cockatoo	VU	EN			X														
<i>Calyptorhynchus latirostris</i>	Carnaby's Black-Cockatoo	EN	EN		X	X	X							X	X	X	X	X		
<i>Eolophus roseicapillus</i>	Galah						X		X			X		X	X	X	X	X	X	X
<i>Nymphicus hollandicus</i>	Cockatiel						X													
Campephagidae																				
<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike						X	X		X	X	X		X	X	X	X	X	X	X
<i>Lalage sueurii</i>	White-winged Triller														X				X	
Caprimulgidae																				
<i>Eurostopodus argus</i>	Spotted Nightjar															x				
Casuariidae																				
<i>Dromaius novaehollandiae</i>	Emu										X	X			X	X	X			X
Charadriidae																				
<i>Charadrius australis</i>	Inland Dotterel						X													
<i>Charadrius leschenaultii</i>	Greater Sand Plover	M						X												
<i>Charadrius mongolus</i>	Lesser Sand Plover	M						X												
<i>Charadrius ruficapillus</i>	Red-capped Plover							X				X								
<i>Pluvialis fulva</i>	Pacific Golden Plover	M						X												
<i>Pluvialis squatarola</i>	Grey Plover	M						X												
<i>Vanellus tricolor</i>	Banded Lapwing						X					X			X	X	X			
Cinclosomatidae																				
<i>Cinclosoma castaneothorax</i>	Chestnut-breasted Quail-thrush																		X	
<i>Psophodes occidentalis</i>	(Western Wedgebill)						X													
Columbidae																				
<i>Columba livia</i>	Rock Dove						X	X		X		X								
<i>Geopelia cuneata</i>	Diamond Dove						X	X											X	
<i>Ocyphaps lophotes</i>	Crested Pigeon						X	X	X	X	X	X	X	X	X	X	X	X	X	X
<i>Phaps chalcoptera</i>	Common Bronzewing						X	X		X	X	X	X	X	X	X	X	X	X	X
<i>Phaps elegans</i>	Brush Bronzewing						X			X					X	X	X	X		
<i>Sterptopelia senegalensis</i>	Laughing Turtle-Dove							X		X	X	X		X	X	X	X	X		
Corvidae																				
<i>Corvus bennetti</i>	Little Crow						X	X							X					
<i>Corvus coronoides</i>	Australian Raven						X	X	X	X	X	X	X	X	X	X	X	X	X	X
<i>Corvus orru</i>	Torresian Crow							X												
Cuculidae																				
<i>Cacomantis flabelliformis</i>	Fan-tailed Cuckoo						X	X				X					X			
<i>Cacomantis pallidus</i>	Pallid Cuckoo									X							X			
<i>Chalcites basalis</i>	Horsfield's Bronze-Cuckoo									X	X				X	X	X			
<i>Chalcites lucidus</i>	Shining Bronze-Cuckoo						X										X			
<i>Chalcites osculans</i>	Black-eared Cuckoo																		X	
Diomedidae																				
<i>Diomedae exulans</i>	Wandering Albatros	VU/M	VU					X												
<i>Thalassarche certeri</i>	Indian Yellow Nosed Albatross	M						X												
Estrildidae																				
<i>Taeniopygia guttata</i>	Zebra Finch						X	X		X		X			X					
Eurostopodidae																				
<i>Eurostopodus argus</i>	Spotted Nightjar											X								
Falconidae																				
<i>Falco berigora</i>	Brown Falcon						X					X			X	X	X	X	X	X
<i>Falco cenchroides</i>	Nankeen Kestrel						X	X		X	X	X	X	X	X	X	X	X	X	X
<i>Falco longipennis</i>	Australian Hobby						X	X							X	X	X	X	X	X
<i>Falco peregrinus</i>	Peregrine Falcon		S4							X										
Halcyonidae																				
<i>Dacelo novaeguineae</i>	Laughing Kookaburra						X	X									X			
<i>Todiramphus sanctus</i>	Sacred Kingfisher						X	X		X		X								
Hirundinidae																				
<i>Cheramoeca leucosterna</i>	White-backed Swallow						X			X		X			X	X	X	X	X	X
<i>Hirundo neoxena</i>	Welcome Swallow						X	X		X	X	X	X	X	X	X	X	X	X	X
<i>Petrochelidon ariel</i>	Fairy Martin						X													
<i>Petrochelidon nigricans</i>	Tree Martin							X		X	X	X			X				X	

Vertebrate Fauna Survey - West Erregulla Exploration Program
Appendix A - Vertebrate fauna species recorded during previous surveys conducted in the vicinity of the survey area

Species	Common Name	Conservation Status			Database Search			1	2	3	4	5	6	7	8	9	10	11	12	Site Observations
		EPBC Act	WC Act	DEC	EPBC Protected Matters	DEC Threatened Species 25 km	NatureMap	GHD 2011	Desmond and Heriot 2002	Ecologia 2002	Bamford 1998	Dames and More 1993	RCCWA 2009	How et al 1983	ATA 2006	Bamford 2012	Calm 1989	Ecologia 1994	ATA 2004	
BIRDS (cont'd)																				
Laridae																				
<i>Chroicocephalus novaehollandiae</i>	Silver Gull											X	X		X		X			
Maluridae																				
<i>Malurus lamberti</i>	Variiegated Fairy-wren															X	X	X		X
<i>Malurus leucopterus</i>	White-winged Fairy-wren									X	X					X	X			
<i>Malurus pulcherrimus</i>	Blue-breasted Fairy-wren													X						
<i>Malurus splendens</i>	Splendid Fairy-wren									X					X	X	X	X	X	X
Megaluridae																				
<i>Cincloramphus cruralis</i>	Brown Songlark								X							X				
<i>Cincloramphus mathewsi</i>	Rufous Songlark								X							X				
<i>Magalurus gramineus</i>	Little Grassbird																X			
Megapodiidae																				
<i>Leipoa ocellata</i>	Malleefowl	M/VU	VU		X	X	X												X	
Meliphagidae																				
<i>Acanthagenys rufogularis</i>	Spiny-cheeked Honeyeater							X					X			X			X	
<i>Acanthagenys superciliosus</i>	Western Spinebill							X									X			
<i>Anthochaera carunculata</i>	Red Wattle Bird							X								X	X	X		
<i>Anthochaera lunulata</i>	Western Little Wattlebird							X								X				
<i>Epthianura albifrons</i>	White-fronted Chat							X					X			X	x			
<i>Epthianura tricolor</i>	Crimson Chat							X								X				
<i>Lichenostomus leucotis</i>	White-eared Honeyeater									X										X
<i>Lichenostomus ornatus</i>	Yellow-plumed Honeyeater							X				X								
<i>Lichenostomus penicillatus</i>	White-plumed Honeyeater							X				X				X				
<i>Lichenostomus plumulus</i>	Grey-fronted Honeyeater							X											X	
<i>Lichenostomus virescens</i>	Singing Honeyeater							X		X	X	X		X	X	X	X	X	X	X
<i>Lichmera indistincta</i>	Brown Honeyeater							X		X	X	X			X	X	X	X	X	X
<i>Manorina flavigula</i>	Yellow-throated Miner							X				X	X			X			X	
<i>Melithreptus brevirostris</i>	Brown-headed Honeyeater							X						X					X	
<i>Phylidonyris melanops</i>	Tawny-crowned Honeyeater							X								X	X	X		
<i>Phylidonyris niger</i>	White-Cheaked Honeyeater											X	X			X				
<i>Phylidonyris novaehollandiae</i>	New Holland Honeyeater							X										X		
Meropidae																				
<i>Merops ornatus</i>	Rainbow Bee-eater	M			X		X			X		X		X	X					
Monarchidae																				
<i>Grallina cyanoleuca</i>	Magpie-lark						X	X		X	X	X	X		x	X		X	X	
Motacillidae																				
<i>Anthus novaeseelandiae</i>	Australasian Pipit						X					X	X		X	X	X			
Nectariniidae																				
<i>Dicaeum hirundinaceum</i>	Mistletoebird						X	X				X	X			X	X		X	
Neositidae																				
<i>Daphoenositta chrysoptera</i>	Varied Sittella						X												X	
Otididae																				
<i>Ardeotis australis</i>	Australian Bustard			P4		X	X						X					X		
Pachycephalidae																				
<i>Colluricincla harmonica</i>	Grey Shrike-thrush						X			X	X		X			X	X	X	X	
<i>Oreoica gutturalis</i>	Crested Bellbird						X			X						X	X	X	X	X
<i>Pachycephala pectoralis</i>	Golden Whistler						X					X				X	X	X	X	
<i>Pachycephala rufiventris</i>	Rufous Whistler						X			X		X				X	X	X	X	
Pardalotinae																				
<i>Pardalotus punctatus</i>	Spotted Pardalote						X									X				
<i>Pardalotus rubricatus</i>	Red-browed Pardalote															X				
<i>Pardalotus striatus</i>	Striated Pardalote						X									X			X	
Petroicidae																				
<i>Drymodes brunneopygia</i>	Southern Scrub Robin						X												X	
<i>Eopsaltria georgiana</i>	White-breasted Robin						X					X				X	X			
<i>Eopsaltria griseogularis</i>	Western Yellow Robin																		X	
<i>Microeca fascinans</i>	Jacky Winter																		X	
<i>Petroica goodenovii</i>	Red-capped Robin						X					X				X			X	X
Phalacrocoracidae																				
<i>Microcarbo melanoleucos</i>	Little Pied Cormorant											X								
<i>Phalacrocorax carbo</i>	Great Cormorant																X			
<i>Phalacrocorax sulcirostris</i>	Little Black Cormorant												X							
<i>Phalacrocorax varius</i>	Pied Cormorant																X			
Phasianidae																				
<i>Coturnix pectoralis</i>	Stubble Quail						X					X		X						
Podargidae																				
<i>Podargus strigoides</i>	Tawny Frogmouth						X					X				X	X			

Vertebrate Fauna Survey - West Erregulla Exploration Program
Appendix A - Vertebrate fauna species recorded during previous surveys conducted in the vicinity of the survey area

Species	Common Name	Conservation Status			Database Search			1	2	3	4	5	6	7	8	9	10	11	12	Site Observations
		EPBC Act	WC Act	DEC	EPBC Protected Matters	DEC Threatened Species 25 km	NatureMap	GHD 2011	Desmond and Heriot 2002	Ecologia 2002	Bamford 1998	Dames and More 1993	RCCWA 2009	How et al 1983	ATA 2006	Bamford 2012	Calm 1989	Ecologia 1994	ATA 2004	
BIRDS (cont'd)																				
Podicipedidae																				
<i>Tachybaptus novaehollandiae</i>	Australasian Grebe																			
Pomatostomidae																				
<i>Pomatostomus superciliosus</i>	White-browed Babbler																			
<i>Pomatostomus superciliosus sunsp. Ashbyi</i>	White-browed Babbler			P4		X														
Psittacidae																				
<i>Barnardius zonarius</i>	Australian Ringneck																			
<i>Glossopsitta porphyrocephala</i>	Purple-crowned Lorikeet																			
<i>Melopsittacus undulatus</i>	Budgerigar																			
<i>Neophema splendida</i>	Scarlet-chested Parrot																			
<i>Psephotus varius</i>	Mulga Parrot																			
<i>Platycercus elegans</i>	Elegant Parrot																			
Ptilonorhynchidae																				
<i>Ptilonorhynchus guttatus</i>	Western Bowerbird																			
Rallidae																				
<i>Gallirallus ventralia</i>	Black tailed native hen																			
<i>Porzana fluminea</i>	Australian Spotted Crake																			
Recurvirostridae																				
<i>Himantopus himantopus</i>	Black-winged Stilt																			
Rhipiduridae																				
<i>Rhipidura albiscapa</i>	Grey Fantail																			
<i>Rhipidura leucophrys</i>	Willie Wagtail																			
Scolopacidae																				
<i>Actitis hypoleucos</i>	Common Sandpiper	M																		
Strigidae																				
<i>Ninox novaeseelandiae</i>	Southern Boobook																			
Threskiornithidae																				
<i>Platalea flavipes</i>	Yellow-billed Spoonbill																			
<i>Threskiornis spinicollis</i>	Straw-necked Ibis																			
Timaliidae																				
<i>Zosterops lateralis</i>	Silveryeye																			
Turnicidae																				
<i>Turnix varia varia</i>	Painted Button-quail																			
Tytonidae																				
<i>Tyto abla</i>	Barn Owl																			
<i>Tyto javanica</i>	Eastern Barn Owl																			
MAMMALS																				
Bovidae																				
<i>Bos taurus*</i>	Cow*																			
<i>Capra hircus*</i>	Goat*																			
<i>Ovis aries*</i>	Sheep*																			
Canidae																				
<i>Canis lupus/familiaris*</i>	Dingo/Dog*																			
<i>Vulpes vulpes*</i>	Red Fox*																			
Dasyuridae																				
<i>Sminthopsis crassicaudata</i>	Fat-tailed Dunnart																			
<i>Sminthopsis dolichura</i>	Little long-tailed Dunnart																			
<i>Sminthopsis granulipes</i>	White-tailed Dunnart																			
Equidae																				
<i>Equus ferus caballus</i>	Wild Horse																			
Felidae																				
<i>Felis catus*</i>	Feral Cat*																			
Leporidae																				
<i>Oryctolagus cuniculus*</i>	European Rabbit*																			
Macropodidae																				
<i>Macropus fuliginosus</i>	Western Grey Kangaroo																			
<i>Macropus irma</i>	Western Brush Wallaby			P4																
<i>Macropus robustus</i>	Euro																			
<i>Macropus rufus</i>	Red Kangaroo																			
Molossidae																				
<i>Tadarida australis</i>	White-striped Free-tailed Bat																			
Muridae																				
<i>Mus musculus*</i>	House Mouse*																			
<i>Pseudomys albocinereus</i>	Ashy-grey Mouse/Noodji																			
<i>Rattus fuscipes</i>	Western bush Rat																			
<i>Rattus rattus*</i>	Rat*																			

Appendix A - Vertebrate fauna species recorded during previous surveys conducted in the vicinity of the survey area

Species	Common Name	Conservation Status			Database Search			1	2	3	4	5	6	7	8	9	10	11	12	Site Observations
		EPBC Act	WC Act	DEC	EPBC Protected Matters	DEC Threatened Species 25 km	NatureMap	GHD 2011	Desmond and Heriot 2002	Ecologia 2002	Bamford 1998	Dames and More 1993	RCCWA 2009	How et al 1983	ATA 2006	Bamford 2012	Calm 1989	Ecologia 1994	ATA 2004	
MAMMALS (cont'd)																				
Phalangeridae																				
<i>Trichosurus vulpecula</i>	Common Brish-tailed Possum							X				X								
Pteropodidae																				
<i>Pteropus scapulatus</i>	Little Red Flying-fox							X												
Suidae																				
<i>Sus scrofa</i>	Pig*							X				X								
Tachyglossidae																				
<i>Tachyglossus aculeatus</i>	Echidna							X	X	X	X	X		X	X	X	X	X	X	
Tarsipedidae																				
<i>Tarsipes rostratus</i>	Honey Possum						X	X							X					
Vespertilionidae																				
<i>Chalinolobus gouldii</i>	Gould's Wattled Bat											X								
<i>Chalinolobus morio</i>	Chocolate Wattled Bat														X					
<i>Nyctophilus geoffroyi</i>	Lesser Long-eared Bat						X	X				X			X					
<i>Scotorepens balstoni</i>	Inland Broad-nosed Bat											X								
<i>Vespadelus regulus</i>	Southern Forest Bat						X								X	X				
REPTILES																				
Agamidae																				
<i>Amphibolurus longirostris</i>	Long-nosed Dragon												X							
<i>Ctenophorus maculatus maculatus</i>	Spotted Military Dragon						X	X				X	X	X	X					
<i>Ctenophorus nuchalis</i>	Central Netted Dragon						X						X							
<i>Ctenophorus reticulatus</i>	Western Netted Dragon						X	X				X	X						X	
<i>Ctenophorus scutulatus</i>	Lozenge Marked Dragon																		X	
<i>Moloch horridus</i>	Thorny Devil							X					X		X					X
<i>Pogona minor minor</i>	Dwarf Bearded Dragon						X	X	X			X	X	X	X	X	X		X	
<i>Rankinia adelaidensis</i>	Western Heath Dragon						X	X	X				X	X	X	X	X			
Carphodactylidae																				
<i>Nephurus milii</i>							X					X	X	X						
<i>Nephurus levis</i>	Western Knob-tailed							X					X							
Chelluidae																				
<i>Chelodina oblonga</i>	Long-necked Tortoise							X												
<i>Chelodina steindachneri</i>	Flat-shelled Turtle						X													
Diplodactylidae																				
<i>Crenadactylus ocellatus</i>	Clawless Gecko						X	X												
<i>Diplodactylus granariensis</i>	Western Stone Gecko						X						X	X						
<i>Diplodactylus ornatus</i>							X					X	X							
<i>Diplodactylus pulcher</i>	Beautiful Gecko											X	X							
<i>Diplodactylus squarrosus</i>												X	X							
<i>Strophurus spinigerus</i>	Soft Spiny-tailed Gecko						X					X	X	X		X	X			
<i>Strophurus strophurus</i>													X							
Elapidae																				
<i>Brachyurophis semifasciata</i>							X	X				X	X							
<i>Brachyurophis fasciolatus</i>													X							
<i>Demansia psammophis reticulata</i>	Yellow-faced Whipsnake						X	X	X			X	X	X					X	
<i>Echiopsis curta</i>	Bardick						X						X							
<i>Neelaps bimaculatus</i>	Black-naped Snake			P3			X	X	X					X	X					
<i>Neelaps calonotos</i>	Black-striped Snake			P3	X															
<i>Parasuta gouldii</i>	Gould's Hooded Snake												X			X				
<i>Parasuta monachus</i>	Monk Snake						X	X	X			X	X						X	
<i>Pseudechis affinis</i>	Dugite													X						
<i>Pseudechis australis</i>	Mulga Snake						X	X	X				X		X				X	
<i>Pseudonaja mengdeni</i>	Gwardar						X	X	X	X		X	X		X					
<i>Pseudonaja modesta</i>	Ringed Brown Snake												X						X	
<i>Pseudonaja nuchalis</i>	Northern Brown Snake						X													
<i>Simoselaps bertholdi</i>	Jan's Banded Snake						X	X					X		X					
<i>Simoselaps littoralis</i>	West Coast Banded Snake						X	X				X	X							
Gekkonidae																				
<i>Diplodactylus granariensis</i>	Western Stone Gecko															X			X	
<i>Diplodactylus pulcher</i>																			X	
<i>Gehyra variegata</i>							X	X					X	X	X	X		X	X	
<i>Heteronotia binoei</i>	Bynoe's Gecko							X				X	X						X	
<i>Lucasium alboguttatum</i>	White-spotted Ground Gecko											X	X			X				
<i>Strophurus spinigerus</i>	Soft Spiny-tailed Gecko															X				
Pygopodidae																				
<i>Aprasia repens</i>													X							
<i>Delma australis</i>												X	X						X	
<i>Delma fraseri</i>							X					X	X	X	X				X	
<i>Delma greyii</i>													X		X					

Appendix A - Vertebrate fauna species recorded during previous surveys conducted in the vicinity of the survey area

Species	Common Name	Conservation Status			Database Search			1	2	3	4	5	6	7	8	9	10	11	12	Site Observations
		EPBC Act	WC Act	DEC	EPBC Protected Matters	DEC Threatened Species 25 km	NatureMap	GHD 2011	Desmond and Heriot 2002	Ecologia 2002	Bamford 1998	Dames and More 1993	RCCWA 2009	How et al 1983	ATA 2006	Bamford 2012	Calm 1989	Ecologia 1994	ATA 2004	
REPTILES (cont'd)																				
<i>Delma tinca</i>							X	X				X	X							
<i>Lialis burtonis</i>							X	X				X	X	X	X					
<i>Pletholax gracilis</i>													X							
<i>Pygopus lepidopodus</i>							X	X					X		X	X	X			
<i>Pygopus nigriceps</i>													X						X	
Pythonidae																				
<i>Antaresia stimsoni stimsoni</i>								X	X			X	X							
<i>Aspidites ramsayi</i>	Woma		S4	P1									X							
<i>Morelia spilota imbricata</i>	Western carpet python		S4	P4			X	X					X							
Scincidae																				
<i>Cryptoblepharus</i>	Fence Skink								X			X	X							
<i>Cryptoblepharus buechananii</i>							X													
<i>Cryptoblepharus carnabyi</i>												X	X						X	
<i>Cryptoblepharus plagioccephalus</i>							X								X	X			X	
<i>Ctenotus australis</i>													X	X						
<i>Ctenotus fallens</i>							X		X			X	X	X	X	X	X		X	
<i>Ctenotus impar</i>													X		X					
<i>Ctenotus mimetes</i>													X						X	
<i>Ctenotus pantherinus</i>	Leopard Skink						X						X		X				X	
<i>Ctenotus schomburgkii</i>													X						X	
<i>Ctenotus uber</i>																			X	
<i>Cyclodomorphus branchialis</i>	Gilled slender-blue tongue		VU														X	X	X	
<i>Cyclodomorphus celatus</i>														X	X					
<i>Egernia depressa</i>																			X	
<i>Egernia kingii</i>	King's Skink												X							
<i>Egernia multiscutata</i>	Bull Skink												X							
<i>Egernia stokesii</i>			VU																X	
<i>Eremiascincus richardsonii</i>													X							
<i>Hemiergisinitialis</i>																			X	
<i>Lesrista christinae</i>													X		X					
<i>Lesrista distinguenda</i>													X							
<i>Lerista elegans</i>							X		X			X	X		X					
<i>Lerista gerrardii</i>												X	X						X	
<i>Lerista lineata</i>	Lined skink			P3				X												
<i>Lerista lineopunctulata</i>								X	X			X	X	X						
<i>Lerista macropisthopus</i>				P2									X							
<i>Lerista planiventralis decora</i>							X	X					X	X						
<i>Lerista praepedita</i>								X	X			X	X	X	X	X	X			
<i>Menetia greyii</i>								X	X			X	X	X	X	X			X	
<i>Menetia surda</i>													X							
<i>Morethia butleri</i>													X							
<i>Morethia lineocellata</i>								X	X			X	X	X					X	
<i>Morethia obscura</i>													X							
<i>Tiliqua occipitalis</i>	Western Bluetongue						X	X	X			X	X	X						
<i>Tiliqua rugosa rugosa</i>	Bobtail						X	X	X	X		X	X	X	X	X	X	X	X	
Typhlopidae																				
<i>Ramphotyphlops australis</i>	Australian Blind Snake						X	X	X			X	X	X						
<i>Ramphotyphlops hamatus</i>													X							
<i>Ramphotyphlops leptosoma</i>								X	X				X							
<i>Ramphotyphlops waitti</i>							X	X	X				X							
Varanidae																				
<i>Varanus caudolineatus</i>	Striped-tailed Monitor												X						X	
<i>Varanus gouldii</i>	Gould's Monitor						X	X	X	X	X	X	X	X	X	X	X	X	X	
<i>Varanus tristis</i>	Black-headed Monitor						X	X	X	X	X	X	X	X	X	X	X	X	X	

1. Conservation Status Key

*	Represents introduced species
X	Represents species present during survey or database searches
X?	Specimen identification that is not 100% verified
E	Endangered species under the EPBC Act 1999
V	Vulnerable species under the EPBC Act 1999
M	Migratory species under Wildlife Conservation Act 1950 (Schedule 3) and/or the EPBC Act 1999
S	Schedule species under Wildlife Conservation Act 1950 (Schedule 1, 2 and 4)
P	Priority species under Wildlife Conservation Act 1950 (P1, P2, P3 and P4)

Appendix A - Vertebrate fauna species recorded during previous surveys conducted in the vicinity of the survey area

References

1. GHD. 2011. Report for Lots 3012 and 3013 Olive Street, Geraldton: Flora and Fauna Survey. Unpublished report Geraldton-Greenough.
2. Desmond, A.J. and Heriot, S.M. 2002. Fauna monitoring of the Chapman River wildlife corridor, Geraldton. Department of Conservation and Land Management, Geraldton.
3. ecologia Environment. 2002. Northwest Coastal Highway Geraldton Bypass: Fauna assessment survey. Unpublished report for the Department of Planning and Infrastructure, Western Australia.
4. Skull, S. and Cockerton, G. (Landscape Services Pty Ltd) and Bamford, M. (Bamford Consulting Ecologists). 1998. Oakajee pipeline route flora and fauna study: desktop review and field survey. Gutteridge Haskins and Davey Pty Ltd.
5. Dames and Moore Pty Ltd. 1993. Oakajee Proposed Industrial Site: flora and fauna assessment. Unpublished report for Landcorp.
6. Roadside Conservation Committee Western Australia. 2009. Roadside vegetation and conservation values in the City of Geraldton-Greenough.
7. How, R.A., Pearson, D.J. and Dunlop, J.N. 1983. Herpetofauna of the Geraldton Region, Western Australia. Records of the Western Australian Museum 10: 215-234.
8. ATA Environmental. 2006. Vertebrate Fauna Assessment, Shire of Greenough TPS No.1A Amendment No.4. Unpublished report for Bayform Holdings Pty Ltd.
9. Bamford 2012. Fauna Assessment of Tiwest's Dongara Project
10. Calm, 1989. A spring reconnaissance survey of the flora and fauna of the southern beekeepers reserve. Burbidge and Boscacci, Department of Conservation and Land Management
11. Ecologia, 1994. Coastal Road Jurien to Green Head Biological Survey Report
12. ATA, 2004. Fauna Assessment of Koolanooka South. ATA Environmental

Appendix B

Conservation Codes for Western Australian Fauna

Wildlife Conservation Act (WC Act) conservation status definitions:

Schedule 1 (S1) Fauna that is rare or likely to become extinct.

Schedule 2 (S2) Fauna that is presumed to be extinct.

Schedule 3 (S3) Birds that are subject to an agreement between the governments of Australia and Japan relating to the protection of migratory birds.

Schedule 4 (S4) Fauna that is in need of special protection, otherwise than for the reasons mentioned above.

DEC Priority List:

In addition to the above classification, DEC also classifies fauna not listed as a scheduled species under five different codes.

Priority 1 (P1) Taxa that are known from few specimens or sight records from one or a few localities on lands not managed for conservation, e.g., agricultural or pastoral lands, urban areas, active mineral leases. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

Priority 2 (P2) Taxa that are known from few specimens or sight records from one or a few localities on lands not under immediate threat of habitat destruction or degradation, e.g., national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

Priority 3 (P3) Taxa that are known from few specimens or sight records from several localities, some of which are on lands not under immediate threat of habitat destruction or degradation. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

Priority 4 (P4) Taxa that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.

Priority 5 (P5) Taxa that are not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

EPBC Act conservation status definitions:

Endangered (EN) A taxon is Endangered when the best available evidence indicates that it is considered to be facing a very high risk of extinction in the wild.

Vulnerable (VU) A taxon is Vulnerable when the best available evidence indicates that it is considered to be facing a high risk of extinction in the wild.

Migratory (M) Species migrate to, over and within Australia and its external territories.

Appendix D

Environmental risk assessment

Environmental Risk Assessment – West Erregulla 3D Seismic Survey

Warrego Energy
West Erregulla Exploration Program



No.	ASPECT	SOURCE OF RISK	IMPACTS	INITIAL RISK			CONTROL AND MITIGATION MEASURES			RESIDUAL RISK		
				Cons.	L'hood	Risk	No.	Description	Cons.	L'hood	Risk	
1	Line preparation	Vehicle and equipment/plant movement	Introduction and spread of weeds/dieback.	3	4	12	1.01	The Vacant Crown Land in the project area will be treated as dieback-free.	4	1	4	
							1.02	A dieback and weed management plan will be developed, including the following management strategies and monitoring programs: – Ensure machinery, vehicles and equipment are clean of soil and debris prior to entering and leaving the project area, prior to moving between agricultural land and Vacant Crown Land, and in accordance with landowner hygiene requirements. – As much as possible, minimise vehicle movements within and between the agricultural land and the Vacant Crown Land to mitigate the potential for the introduction and/or spread of weeds and disease. – A suitable hygiene facility for decontamination of vehicles and machinery arriving in the project area, departing from the project area, or moving between agricultural land and Vacant Crown Land within the project area will be designed, constructed and operated.				
							1.03	Vehicle and machinery movements will be restricted to the project footprint and existing disturbance, tracks and firebreaks.				
							1.04	Adhere to any biosecurity requirements of landowners as per land access agreements.				
							1.05	All personnel will be instructed on weed/disease risks and correct hygiene procedures.				
							1.06	Vehicle movements will be minimised (particularly along source lines) to maximise success of natural regeneration.				
2			Loss of conservation significant flora.	4	5	20	2.01	Vehicle and machinery movements will be restricted to the project footprint and existing disturbance, tracks and firebreaks.	4	3	12	
							2.02	Vehicle movements will be minimised (particularly along source lines) to maximise success of natural regeneration.				
							2.03	All vehicles and machinery will be fitted with rubber tyres.				
3			Erosion of soil.	2	3	6	3.01	Vehicle and machinery movements will be restricted to a speed limit of 20 km/h along new project tracks and as per land access agreements on other non-public tracks.	2	1	2	
							3.02	No clearing will occur within 20 m of Sand Plain Creek.				
							3.03	Vehicle and machinery movements will be restricted to the project footprint and existing disturbance, tracks and firebreaks.				
							3.04	Vegetation will be cleared using a raised roller mulching method. Raised-blade clearing preserves rootstock and retains seedstock and vegetation cover.				
							3.05	Project activities (especially vehicle movements) will be limited during and immediately after high rainfall events.				
4			Generation of dust.	2	4	8	4.01	Vehicle and machinery movements will be restricted to a speed limit of 20 km/h along new project tracks and as per land access agreements on other non-public tracks.	2	3	6	
							4.02	Consider dust suppression techniques such as watering if required.				
							4.03	Vehicle and machinery movements will be restricted to the project footprint and existing disturbance, tracks and firebreaks.				
							4.04	Vegetation will be cleared using a raised roller mulching method. Raised-blade clearing preserves rootstock and retains seedstock and vegetation cover.				
5			Fauna mortalities.	2	3	6	5.01	Vehicle and machinery movements will be restricted to a speed limit of 20 km/h along new project tracks and as per land access agreements on other non-public tracks.	2	2	4	
							5.02	Vehicle and machinery movements will be restricted to the project footprint and existing disturbance, tracks and firebreaks.				

Environmental Risk Assessment – West Erregulla 3D Seismic Survey

Warrego Energy
West Erregulla Exploration Program



No.	ASPECT	SOURCE OF RISK	IMPACTS	INITIAL RISK			CONTROL AND MITIGATION MEASURES			RESIDUAL RISK		
				Cons.	L'hood	Risk	No.	Description	Cons.	L'hood	Risk	
6			Disturbance to fauna.	1	4	4	5.03	Education and awareness training will identify conservation significant values within the project area and discuss relevant management measures and personnel/contractor responsibilities.	1	3	3	
							6.01	Vehicle and machinery movements will be restricted to a speed limit of 20 km/h along new project tracks and as per land access agreements on other non-public tracks.				
							6.02	Education and awareness training will identify conservation significant values within the project area and discuss relevant management measures and personnel/contractor responsibilities.				
7			Contamination of soil (e.g. in refuelling, hydraulic line bursts, spilt drums, etc.).	2	4	8	6.03	Project activities will be planned for daylight hours only.	2	3	6	
							7.01	Use drip trays, spill mats or equivalent while refuelling.				
							7.02	Refuel, service and maintain vehicles and machinery at designated locations only.				
							7.03	Remove and dispose of any contaminated material offsite to a licenced facility using a licenced contractor.				
							7.04	Spill kits will be available during all refuelling operations.				
							7.05	No smoking will be permitted in vicinity of refuelling operations under any circumstances.				
							7.06	In-field refuelling will be prohibited during total fire ban or harvester and vehicle movement bans.				
7.07	Refuelling will not be conducted within 100 m of watercourses.											
8			Fire.	4	3	12	8.01	The project will not operate during harvest and vehicle movement bans issued by local shires.	4	2	8	
							8.02	Fire fighting equipment will be fitted to all machinery and equipment and all personnel will be appropriately trained in how to prevent and respond to fires.				
							8.03	Maintain at least one 'fast-attack' vehicle (with water tank, pump and hose) on-site at all times during operations.				
							8.04	Permit smoking only in designated smoking areas.				
							8.05	Liaise with DFES, DPaW and local councils to ensure that activities are undertaken at times of lower risk, that any local restrictions are adhered to and that any incidence of fire is reported.				
							8.06	A communication protocol will be established to include notifying the DPAW Moora District office of operations (arrival and departure from the project area) and immediate notification of any incidence of fire associated with project activities.				
							8.07	All vehicles and machinery will operate on diesel fuel.				
							8.08	Adhere to emergency response plan (ERP) and stakeholder management plan.				
							8.09	Vehicle and machinery movements will be restricted to the project footprint and existing disturbance, tracks and firebreaks.				
9		Planned vegetation clearing	Loss of conservation significant flora.	4	5	20	9.01	Clearing of native vegetation will not exceed 70 ha within the 8,575 ha project area.	4	3	12	
							9.02	Vegetation will be cleared using roller mulching clearing methods. Raised-blade clearing preserves rootstock and retains seedstock and vegetation cover, increasing the success of natural rehabilitation and revegetation and mitigating impacts to tubers of both <i>Thelymitra stellata</i> and <i>Paracaleana dixonii</i> .				
							9.03	All large trees, open <i>Eucalyptus</i> forest habitat and planted <i>Eucalyptus</i> habitat will be avoided.				
							9.04	Known locations of Threatened flora will be avoided by deviating source lines, receiver points and tracks around sensitive areas and topographic obstructions.				
							9.05	Where possible, known locations of Priority 1 and Priority 2 flora will be avoided by deviating source lines, receiver points and tracks around sensitive areas and topographic obstructions.				
							9.06	A Permit To Take will be obtained through DPaW prior to native vegetation clearing. No known Threatened flora will be cleared without a Permit To Take.				
							9.07	Education and awareness training will identify conservation significant values within the project area and discuss relevant management measures and personnel/contractor responsibilities.				
							9.08	A permit to clear native vegetation will be obtained prior to clearing.				

Environmental Risk Assessment – West Erregulla 3D Seismic Survey

Warrego Energy
West Erregulla Exploration Program



No.	ASPECT	SOURCE OF RISK	IMPACTS	INITIAL RISK			CONTROL AND MITIGATION MEASURES			RESIDUAL RISK		
				Cons.	L'hood	Risk	No.	Description	Cons.	L'hood	Risk	
10	Loss of habitat for conservation significant fauna species.			4	5	20	9.09	Clearing of vegetation will be kept to the minimum necessary to conduct the survey.	2	4	8	
							9.10	Initial surveying using a GPS will be undertaken to accurately locate and demarcate all areas of disturbance (i.e. source and receiver lines) and identify areas that need to be avoided.				
							9.11	Education and awareness training will identify conservation significant values within the project area and discuss relevant management measures and personnel/contractor responsibilities.				
							10.01	Vegetation will be cleared using roller mulching clearing methods. Raised-blade clearing preserves rootstock and retains seedstock and vegetation cover, increasing the success of natural rehabilitation and revegetation and mitigating impacts to tubers of both <i>Thelymitra stellata</i> and <i>Paracaleana dixonii</i> .				
							10.02	All large trees, open <i>Eucalyptus</i> forest habitat and planted <i>Eucalyptus</i> habitat will be avoided.				
							10.03	Education and awareness training will identify conservation significant values within the project area and discuss relevant management measures and personnel/contractor responsibilities.				
							10.04	Initial surveying using a GPS will be undertaken to accurately locate and demarcate all areas of disturbance (i.e. source and receiver lines) and identify areas that need to be avoided.				
							10.05	The project will be referred to the federal Department of the Environment under the EPBC Act.				
							10.06	A permit to clear native vegetation will be obtained prior to clearing.				
11	Fragmentation of habitat.			2	5	10	11.01	Vegetation will be cleared using roller mulching clearing methods. Raised-blade clearing preserves rootstock and retains seedstock and vegetation cover, increasing the success of natural rehabilitation and revegetation and mitigating impacts to tubers of both <i>Thelymitra stellata</i> and <i>Paracaleana dixonii</i> .	2	4	8	
							11.02	Rehabilitation of seismic lines will commence as soon as practicable.				
							11.03	Education and awareness training will identify conservation significant values within the project area and discuss relevant management measures and personnel/contractor responsibilities.				
							11.04	Clearing of vegetation will be kept to the minimum necessary to conduct the survey.				
							11.05	Receivers will be walked in.				
							11.06	The number of access tracks required along east-west receiver lines will be kept to a minimum.				
12	Fauna mortalities.			2	3	6	12.01	Vehicle and machinery movements will be restricted to a speed limit of 20 km/h along new project tracks and as per land access agreements on other non-public tracks.	2	2	4	
							12.02	Vehicle and machinery movements will be restricted to the project footprint and existing disturbance, tracks and firebreaks.				
							12.03	Education and awareness training will identify environmental sensitivities within the project area and discuss relevant management measures and personnel/contractor responsibilities.				
							12.04	Pets and firearms will be prohibited in the project area.				
13	Disturbance to fauna.			1	4	4	13.01	Vehicle and machinery movements will be restricted to a speed limit of 20 km/h along new project tracks and as per land access agreements on other non-public tracks.	1	3	3	
							13.02	Education and awareness training will identify environmental sensitivities within the project area and discuss relevant management measures and personnel/contractor responsibilities.				
							13.03	Project activities will be planned for daylight hours only.				

Environmental Risk Assessment – West Erregulla 3D Seismic Survey

Warrego Energy
West Erregulla Exploration Program



No.	ASPECT	SOURCE OF RISK	IMPACTS	INITIAL RISK			CONTROL AND MITIGATION MEASURES					RESIDUAL RISK		
				Cons.	L'hood	Risk	No.	Description	Cons.	L'hood	Risk			
14		Unplanned vegetation clearing (i.e. clearing outside of approved clearing footprint)	Loss of conservation significant flora. Clearing in an Environmentally Sensitive Area (ESA).	4	3	12	14.01	Initial surveying using a GPS will be undertaken to accurately locate and demarcate all areas of disturbance (i.e. source and receiver lines) and identify areas that need to be avoided.	3	1	3			
							14.02	ESA 6046 will be avoided.						
							14.03	Vehicle and machinery movements will be restricted to the project footprint and existing disturbance, tracks and firebreaks.						
							14.04	Education and awareness training will identify conservation significant values within the project area and discuss relevant management measures and personnel/contractor responsibilities.						
							14.05	Incident reporting procedures will be implemented.						
15		Alteration of landform.	Alteration of surface water flows. Disturbance to drainage lines or minor watercourses.	2	4	8	15.01	No clearing will occur within 20 m of Sand Plain Creek.	2	2	4			
							15.02	Existing crossings of watercourses will be used.						
							15.03	Project activities (especially vehicle movements) will be limited during and immediately after high rainfall events.						
							15.04	A rehabilitation plan will be developed in line with industry standards and in consultation with the Department of Mines and Petroleum (DMP) and the Department of Parks and Wildlife (DPaW). The rehabilitation plan will be submitted to the DMP for approval prior to the completion of the seismic survey and will include the following: – Cleared areas will be rehabilitated as soon as practical following completion of project activities. – Rehabilitated sites will be monitored for a minimum of two years after demobilisation/rehabilitation and until rehabilitation completion criteria have been met.						
							15.05	Education and awareness training will identify environmental sensitivities within the project area and discuss relevant management measures and personnel/contractor responsibilities.						
16			Disturbance to indigenous or non-indigenous heritage site.	3	2	6	16.01	Adhere to agreement with Amangu people.	3	1	3			
							16.02	Education and awareness training will identify heritage values within the project area and discuss relevant management measures and personnel/contractor responsibilities.						
							16.03	There are no registered indigenous or non-indigenous heritage sites within the project area.						
							16.04	Adhere to requirements of the Aboriginal Heritage Act 1972 in the event that a suspected Aboriginal heritage site is discovered.						
17		Presence of project team	Disruption to landowners.	3	4	12	17.01	Ensure landowner access agreements are in place before project commences.	1	3	3			
							17.02	Include landowner requirements and sensitivities in inductions for all personnel/contractors.						
							17.03	Adhere to stakeholder management plan.						
							17.04	Incident reporting procedures will be implemented.						
							17.05	Education and awareness training will identify stakeholder sensitivities within the project area and discuss relevant management measures and personnel/contractor responsibilities.						
18	Operations (seismic data acquisition)	Seismic signal generation	Soil compaction (in particular on agricultural land).	2	5	10	18.01	On agricultural land, rehabilitation techniques (e.g. shallow ripping) will be as agreed with the landowner.	2	5	10			
							18.02	A rehabilitation plan will be developed in line with industry standards and in consultation with the Department of Mines and Petroleum (DMP) and the Department of Parks and Wildlife (DPaW). The rehabilitation plan will be submitted to the DMP for approval prior to the completion of the seismic survey and will include the following: – Cleared areas will be rehabilitated as soon as practical following completion of project activities. – Rehabilitated sites will be monitored for a minimum of two years after demobilisation/rehabilitation and until rehabilitation completion criteria have been met.						
							18.03	Vehicle movements will be minimised (particularly along source lines) to maximise success of natural regeneration.						

Environmental Risk Assessment – West Erregulla 3D Seismic Survey

Warrego Energy
West Erregulla Exploration Program



No.	ASPECT	SOURCE OF RISK	IMPACTS	INITIAL RISK			CONTROL AND MITIGATION MEASURES			RESIDUAL RISK		
				Cons.	L'hood	Risk	No.	Description	Cons.	L'hood	Risk	
19		Generation, storage and removal of wastes	Attraction of fauna to waste receptacles. Rubbish from project left on site. Contamination of soil or groundwater (e.g. spills from generators, sewage systems, etc.).	2	4	8	19.01	All putrescible waste will be stored in bins that have a tightly secured lid to avoid fauna attraction and entry.	2	2	4	
							19.02	Refuel, service and maintain vehicles and machinery at designated locations only.				
							19.03	Remove and dispose of any contaminated material offsite to a licenced facility using a licenced contractor.				
							19.04	Sewage will be contained and removed and disposed of offsite using an approved contractor in accordance with local requirements.				
20	Operation of site office	Generation, storage and removal of wastes	Attraction of fauna to waste receptacles. Rubbish from project left on site. Contamination of soil or groundwater (e.g. spills from generators, sewage systems, etc.).	1	4	4	20.01	All putrescible waste will be stored in bins that have a tightly secured lid to avoid fauna attraction and entry.	1	2	2	
							20.02	Refuel, service and maintain vehicles and machinery at designated locations only.				
							20.03	Remove and dispose of any contaminated material offsite to a licenced facility using a licenced contractor.				
							20.04	Sewage will be contained and removed and disposed of offsite using an approved contractor in accordance with local requirements.				
21	Vehicle, equipment and plant use	Operation of combustion engines	Greenhouse gas emissions.	1	5	5	21.01	Ensure vehicles and machinery have standard emission control devices fitted and maintained.	1	5	5	
22		Fire started by combustion engines, hot equipment or people	Loss of equipment or property. Loss of flora and fauna. Indirect effects (e.g. loss of topsoil in next rain event). Negative community sentiment.	4	3	12	22.01	The project will not operate during harvest and vehicle movement bans issued by local shires.	4	2	8	
							22.02	Fire fighting equipment will be fitted to all machinery and equipment and all personnel will be appropriately trained in how to prevent and respond to fires.				
							22.03	Maintain at least one 'fast-attack' vehicle (with water tank, pump and hose) on-site at all times during operations.				
							22.04	Permit smoking only in designated smoking areas.				
							22.05	Liaise with DFES, DPaW and local councils to ensure that activities are undertaken at times of lower risk, that any local restrictions are adhered to and that any incidence of fire is reported.				
							22.06	A communication protocol will be established to include notifying the DPAW Moora District office of operations (arrival and departure from the project area) and immediate notification of any incidence of fire associated with project activities.				
							22.07	All vehicles and machinery will operate on diesel fuel.				
							22.08	Adhere to emergency response plan (ERP) and stakeholder management plan.				
							22.09	Vehicle and machinery movements will be restricted to the project footprint and existing disturbance, tracks and firebreaks.				
							23.01	Vehicle and machinery movements will be restricted to a speed limit of 20 km/h along new project tracks and as per land access agreements on other non-public tracks.				
							23.02	Vehicle and machinery movements will be restricted to the project footprint and existing disturbance, tracks and firebreaks.				
							23.03	Education and awareness training will identify conservation significant values within the project area and discuss relevant management measures and personnel/contractor responsibilities.				
							23.04	The project will not operate during harvest and vehicle movement bans issued by local shires.				

Environmental Risk Assessment – West Erregulla 3D Seismic Survey

Warrego Energy
West Erregulla Exploration Program



No.	ASPECT	SOURCE OF RISK	IMPACTS	INITIAL RISK			CONTROL AND MITIGATION MEASURES			RESIDUAL RISK		
				Cons.	L'hood	Risk	No.	Description	Cons.	L'hood	Risk	
23			Fauna mortalities.	2	3	6	23.05	Fire fighting equipment will be fitted to all machinery and equipment and all personnel will be appropriately trained in how to prevent and respond to fires.	2	2	4	
							23.06	Maintain at least one 'fast-attack' vehicle (with water tank, pump and hose) on-site at all times during operations.				
							23.07	Permit smoking only in designated smoking areas.				
							23.08	Liaise with DFES, DPaW and local councils to ensure that activities are undertaken at times of lower risk, that any local restrictions are adhered to and that any incidence of fire is reported.				
							23.09	A communication protocol will be established to include notifying the DPAW Moora District office of operations (arrival and departure from the project area) and immediate notification of any incidence of fire associated with project activities.				
							23.10	All vehicles and machinery will operate on diesel fuel.				
							23.11	Adhere to emergency response plan (ERP) and stakeholder management plan.				
24			Disturbance to fauna.	2	4	8	24.01	Vehicle and machinery movements will be restricted to a speed limit of 20 km/h along new project tracks and as per land access agreements on other non-public tracks.	2	3	6	
							24.02	Education and awareness training will identify conservation significant values within the project area and discuss relevant management measures and personnel/contractor responsibilities.				
							24.03	The project will not operate during harvest and vehicle movement bans issued by local shires.				
							24.04	Fire fighting equipment will be fitted to all machinery and equipment and all personnel will be appropriately trained in how to prevent and respond to fires.				
							24.05	Maintain at least one 'fast-attack' vehicle (with water tank, pump and hose) on-site at all times during operations.				
							24.06	Permit smoking only in designated smoking areas.				
							24.07	Liaise with DFES, DPaW and local councils to ensure that activities are undertaken at times of lower risk, that any local restrictions are adhered to and that any incidence of fire is reported.				
							24.08	A communication protocol will be established to include notifying the DPAW Moora District office of operations (arrival and departure from the project area) and immediate notification of any incidence of fire associated with project activities.				
							24.09	All vehicles and machinery will operate on diesel fuel.				
							24.10	Adhere to emergency response plan (ERP) and stakeholder management plan.				
25	Refuelling	Contamination of soil.		2	3	6	25.01	Use drip trays, spill mats or equivalent while refuelling.	2	3	6	
							25.02	Refuel, service and maintain vehicles and machinery at designated locations only.				
							25.03	Remove and dispose of any contaminated material offsite to a licenced facility using a licenced contractor.				
							25.04	Spill kits will be available during all refuelling operations.				
							25.05	No smoking will be permitted in vicinity of refuelling operations under any circumstances.				
							25.06	In-field refuelling will be prohibited during total fire ban or harvester and vehicle movement bans.				
							25.07	Refuelling will not be conducted within 100 m of watercourses.				
							25.08	Incident reporting procedures will be implemented.				
26	Burst hydraulic line/hose	Contamination of soil.		2	3	6	26.01	Vehicles and machinery will be maintained according to the manufacturer's specifications.	2	2	4	
							26.02	Vehicles and machinery will be inspected on a regular basis.				
							26.03	Refuel, service and maintain vehicles and machinery at designated locations only.				
27	Spilt engine/gear/hydraulic oil drum	Contamination of soil.		2	3	6	27.01	Drums containing oil will be stored in a bund capable of holding 110% of the largest drum's contents.	2	2	4	
							27.02	Refuel, service and maintain vehicles and machinery at designated locations only.				

Environmental Risk Assessment – West Erregulla 3D Seismic Survey

Warrego Energy
West Erregulla Exploration Program



No.	ASPECT	SOURCE OF RISK	IMPACTS	INITIAL RISK			CONTROL AND MITIGATION MEASURES			RESIDUAL RISK		
				Cons.	L'hood	Risk	No.	Description	Cons.	L'hood	Risk	
28		Rollover or accident involving fuel tanker or fuel delivery vehicle	Contamination of soil.	3	2	6	28.01	Refuel, service and maintain vehicles and machinery at designated locations only.	2	1	2	
							28.02	Vehicles delivering fuel to the project area will have a journey management plan in place.				
							28.03	Vehicles delivering fuel to the project area will carry a spill kit at all times.				
							28.04	Vehicles delivering fuel to the project area will be double banded.				
29		On-site vehicle hygiene station	Introduction and spread of weeds/dieback.	4	4	16	29.01	The Vacant Crown Land in the project area will be treated as dieback-free. A dieback and weed management plan will be developed, including the following management strategies and monitoring programs: – Ensure machinery, vehicles and equipment are clean of soil and debris prior to entering and leaving the project area, prior to moving between agricultural land and Vacant Crown Land, and in accordance with landowner hygiene requirements.	4	1	4	
							29.02	– As much as possible, minimise vehicle movements within and between the agricultural land and the Vacant Crown Land to mitigate the potential for the introduction and/or spread of weeds and disease. – A suitable hygiene facility for decontamination of vehicles and machinery arriving in the project area, departing from the project area, or moving between agricultural land and Vacant Crown Land within the project area will be designed, constructed and operated.				
							29.03	Adhere to any biosecurity requirements of landowners as per land access agreements.				
							29.04	Any untreated wastewater from hygiene station will be prevented from running off-site.				
							29.05	Any soil from the hygiene station will be treated as contaminated and removed from site.				
							29.06	All personnel will be instructed on weed/disease risks and correct hygiene procedures.				
30	Rehabilitation	Rehabilitation not carried out properly or in a timely manner	Unauthorised third party access to remnant native vegetation preventing successful rehabilitation.	2	2	4	30.01	Minimise visual line of sight along access tracks from intersections with public roads (i.e. dog-leg or meander cleared tracks).	2	1	2	
							30.02	Project tracks will be closed as soon as possible after completion of seismic data acquisition (e.g. through placement of brushing at entrances).				
31		Completion criteria not met	Vegetation along seismic lines not regenerating.	3	4	12	31.01	A rehabilitation plan will be developed in line with industry standards and in consultation with the Department of Mines and Petroleum (DMP) and the Department of Parks and Wildlife (DPAW). The rehabilitation plan will be submitted to the DMP for approval prior to the completion of the seismic survey and will include the following: – Cleared areas will be rehabilitated as soon as practical following completion of project activities. – Rehabilitated sites will be monitored for a minimum of two years after demobilisation/rehabilitation and until rehabilitation completion criteria have been met.	3	3	9	
							31.02	Rehabilitation of seismic lines will commence as soon as practicable.				
32	Stakeholder management	Unauthorised or improper access to properties	Unauthorised land access by project personnel. Breach of landowner agreements. Damage to landowner infrastructure. Complaints about the	3	3	9	32.01	Ensure landowner access agreements are in place before project commences.	3	1	3	
							32.02	Include landowner requirements and sensitivities in inductions for all personnel/contractors.				
							32.03	Adhere to stakeholder management plan.				
							32.04	Incident reporting procedures will be implemented.				
							32.05	Education and awareness training will identify stakeholder sensitivities within the project area and discuss relevant management measures and personnel/contractor responsibilities.				
							33.01	Ensure landowner access agreements are in place before project commences.				

Environmental Risk Assessment – West Erregulla 3D Seismic Survey

Warrego Energy
West Erregulla Exploration Program



No.	ASPECT	SOURCE OF RISK	IMPACTS	INITIAL RISK			CONTROL AND MITIGATION MEASURES			RESIDUAL RISK		
				Cons.	L'hood	Risk	No.	Description	Cons.	L'hood	Risk	
33		Presence of project team	Disruption to landowners.	2	5	10	33.02	Include landowner requirements and sensitivities in inductions for all personnel/contractors.	1	3	3	
							33.03	Adhere to stakeholder management plan.				
							33.04	Incident reporting procedures will be implemented.				
							33.05	Education and awareness training will identify stakeholder sensitivities within the project area and discuss relevant management measures and personnel/contractor responsibilities.				
34			Additional vehicles on local roads. Disruption to traffic. Disruption to local residents.	3	4	12	34.01	Implement a traffic management plan (approved by local shire) where required.	2	3	6	
							34.02	Adhere to stakeholder management plan.				
35		Failure to engage stakeholders	Negative community sentiment resulting in complaints about the project or future difficulties in obtaining social licence for similar projects.	3	3	9	35.01	Adhere to stakeholder management plan.	2	2	4	
							35.02	Incident reporting procedures will be implemented.				
							35.03	Education and awareness training will identify stakeholder sensitivities within the project area and discuss relevant management measures and personnel/contractor responsibilities.				

Appendix E

KD.1 landholder consultation register

Stakeholder Register

Note: Shire (i.e. Mingenew and Three Springs), Department of Lands and landholder consultation (i.e. pastoralists) has been managed by KD-1 Pty Ltd and is summarised in a separate appendix and so excluded from this table.

Stakeholder	Representatives	Date and Method of Consultation	Nature of the Consultation	Consultation Outcomes
Department of Mines and Petroleum (DMP)	<ul style="list-style-type: none"> DMP: Alicia Lim and Laura McCarthy Warrego: Duncan MacNiven and Dennis Donald Coffey: Nick Phillips 	<p>1 January 2010</p> <p>Meeting</p>	<p>Informal discussion about the project, company and its people, planned activities for the next 12 months and related approvals.</p>	<ul style="list-style-type: none"> Coffey to provide DMP a copy of the current flora survey and maps of proposed activity. DMP require detailed management procedures should Warrego propose to use oil-based muds. Drill cuttings would need to be removed from lined pits and disposed of within licensed facility. DMP would like an understanding of groundwater and potential users because the fracturing process introduces hazardous chemicals. DMP interested about Warrego's camp requirements and whether facilities would be established on or off site. DMP advised Warrego of the need to consult with stakeholders. DMP advised that consultation with the Environmental Protection Authority (EPA) is probably most effective via the DMP and through an Environment Plan (then referred to as an EMP).
Department of Mines and Petroleum – Petroleum Branch	<ul style="list-style-type: none"> DMP: Laura McCarthy and Stan Bowes Warrego: Duncan MacNiven and Dennis Donald Coffey: Martine Scheltema, Shane Hashim and David Morley 	<p>15 February 2012</p> <p>Meeting</p>	<p>Inform the DMP of Warrego's planned exploration activities in EP 469 and discuss key issues and approval strategies for both the seismic survey and appraisal-drilling program.</p>	<ul style="list-style-type: none"> Likely project environmental approvals required are an Environment Plan (EP) and Native Vegetation Clearing Permit (NVCP), along with referral to the Commonwealth Department of the Environment (DotE). From the information provided, the DMP do not see any triggers for referral to the EPA under the Memorandum of Understanding. DMP assessment timeframes for EP's is 30 days for acceptance, non-acceptance, or to give the operator notice in writing stating that a decision cannot be made and setting out a proposed timetable for consideration of the plan. If additional information is required, the assessment timeframe restarts once a revision of the document is submitted.

Stakeholder	Representatives	Date and Method of Consultation	Nature of the Consultation	Consultation Outcomes
				<ul style="list-style-type: none"> • DMP assessment timeframes for NVCP is 90 days for initial assessment. The NVCP can be submitted to the DMP in advance of the EP. • A licence to take will also be required from Department of Parks and Wildlife (DPaW) if Threatened flora is going to be impacted. • EP must include details of landholder/stakeholder consultation and land access information. • If Warrego plan to hydraulically stimulate the well, DMP recommends that two separate EP's be submitted to the Department (one for drilling and one for hydraulic stimulation) for assessment of activity specific details and potential risks to the environment. • In light of public interest surrounding hydraulic stimulation, Warrego may wish to refer their hydraulic stimulation proposal to the EPA to prevent third party referrals and potential delays to scheduling.
Department of Mines and Petroleum – Native Vegetation Branch	<ul style="list-style-type: none"> • DMP: Adam Buck, Matt Boardman. • Warrego: Duncan MacNiven and Dennis Donald • Coffey: Martine Scheltema, Shane Hashim and David Morley 	6 June 2012 Meeting	Provide an overview of the project; discuss key issues relating to flora, vegetation and fauna habitat; and obtain advice regarding the proposed strategy for preparation and submission of the NVCP Application.	<ul style="list-style-type: none"> • The NVCP Application should include the following: <ul style="list-style-type: none"> – Management of significant fauna habitat (e.g. Black-Cockatoos). – Appropriate biosecurity measures to mitigate against dieback and the spread of weeds. – Proposed rehabilitation measures (helpful but not essential, largely assessed through the EP process. – Commitments that will assure the DMP that impacts to Threatened (Declared Rare) flora, priority flora and significant fauna habitat will be kept to ALARP or avoided altogether. • If impacts to Threatened flora (previously Declared Rare Flora) are unavoidable, Warrego Energy will be required to obtain a Permit to Take from the DPaW.
Office of the Environmental Protection Authority (OEPA)	<ul style="list-style-type: none"> • OEPA: Peter Tapsell, Maree Heath and Annaleigh Gunston • Warrego: Kenny 	14 November 2012 Meeting	Provide an overview of the project, discuss potential impacts and confirm the assessment	<ul style="list-style-type: none"> • Consultation with the OEPA confirmed that the OEPA believe the project can be adequately assessed by the DMP and would only require their involvement, where the DMP and or the Department of Environment and Conservation (now the Department of Environment and Regulation (DER) and the DPaW) was concerned that the proposed management of flora impacts was not satisfactory and decided to refer the project.

Stakeholder	Representatives	Date and Method of Consultation	Nature of the Consultation	Consultation Outcomes
	Paterson <ul style="list-style-type: none"> Coffey: Martine Scheltema and David Morley 		approach.	<ul style="list-style-type: none"> The OEPA recommended that management approaches be developed in consultation with the DMP and Department of the Environment and Conservation (now the DER and the DPaW).
Department of Environment and Conservation (now the DPaW and DER).	<ul style="list-style-type: none"> Kelly Griffiths and Ken Atkins 	June 2012 Email Correspondence	Seeking an opportunity to discuss the projects potential impacts to Threatened flora and the requirement to obtain a 'Permit to Take'	<ul style="list-style-type: none"> Weren't interested to meet and discuss the project at this time, awaiting results of the flora and vegetation assessment.
Department of Parks and Wildlife – Environmental Management Branch (EMB)	<ul style="list-style-type: none"> DPaW: Murray Baker and Grant Lamb Warrego: Duncan MacNiven and Dennis Donald Coffey: Martine Scheltema and Natassja Raymond 	29 October 2013 Meeting	Provide an update on the project and the intention to submit the necessary assessment documents before December 2013, with a February 2014 target commencement date for the project.	<ul style="list-style-type: none"> The EMB recommended that a 'Permit to Take' would be required and an application should be submitted promptly to the DPaW Species and Communities Branch to allow parallel assessment with the NVCP application. The EMB encouraged the avoidance of Threatened, Priority 1 and Priority 2 flora, implementation of a weed and dieback management plan, development of a communication procedure with the Moora district office, fire management, avoidance of habitat trees, the design of access tracks to avoid third party access (i.e. doglegging) and rehabilitation monitoring.
Commonwealth Department of the Environment (DotE)	<ul style="list-style-type: none"> DotE: Victoria Press and Warrego: Duncan MacNiven and Dennis Donald Coffey: Martine 	29 October 2013 Meeting	Provide an update on the project and the intention to submit the necessary assessment documents before	<ul style="list-style-type: none"> The DotE were happy to see that Warrego Energy has taken measures to avoid, mitigate and manage impacts to Matters of National Environmental Significance and that offset options were already being investigated should they be required. The DotE also confirmed the various assessment processes and recommended a rigorous discussion of project impacts, so should it be determined that the project is a controlled action, the project may be assessed under an Assessment on

Stakeholder	Representatives	Date and Method of Consultation	Nature of the Consultation	Consultation Outcomes
	Scheltema and Natassja Raymond		December 2013, with a February 2014 target commencement date for the project.	Referral Information (ARI) level of assessment.
Department of Mines and Petroleum – Native Vegetation Branch and Petroleum Branch	<ul style="list-style-type: none"> Petroleum Branch: Laura McCarthy and Stan Bowes Native Vegetation Branch: Alicia Dudzinska Warrego: Duncan MacNiven and Dennis Donald Coffey: Martine Scheltema and Natassja Raymond 	31 October 2013 Meeting	Provide an update on the project and the intention to submit the necessary assessment documents before December 2013, with a February 2014 target commencement date for the project.	<ul style="list-style-type: none"> Both branches of the DMP were happy to see that Warrego Energy had taken measures to avoid, mitigate and manage project impacts since the last meeting. Confirmed the assessment process and recommended prompt submission of the NVCP Application and EP to facilitate meeting the project schedule.
Department of Parks and Wildlife – Species and Communities Branch (SCB)	<ul style="list-style-type: none"> DPaW: Ken Atkins and Anthea Jones DPaW (EMB): Grant Lamb Warrego: Duncan MacNiven and Dennis Donald Coffey: Martine Scheltema and Natassja Raymond 	6 November 2013 Meeting	Discuss the project and its potential impacts to Threatened flora and confirm the requirements of a 'Permit to Take' application.	<ul style="list-style-type: none"> The SCB was pleased with the avoidance, mitigation and management measures in place and believed they generally represented best practice. It was recommended that rubber tyres be used and vehicle movements minimised to maximise the success of natural revegetation of disturbed areas. It was also identified that any borrow material not sourced from the project area must be dieback accredited, before it is brought onto site and that air blowing and brushing is likely to be the preferred mechanism for dieback and weed control given project activities will be undertaken in March, with a particular focus on belly plates, rail guards and steps.

Stakeholder	Representatives	Date and Method of Consultation	Nature of the Consultation	Consultation Outcomes
Amangu people and their representative the Yamatji Marlpa Aboriginal Corporation	<ul style="list-style-type: none"> Louahna Lloyd Sarah Blacklock Lawrence Hillary Brooke St James 	<p>March 2010 – December 2013</p> <p>Email, teleconference and meetings</p>	<p>Information exchange and operations update.</p> <p>Organisation and execution of a heritage survey in respect of proposed well site for West Erregulla-2 well.</p>	<ul style="list-style-type: none"> Warrego Energy has a Heritage Protection Agreement with the Amangu People for the undertaking of low impact and ground disturbing petroleum operations on the land within EP 469 (previously referred to as EP 25/07-8) and will continue to honour the conditions of this agreement.
Origin Energy	<ul style="list-style-type: none"> Gary McWilliam Ken Aitken 	<p>November 2011 – March 2012</p> <p>Email, teleconference and meetings</p>	<p>Information exchange and operations update.</p> <p>Address issues arising on Origin Redback seismic survey.</p>	<ul style="list-style-type: none"> Consider opportunities to work together in future, share costs etc. Seek to assist/support Origin in implementation of Redback seismic survey.
AWE Limited	<ul style="list-style-type: none"> Mark Fabian Steve Broom 	<p>January – March 2012</p> <p>Email, teleconference and meetings</p>	<p>Information exchange and operations update.</p>	<ul style="list-style-type: none"> Consider opportunities to work together in future, share costs etc.
UIL Energy	<ul style="list-style-type: none"> John de Stefani Vik Palanyk Keith Skipper 	<p>June 2012 – October 2013</p> <p>Email, teleconference and meetings</p>	<p>Information exchange and operations update.</p>	<ul style="list-style-type: none"> Consider opportunities to work together in future, share costs etc.
Empire Oil and Gas NL	<ul style="list-style-type: none"> Bevan Warris 	<p>June – December 2013</p> <p>Email, teleconference and meetings</p>	<p>Information exchange and operations update.</p>	<ul style="list-style-type: none"> Consider opportunities to collaborate on seismic survey tender.
Tronox Limited	<ul style="list-style-type: none"> Nick Sibbel 	<p>October/November 2013</p>	<p>Information exchange centred</p>	<ul style="list-style-type: none"> Data share agreement.

Stakeholder	Representatives	Date and Method of Consultation	Nature of the Consultation	Consultation Outcomes
	<ul style="list-style-type: none"> Cindy Walker 	Email, teleconference and meetings	around environmental compliance and regulation. Information exchange concerning future operations.	
Pipeline operators DBP Transmission and APA Group	<ul style="list-style-type: none"> Steve Lewis (APA Group) Jessica Shaw (DBP) 	February 2012 Email and meetings	Information exchange and operations update.	<ul style="list-style-type: none"> Follow up post seismic survey to provide update on next phases of appraisal.
Green Rock Energy	<ul style="list-style-type: none"> Adrian Larking Mark Ballasteros 	February 2012 – October 2013 Email, teleconference and meetings	Information exchange and operations update.	<ul style="list-style-type: none"> Consider opportunities to work together in future, share costs etc.
Mid West Energy	<ul style="list-style-type: none"> Richard Harris Kyle Jackson 	March 11 Email and meeting	Information exchange.	<ul style="list-style-type: none"> Consider opportunities to share data, particularly on environmental issues.

Appendix F

Warrego Energy stakeholder consultation register

Date	CFN	Contact Type	KD.1 Rep	Contacts	Description	Key Issues
17/12/2013	4301	Meeting	Jodi Gratton	Shire of Irwin (Jolley, Wayne)	Met with Wayne to discuss the temporary camp just off Mt Adams Road - two aspects are required. Wayne gave KD.1 a copy of the regulations and highlighted the form and information required. He saw no issue in obtaining the permit by end of Feb, if not end of January.	
17/12/2013	3807	Email - Outgoing	Jodi Gratton	Shire of Irwin (Jolley, Wayne)	Forwarded Wayne the email trail with Doug regarding land access, and requested if a formal letter is needed as well or if the email will suffice to satisfy the need for land access - Wayne advised that KD.1 will need to obtain permission off the owner of the land (Shire) and a temporary Caravan Park License.	
17/12/2013	4303	Visit	Jodi Gratton	Murion Cattle Co (Hargreaves, Jeff)	Met with Jeff and discussed seismic agreement - he had no issues and signed the agreement.	
17/12/2013	4302	Phone	Jodi Gratton	Murion Cattle Co (Hargreaves, Jeff)	Rang Hayden to confirm it was ok to drive out from Dongara to meet him now - he advised that the timing was fine and that the main contact was Jeff, his brother, going forward.	
17/12/2013	4304	Visit	Jodi Gratton	Murion Cattle Co (Hargreaves, Jeff)	Discussed potential next step of drilling and also offset requirements of seismic and potentially drilling. Cant advise exact offset requirements yet but in the order of 450ha. Need to look at options of subdivision and purchase, lease, caveat etc. Jeff advised they want mains power at the bore and centre pivots. That would be an option, especially if power is need at the drill site. He will discuss with the owners, he is seeing one owner (Peter) on Friday.	
17/12/2013	4305	Visit	Jodi Gratton	Murion Cattle Co (Hargreaves, Jeff)	Drove around the area with Jeff and inspected access. Alternative access to be used off Yandanooka East Road, approximately 3.1km east of main Mt Adams Farm gate (Murion), denoted as 3951 YE Road.	
13/12/2013	3804	Email - Outgoing	Jodi Gratton	Department of Lands (Farrar, Henty)	Sent Henty an email from the Shire of Irwin with regard to the proposed use of the Gravel Pit Reserve under their management for the temporary camp.	
12/12/2013	3806	Email - Outgoing	Alex Aitken	Shire of Irwin (Fotheringham, Doug)	Discussions regarding proposed temporary development of a campsite on Reserve 40805 for 60 days - Doug advised that Planning Approval is not required.	
9/12/2013	3803	Email - Incoming	Jodi Gratton	Department of Lands (Farrar, Henty)	Henty requested a description of what the camp is supporting and a map of the location and access - sent information to Hentry as well as some queries.	
8/12/2013	3802	Email - Outgoing	Jodi Gratton	Department of Lands (Farrar, Henty)	Emailed Henty in regards to meeting to discuss a section 91 for a temporary camp on Crown Land in the Shire of Three Springs.	
27/11/2013	3801	Email - Outgoing	Jodi Gratton	Heitman, Don	Sent Hygiene Management Plan to Don, and requested a copy of his revised plan so all the requirements can be incorporated into his land access agreement and also into the relevant seismic contractor documentation.	
21/11/2013	1724	Meeting	Alex Aitken	Shire of Three Springs (unknown, Sylvia)	Called at Shire with KW and met with CEO - need to update Shire ASAP. Would like to meet with Duncan and Donald when they are over next month.	
20/11/2013	1723	Meeting	Alex Aitken	Groke, Terry Shire of Mingenew	Met with Terry and seismic contractors for site visit - drove survey area and inspected UCL and freehold areas. Called at Mingenew Shire to chat with Mike Subly but he was not available.	
14/11/2013	1722	Email - Outgoing	Alex Aitken	Groke, Terry	Emailed Terry regarding site visit next Thursday 21st November. Terry phoned and discussed timing as Friday was no good. Terry will organise personnel to be at Mingenew or Dongara on Tuesday. KD.1 will meet them on Wednesday morning to look at the UCL areas only and road verve drive by.	
14/11/2013	3726	Email - Incoming	Alex Aitken	Coffey (Raymond, Natassja)	Sent Warrego Communications Report, as requested.	
13/11/2013	3719	Visit	Kiara Wells	Murion Cattle Co (Hargreaves, Hayden)	Landholder interaction during offset survey: 8.00am - ok to go to west block - Kathy. 12.20pm - leaving site - Kathy.	
12/11/2013	3718	Visit	Kiara Wells	Murion Cattle Co (Hargreaves, Hayden)	Landholder interaction during offset survey: 8.15am - ok to go to east block - Hayden 5.00pm - leaving site - Kyle.	
11/11/2013	3717	Visit	Kiara Wells	Murion Cattle Co (Hargreaves, Hayden)	Landholder interaction during offset survey: 10.30am - ok to come in, go to sheds, meet on west block. 11.30am - meet Kyle, ok to enter. 5.00pm - leaving site - ok - Hayden and Kyle.	
1/11/2013	1178	Phone - Left Message	Jodi Gratton	Department of Lands (Farrar, Henty)	Rang to discuss camp and general non-intrusive land access - Henty, Ken or Teri unavailable.	
1/11/2013	1177	Phone	Jodi Gratton	Murion Cattle Co (Hargreaves, Hayden)	Discussion regarding harvest activities so no time to meet Dennis/Duncan. Discussion approving access for flora survey of offset areas. Discussion agreeing for KD.1 to email revised seismic agreement. Discussion regarding lack of owner availability for offset discussion.	
30/10/2013	4585	Email - Outgoing	Jodi Gratton	Woodman Environmental Consulting (Woodman, Greg)	Discussion with Greg regarding offset targeted survey dates.	
28/10/2013	4551	Email - Outgoing	Jodi Gratton	Heitman, Don	Emails to and from Don regarding land access.	
28/10/2013	4553	Email - Outgoing	Jodi Gratton	Murion Cattle Co (Hargreaves, Hayden)	Email sent to Hayden in regards to meeting with the Directors from Warrego Energy.	
28/10/2013	4300	Email - Outgoing	Jodi Gratton	Department of Water (DoW) (Maher, Erin)	Emails regarding the licensing status of the bore and what would be required for the proposed use - Erin advised that the bore is currently unlicensed and a Licence to Take Water will be required. Proof of legal access to the land the licence related will also be needed.	

Date	CFN	Contact Type	KD.1 Rep	Contacts	Description	Key Issues
28/10/2013	4552	Email - Outgoing	Jodi Gratton	DMP (Bower, Bev) DMP (Gooch, Alan)	Emails to and from Alan in regards to meeting with the Warrego Energy team.	
28/10/2013	4554	Email - Outgoing	Jodi Gratton	Dempster, Phillip	Email sent to Mr & Mrs Dempster in regards to meeting with the Directors from Warrego Energy.	
2/10/2013	1721	Visit	Jodi Gratton	Heitman, Don	Has said no to miners and infrastructure, thinks he cant say no to oil and gas. Explained that technically he can however there are legal processes that can be progressed to enable access. See CFN for more details.	Not against the seismic but concerned about access and management of any impact.
2/10/2013	1719	Visit	Alex Aitken	Murion Cattle Co (Hargreaves, Hayden)	Met with landholder and discussed 3D seismic survey.	
2/10/2013	1720	Visit	Jodi Gratton	Murion Cattle Co (Hargreaves, Hayden)	Discussed environmental approvals for the seismic project; state and federal. See CFN for further details.	No major issues
25/09/2013	1718	Phone - Left Message	Alex Aitken	Metcalfe, Len	Rang - left message.	
25/09/2013	1717	Phone	Alex Aitken	Murion Cattle Co (Hargreaves, Hayden)	0437 808 700 - Hayden - ring Tuesday regarding timing of meeting.	
11/09/2013	1715	Email - Outgoing	Alex Aitken	Heitman, Don	Emails with Don re meeting, suggested 2nd October, confirmed with Don.	
11/09/2013	1716	Email - Outgoing	Alex Aitken	Dempster, Phillip	Emailed Phil regarding catchup.	
10/09/2013	0	Phone - Left Message	Alex Aitken	Heitman, Don	Left messages re catch up for Land Access agreement meetings.	
10/09/2013	0	Phone - Left Message	Alex Aitken	Murion Cattle Co (Hargreaves, Hayden)	Left messages re catch up for Land Access agreement meetings.	
10/09/2013	0	Phone - Left Message	Alex Aitken	Dempster, Phillip	Left messages re catch up for Land Access agreement meetings.	
24/04/2013	1708	Visit	Malcolm Smallacombe	Heitman, Don	Met with landowner - signed agreement.	
19/04/2013	1702	Phone	Malcolm Smallacombe	Heitman, Don	Arranged meeting for 8am Tuesday 24th April. Got directions to property.	Selling property Previous damage by packory in 1970s Bad reports about recent work 3D in Dongara
29/11/2012	0	Phone	Alex Aitken	Murion Cattle Co (Hargreaves, Hayden)	Rang for access re possible offset areas. Access OK surveyors to call on entry and exit.	
5/10/2012	0	Visit	Alex Aitken	Dempster, Phillip	Kenny Patterson outlined the Project and any impacts the overall project may have on Landholders.	Rehabilitation of the area would be by agreement with landholders and a "leave as found" policy.
4/10/2012	0	Visit	Alex Aitken	Heitman, Don	Kenny Patterson outlined the Project and any impacts the overall project may have on Landholders. Don was supportive of the Project and asked for results of Flora and Fauna studies for local Biodiversity group Rehabilitation of the area would be by agreement with landholders and a "leave as found" policy	
4/10/2012	0	Visit	Alex Aitken	Shire of Mingenew	Kenny Patterson outlined the Project and any impacts the overall project may have on the Shire. Shire would support the Project.	
3/10/2012	0	Visit	Alex Aitken	Shire of Three Springs	Kenny Patterson outlined the Project and any impacts the overall project may have on the Shire.	They Expressed the following: Any development opportunities for the Shire. Camp site available in Three Springs Shire has Road Use Policy which will need to be agreed to.
24/09/2012	0	Phone	Alex Aitken	Metcalfe, Len	Phone calls and emails to confirm appointments for meetings with Warrego Management and KD.1 staff to discuss the project and future activities.	
24/09/2012	0	Phone	Alex Aitken	Heitman, Don	Phone calls and emails to confirm appointments for meetings with Warrego Management and KD.1 staff to discuss the project and future activities.	
24/09/2012	0	Phone	Alex Aitken	Murion Cattle Co (Hargreaves, Hayden)	Phone calls and emails to confirm appointments for meetings with Warrego Management and KD.1 staff to discuss the project and future activities.	
24/09/2012	0	Phone	Alex Aitken	Dempster, Phillip	Phone calls and emails to confirm appointments for meetings with Warrego Management and KD.1 staff to discuss the project and future activities.	
24/09/2012	0	Phone	Alex Aitken	Shire of Three Springs	Phone calls and emails to confirm appointments for meetings with Warrego Management and KD.1 staff to discuss the project and future activities.	
24/09/2012	0	Phone	Alex Aitken	Shire of Mingenew	Phone calls and emails to confirm appointments for meetings with Warrego Management and KD.1 staff to discuss the project and future activities.	
17/09/2012	0	Phone	Alex Aitken	Metcalfe, Len	Phone calls to arrange access for flora/fauna surveys 3-5 October.	
17/09/2012	0	Phone	Alex Aitken	Heitman, Don	Phone calls to arrange access for flora/fauna surveys 3-5 October.	
17/09/2012	0	Phone	Alex Aitken	Murion Cattle Co (Hargreaves, Hayden)	Phone calls to arrange access for flora/fauna surveys 3-5 October.	

Date	CFN	Contact Type	KD.1 Rep	Contacts	Description	Key Issues
17/09/2012	0	Phone	Alex Aitken	Dempster, Phillip	Phone calls to arrange access for flora/fauna surveys 3-5 October.	
10/09/2012	0	Phone	Alex Aitken	Metcalfe, Len	Phone calls and emails to arrange appointments for meetings with Warrego Management and KD.1 staff to discuss the project and future activities.	
10/09/2012	0	Phone	Alex Aitken	Heitman, Don	Phone calls and emails to arrange appointments for meetings with Warrego Management and KD.1 staff to discuss the project and future activities.	
10/09/2012	0	Phone	Alex Aitken	Murion Cattle Co (Hargreaves, Hayden)	Phone calls and emails to arrange appointments for meetings with Warrego Management and KD.1 staff to discuss the project and future activities.	
10/09/2012	0	Phone	Alex Aitken	Dempster, Phillip	Phone calls and emails to arrange appointments for meetings with Warrego Management and KD.1 staff to discuss the project and future activities.	
10/09/2012	0	Phone	Alex Aitken	Shire of Three Springs	Phone calls and emails to arrange appointments for meetings with Warrego Management and KD.1 staff to discuss the project and future activities.	
10/09/2012	0	Phone	Alex Aitken	Shire of Mingenew	Phone calls and emails to arrange appointments for meetings with Warrego Management and KD.1 staff to discuss the project and future activities.	
7/06/2012	0	Visit	Malcolm Smallacombe	Murion Cattle Co (Hargreaves, Hayden)	Met at shed as arranged prior to survey access, given full access to the property.	
6/06/2012	0	Phone	Malcolm Smallacombe	Brenkley, Mary	Called to let her know the survey had been completed and there had been no need to enter the property so there was no concern of a Bio-Security nature.	
6/06/2012	0	Visit	Malcolm Smallacombe	Heitman, Don	Delivered signed Bio-Security Plan and discussed access and vehicle hygiene protocols.	
5/06/2012	0	Phone	Malcolm Smallacombe	Heitman, Don	Left message re survey starting on his property tomorrow.	
28/05/2012	0	Email - Incoming	Alex Aitken		Email confirmation of Access for Fauna and Flora studies.	
25/05/2012	0	Phone	Malcolm Smallacombe	Metcalfe, Len	Notification of the Fauna Survey to take place on 6-8 June. All approved for the access just need to be sure all Bio Security issues are managed well as it has rained and paddocks are seeded. Limited access to some paddocks, on foot only.	
25/05/2012	0	Phone	Malcolm Smallacombe	Brenkley, Mary	Notification of the Fauna Survey to take place on 6-8 June. All approved for the access just need to be sure all Bio Security issues are managed well as it has rained and paddocks are seeded. Limited access to some paddocks, on foot only.	
25/05/2012	0	Phone	Malcolm Smallacombe	Heitman, Don	Notification of the Fauna Survey to take place on 6-8 June. All approved for the access just need to be sure all Bio Security issues are managed well as it has rained and paddocks are seeded. Limited access to some paddocks, on foot only.	
25/05/2012	0	Phone	Malcolm Smallacombe	Murion Cattle Co (Hargreaves, Hayden)	Notification of the Fauna Survey to take place on 6-8 June. All approved for the access just need to be sure all Bio Security issues are managed well as it has rained and paddocks are seeded. Limited access to some paddocks, on foot only.	
25/05/2012	0	Phone	Malcolm Smallacombe	Dempster, Phillip	Notification of the Fauna Survey to take place on 6-8 June. All approved for the access just need to be sure all Bio Security issues are managed well as it has rained and paddocks are seeded. Limited access to some paddocks, on foot only.	
17/05/2012	4586	Email - Outgoing	Alex Aitken	RDL (McKinley, Terry)	Re access to the UCL areas of land for Fauna and Flora studies 6-8 June.	
2/05/2012	1713	Visit	Malcolm Smallacombe	Brenkley, Mary	Explained the project and need for access to areas for flora and fauna surveys. Went through Access Agreement. Mary and Russell explained they have a Bio-Security Plan that must be implemented for any entry to the property. Conditions of entry were agreed and the Access Agreement signed. They are very concerned about ground water issues associated with Oil and Gas exploration.	
1/05/2012	1712	Visit	Malcolm Smallacombe	Metcalfe, Len	Picked up Len in Perth and drove him to Geraldton. Discussed the project and need for Access Agreement to enter his property. Agreed to conditions and signed agreement.	
1/05/2012	0	Phone	Malcolm Smallacombe	Brenkley, Mary	Arranged meeting for tomorrow.	
27/04/2012	0	Phone	Malcolm Smallacombe	Metcalfe, Len	Contacted Len and explained Project. Arranged to meet in Perth and take him to Geraldton as have meetings arranged next week.	
26/04/2012	1711	Phone - Left Message	Malcolm Smallacombe	Metcalfe, Len	Left messages on various phones. Waiting for a reply.	
26/04/2012	0	Phone	Malcolm Smallacombe	Brenkley, Mary	Arranged meeting date and time.	
24/04/2012	0	Phone	Malcolm Smallacombe	Heitman, Don	Confirmation of today's meeting.	
24/04/2012	0	Phone	Malcolm Smallacombe	Dempster, Phillip	Confirmation of today's meeting.	
24/04/2012	1709	Visit	Malcolm Smallacombe	Dempster, Elizabeth Dempster, Phillip	Meeting with landowner - Phil signed flora and fauna study access form.	Liz is very protective of the reserve and has been for many years.
23/04/2012	1707	Visit	Malcolm Smallacombe	Murion Cattle Co (Hargreaves, Hayden)	Explained the project and need for access to areas for flora and fauna surveys. Went through Access Agreement. Hayden signed the Agreement.	Has had original do 3D study recently, compaction was 2 to 6 inches and no rehab done.
19/04/2012	1705	Phone - Left Message	Malcolm Smallacombe	Metcalfe, Len	No answer at farm, tried to find other contact numbers. Will keep trying.	

Date	CFN	Contact Type	KD.1 Rep	Contacts	Description	Key Issues
19/04/2012	1703	Phone - Left Message	Malcolm Smallacombe	Brenkley, Mary	No answer left message will call back later.	
19/04/2012	0	Phone	Malcolm Smallacombe	Heitman, Don	Discussed the need for access for Flora and Fauna studies. Arranged meeting.	
19/04/2012	1701	Phone	Malcolm Smallacombe	Murion Cattle Co (Hargreaves, Hayden)	Discussed the need for access for Flora and Fauna studies. Arranged meeting.	
19/04/2012	1704	Phone	Malcolm Smallacombe	Dempster, Phillip	Discussed the need for access for Flora and Fauna studies. Arranged meeting.	Bad report about Dongara 3D survey.