REPORT

Ecology Assessment Report

Q-4550-15-RP-001_09

Australia Pacific LNG Upstream Phase 1

Ecology Assessment Report - Lot 13 on BWR405

Revision	Date	Description	Originator	Checked	QA/Eng	Approved
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1. Definitions & Abbreviations

1.1. Definitions

Table 1: Definitions

Term	Definition
Biocondition	*Biocondition* is a condition assessment framework for Queensland that provides a measure of how well a terrestrial ecosystem is functioning for the maintenance of biodiversity values at a local or property scale. It is a Site-based, quantitative and repeatable assessment that provides a numeric score that can be summarised as a condition rating of 1, 2, 3 or 4, or functional through to dysfunctional condition for biodiversity. Condition is measured as the degree to which the attributes of a patch of vegetation differs from the attributes of the same vegetation in its reference state.
Biodiversity Status (Remnant vegetation)	The biodiversity status of remnant vegetation is based on an assessment of the condition of remnant vegetation in addition to the criteria used to determine the class under the *Vegetation Management Act 1999* (*VM Act*). The biodiversity status is used for a range of planning and management applications including the determination of Environmentally Sensitive Areas (ESA) that are used for regulation in the mining industry through provisions of the *Environmental Protection Act 1994* (*EP Act*).
Bioregion	Bioregions are geographically distinct areas with common characteristics such as geology, landform patterns, climate and ecological features. Queensland is divided into 13 bioregions.
Class 2 Pest	Pest that is established in Queensland, and has, or could have, a substantial adverse economic, environmental or social impact
Coal Seam Gas	Coal Seam Gas (CSG) is a form of natural gas extracted from underground coal seams. The term refers to methane absorbed into the solid matrix of the coal.
Coal Seam Gas Seismic Survey	Seismic surveys produce a detailed image of the geology beneath the earth's surface, by bouncing sound waves off underground rock formations. This information can be used to accurately plan the location of CSG wells. Seismic surveying on land usually consists of a series of linked seismic lines.
Environmentally Sensitive Area	Environmentally Sensitive Areas (ESAs) are locations that have environmental values that contribute to maintaining biological diversity and integrity; have intrinsic or attributed scientific, historical, or cultural heritage value; or are important in providing amenity harmony or sense of community. ESAs are broken down into three categories: A, B or C. Category A areas are those that have significant ecological values, such as national parks or marine parks. Category B areas have ecological values such as regional ecosystems (REs) with an endangered biodiversity status or Ramsar wetlands. Category C areas typically include ecological values such as REs with an Of Concern biodiversity status, essential habitat or referable wetlands. For the purposes of ESAs, the biodiversity status of the RE is considered, not the status under the *Vegetation Management Act 1999* (*VM Act*).
Essential Habitat	Vegetation in which a species that is endangered, vulnerable, or near threatened under the *Nature Conservation Act 1992* (*NC Act*) has been known to occur, and has been mapped as essential habitat by the Department of Environment and Heritage Protection (DEHP).
High Value Regrowth	High Value Regrowth (HVR) vegetation is mature native vegetation that: has not been cleared since 31 December 1989; is an Endangered, Of Concern or Least

Term	Definition
	Concern regional ecosystem; and is shown on a regrowth vegetation map.
Regional Ecosystems	Defined by Sattler and Williams (1999) as vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil.
Referable Wetland	An area identified as a wetland on the DEHP Map of Referable Wetlands.
Remnant Vegetation	Vegetation that has not been cleared or vegetation that has been cleared but where the dominant canopy has >70% of the height and >50% of the cover relative to the undisturbed height and cover of that stratum and is dominated by species characteristic of the vegetation's undisturbed canopy.
Site	Lot 13 on BWR405.
Dalwogan Area	Dalwogan 3D Seismic Area.
Type A restricted plant	Type A restricted plants are orchids, epiphytic ferns, cycads, grass trees and other popular horticultural species that may not be considered sufficiently rare to be classified as threatened, but are harvested and traded to the extent that a threat to the species might exist. To ensure populations of these plants are not depleted to the point that they become threatened trade is controlled, as is all taking in the wild for commercial or recreational purpose.

1.2. Abbreviations

Table 2: Abbreviations

Abbreviation	Description
Australia Pacific LNG	Australia Pacific LNG Pty Limited
BAA	BirdLife Australia Atlas
BOM	Bureau of Meteorology
CSG	Coal Seam Gas
DEC	Department of Environment and Conservation
DEHP	Department of Environment and Resource Management
DME	Department of Mines and Energy
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities
EA	Environmental Authority
EP Act	*Environment Protection Act 1994*
EPBC Act	*Environment Protection and Biodiversity Conservation Act1999*
ESA	Environmentally Sensitive Areas
GIS	Geographic Information System
GPS	Global Positioning System
HERBRECS	Queensland Herbarium Records
HVR	High Value Regrowth
IUCN	International Union for Conservation of Nature
LP Act	*Land Protection (Pest and Stock Route Management) Act 2002*
LNG	Liquefied Natural Gas
MNES	Matters of National Environmental Significance
NC Act	*Nature Conservation Act 1992*
NC Reg	*Nature Conservation (Wildlife) Regulation 2006*
QGMS	Queensland Government Mining and Safety
RE	Regional Ecosystem
RPS	RPS Australia East Pty Ltd
TEC	Threatened Ecological Community
TSSC	Threatened Species Scientific Committee
VM Act	*Vegetation Management Act 1999*
WoNS	Weeds of National Significance
WWF	World Wildlife Fund

1.3. Document References

Table 3: Associated document references

Document Number	Title
1	BirdLife Australia's Atlas (BAA, 20012). *Birdata*, BirdLife Australia, WildlifeLink and Geographic Web Solutions. Available from: http://www.birdata.com.au/community_front.vm, Accessed on the 7 June 2012.
2	Bureau of Meteorology (BOM, 2013). *Climate data online.* Available from: http://www.bom.gov.au/climate/data/, Accessed on 12 February 2013.
3	Churchill, S. (2009). *Australian Bats*, Second Edition, Allen and Unwin, Crows Nest.
4	Department of Environment and Conservation (DEC, 2005). *Ooline – Profile*. Office of Environment and Heritage, NSW, Sydney. Available from: http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/profile.aspx?id=10118, Accessed on 14 May 2012.
5	Department of Environment and Heritage Protection (DEHP, 2006). *Red Goshawk Erythrotriorchis radiatus,* Conservation Management Profile. Available from: http://www.ehp.qld.gov.au/register/p02093aa.pdf, Accessed on 30 May 2012.
6	Department of Environment and Heritage Protection (DEHP, 2010). *Golden-tailed gecko.* Available from: http://www.ehp.qld.gov.au/wildlife/threatened-species/near-threatened/goldentailed_gecko.html, Accessed on 31 May 2012.
7	Department of Environment and Heritage Protection (DEHP, 2012a). *Regrowth Vegetation Map* (Version 2.1). Available from: http://www.derm.qld.gov.au/wildlife-ecosystems/biodiversity/regional_ecosystems/introduction_and_status/regional_ecosystem_maps/index.php#lot , Accessed on 4 April 2012.
8	Department of Environment and Heritage Protection (DEHP, 2012b). *Environmentally Sensitive Area – Mining Activities* Map. Available from: http://www.ehp.qld.gov.au/licences-permits/maps_of_environmentally_sensitive_areas.php, Accessed on 4 April 2012.
9	Department of Environment and Heritage Protection (DEHP, 2012c). *VMA Essential Habitat Map* (Version 3.1). Available from: http://www.derm.qld.gov.au/wildlife-ecosystems/biodiversity/regional_ecosystems/introduction_and_status/regional_ecosystem_maps/index.php#lot, Accessed on 4 April 2012.
10	Department of Environment and Heritage Protection (DEHP, 2012d). *Referable Wetlands mapping*. Available from: http://www.derm.qld.gov.au/wildlife-ecosystems/ecosystems/referable-wetlands-form.php , Accessed on 4 April 2012.
11	Department of Environment and Heritage Protection (DEHP, 2012e). *Wetland Maps.* Available from: http://wetlandinfo.ehp.qld.gov.au/wetlands/MappingFandD/WetlandMapsAndData/WetlandMaps.html, Accessed on 4 April 2012.
12	Department of Environment and Heritage Protection (DEHP, 2013a). *VMA Regional Ecosystem and Remnant Map* (Version 7). Available from: http://www.derm.qld.gov.au/wildlife-ecosystems/biodiversity/regional_ecosystems/introduction_and_status/regional_ecosystem_maps/index.php#lot, Accessed on 12 February 2013.
13	Department of Environment and Heritage Protection (DEHP, 2013b). *Wildlife Online*. Available from: http://www.derm.qld.gov.au/wildlife-ecosystems/wildlife/wildlife_online, Accessed on 24 January 2013.
14	Department of Environment and Heritage Protection (DEHP) *Environmental Authority (EA) issued for the Walloons project area* by the DEHP (PEN100067807).
15	Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC, 2008a).

Document Number	Title
	Approved conservation advice for *Pterostylis cobarensis (*Cobar greenhood Orchid). Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/12993-conservation-advice.pdf, Accessed on 30 May 2012.
16	Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC, 2008b). Approved conservation advice for *Tylophora linearis.* Available from:http://www.environment.gov.au/biodiversity/threatened/species/pubs/55231-conservation-advice.pdf, accessed on 10 April 2012.
17	Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC, 2008c). Approved conservation advice for *Westringia parvifolia*. Available from:http://www.environment.gov.au/biodiversity/threatened/species/pubs/4822-conservation-advice.pdf, Accessed on 10 April 2012.
18	Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) (2009). *EPBC Act* Approval 2009/4974.
19	Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC, 2012a). *Brigalow (Acacia harpophylla dominant and co-dominant)* in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/sprat, Accessed on 30 May 2012.
20	Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC, 2012b). *Neochmia ruficauda ruficauda* in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/sprat, Accessed on 30 May 2012.
21	Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC, 2012c). R*ostratula australis – Australian Painted Snipe* in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/sprat , Accessed on 30 May 2012.
22	Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC, 2012d). *Chalinolobus dwyeri* — Large-eared Pied Bat, Large Pied Bat, in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/sprat Accessed on 30 May 2012.
23	Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC, 2012e). *Nyctophilus corbeni*— South-eastern Long-eared Bat in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/sprat, Accessed on 30 May 2012.
24	Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC, 2012f). *Anomalopus mackayi*— Five-clawed Worm-skink, Long-legged Worm-skink, in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/sprat, Accessed on 30 May 2012.
25	Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC, 2012g). *Delma torquata* in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/sprat, Accessed on 30 May 2012.
26	Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC, 2012h). *Denisonia maculata* in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/sprat, Accessed 30 May 2012.
27	Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC, 2012i). *Egernia rugosa* in Species Profile and Threats Database, Department of Sustainability, Environment,

Document Number	Title
	Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/sprat, Accessed on 30 May 2012.
28	Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC, 2012j). *Furina dunmalli* in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/sprat, Accessed on 30 May 2012.
29	Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC, 2012k). *Paradelma orientalis* in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/sprat, Accessed 28 June 2012.
30	Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC, 2012l). Species Profile and Threats Database (search undertaken for all Migratory species), Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/sprat, Accessed on 30 May 2012.
31	Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC, 2013). *Protected Matters Search Tool*, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/epbc/pmst/index.html, Accessed on 24 January 2013.
32	Ellis, M. & Pennay, M. (2008) *Chalinolobus picatus*. In: IUCN 2012. IUCN Red List of Threatened Species. Version 2012.2. <www.iucnredlist.org>. Downloaded on 26 February 2013.
33	*Environment Protection and Biodiversity Conservation Act 1999*. Available from: http://www.comlaw.gov.au/Details/C2012C00248 , Accessed on 14 May 2012.
34	Eyre, T.J., Kelly, A.L., Neldner, V.J., Wilson, B.A., Ferguson, D.J., Laidlaw, M.J. and Franks, A.J. (2011). *BioCondition: A Condition Assessment Framework for Terrestrial Biodiversity in Queensland. Assessment Manual. Version 2.1*. Department of Environment and Heritage Protection (DEHP), Biodiversity and Ecosystem Sciences, Brisbane.
35	Garnett, S. (1992). *Threatened and Extinct Birds of Australia*. Royal Australian Ornithologists Union and Australian National Parks and Wildlife Service, Canberra. Available from: http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=25934 , Accessed on 30 May 2012.
36	Glossy Black Conservancy (2010). *Glossy Black-Cockatoo Conservation Guidelines for South-Eastern Queensland and Far North-Eastern New South Wales*. Glossy Black Conservancy.
37	Higgins, P.J. (ed.) (1999). *Handbook of Australian, New Zealand and Antarctic Birds. Volume Four - Parrots to Dollarbird*. Oxford University Press, Melbourne.
38	*Land Protection (Pest and Stock Route Management) Act 2003.* Available from:http://www.legislation.qld.gov.au/LEGISLTN/CURRENT/L/LandPrPSRMR03.pdf, Accessed on 14 May 2012.
39	Marchant S and Higgins PJ (Eds) (1993). Handbook of Australian, New Zealand and Antarctic Birds (vol. 2), Oxford University Press: Melbourne
40	Maxwell, S., Burbidge, A.A. and Morris, K (eds) (1996). *Action Plan for Australian Marsupials and Monotremes*. Environment Australia, Canberra.
41	National Murray Cod Recovery Team (2009). *Draft National Recovery Plan for the Murray Cod Maccullochella peelii peelii*. Department of Sustainability and Environment, Melbourne.
42	*Nature Conservation Act 1992. A*vailable from: http://www.legislation.qld.gov.au/legisltn/current/n/naturecona92.pdf, Accessed on 30 May 2012.

Document Number	Title
43	*Nature Conservation (Wildlife) Regulation 2006.* Available from: http://www.legislation.qld.gov.au/LEGISLTN/CURRENT/N/NatureConWiR06.pdf, Accessed on 30 May 2012.
44	Neldner, V.J., Wilson, B. A., Thompson, E.J. and Dillewaard, H. A. (2012). *Methodology for survey and mapping of regional ecosystems and vegetation communities in Queensland*. Version 3.1 Updated August 2012. Queensland Herbarium, Environmental Protection Agency, Brisbane.
Q-LNG01-15-MP-0109	Origin Energy (2012) *Environmental Constraints Planning and Field Development Protocol* for Australia Pacific LNG Pty Limited
45	Queensland Government Mining and Safety (QGMS, 2011). *Geoscience and Resource Information,* Digital Geological Mapping Data, Available from: http://mines.industry.qld.gov.au/geoscience/digital-geological-mapping-data.htm , Accessed on 12 February 2013.
46	Queensland Herbarium (2012). HERBRECS database, Brisbane.
47	Rangelands (2008). *Taking the Pulse – Brigalow Belt South bioregion*. Available from: http://www.environment.gov.au/land/publications/acris/pubs/bioregion-brigalow-belt-south.pdf, Accessed 08 April 2012.
48	Sattler, P. S., and Williams, R. D., (editors). (1999). *The conservation status of Queensland's bioregional ecosystems*. Environmental Protection Agency, Brisbane.
49	Trémont, R.M. and Whalley, D.B. (1993). *Final Report for Survey for Homopholis belsonii*. Toowoomba and Region Environment Council Inc, Toowoomba.
50	Threatened Species Scientific Committee (TSSC, 2008a). *Commonwealth Listing Advice on Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland*. Available from: http://www.environment.gov.au/cgi-bin/sprat, Accessed 30 May 2012.
51	Threatened Species Scientific Committee (TSSC, 2008b). *Commonwealth Listing Advice on Weeping Myall Woodlands*. Available from: http://www.environment.gov.au/cgi-bin/sprat/public/publicshowcommunity.pl?id=98, Accessed 30 May 2012.
52	Threatened Species Scientific Committee (TSSC, 2011). *Commonwealth Listing Advice on Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions*. Available from: http://www.environment.gov.au/cgi-bin/sprat, Accessed 30 May 2012.
53	*Vegetation Management Act 1999.* Available from: http://www.legislation.qld.gov.au/legisltn/current/v/vegetmana99.pdf, Accessed on 4 April 2012.
54	World Wildlife Fund (WWF) (2008). *Brigalow Belt bioregion – a biodiversity jewel*. Available from: http://www.qmdc.org.au/publications/download/49/fact-sheets-case-studies/reptile-recovery/the-brigalow-belt-bioregion.pdf, Accessed on 14 May 2012.

2. Introduction

RPS was commissioned by Origin Energy Limited (Origin) to prepare this ecological assessment report to identify ecological constraints and opportunities for seismic surveying of Lot 13 on BWR405, hereafter referred to as the Site.

This report and associated field surveys were completed by a team of six RPS Ecologists, led by Brad Dreis, Senior Ecologist (approved by DSEWPaC in writing on 14/09/2012). This report provides a description of the Site's ecological values, including significance and extent of vegetation, habitat and species, as determined from desktop and field investigations.

3. Scope of Work

The purpose of the ecological assessment survey was to identify ecological features within the Site to inform placement of seismic lines, so that environmental impacts can be avoided and minimised. This report addresses conditions within the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (*EPBC Act*) approval 2009/4974 and the Environmental Authority (EA) issued for the Walloons project area by the Department of Environment and Heritage Protection (DEHP) (PEN100067807). Survey requirements include:

- Verification of Queensland DEHP Regional Ecosystem (RE) and High Value Regrowth (HVR) mapping and creation of ground-truthed RE and HVR maps
- Observation and mapping of Category A, B and C Environmentally Sensitive Areas (ESAs)
- Observation and mapping of significant vegetation communities, including Threatened Ecological Communities (TECs) identified under the *EPBC Act*
- Observation and mapping of endangered, vulnerable, or near threatened flora and fauna species listed under the *EPBC Act* and Queensland *Nature Conservation (Wildlife) Regulation 2006* (*NC Reg*). In addition, observation and mapping of suitable threatened species habitat
- Mapping of pre-existing areas of significant disturbance within Category B or C ESA
- Assessment of habitat quality and analysis of likelihood of occurrence of threatened flora and fauna species listed under the *EPBC Act* and *NC Reg*
- Identification of opportunities for placement of seismic lines, such as areas cleared of vegetation, and areas of lower value vegetation
- Identification of areas of significant weed or pest infestation, and known feral animals
- Provision of Site-specific management recommendations to minimise impacts.

The ecological assessment survey was undertaken within Lot 13 on BWR405, located within the northern section of Dalwogan, west of Miles, Queensland (Figure 1). The survey was undertaken in accordance with Origin's Ecological Assessment Guidelines (Origin Energy, 2012) and all work was compliant with relevant legislation. The Dalwogan area comprises part of the Walloons Environmental Authority (EA) PEN10067807.

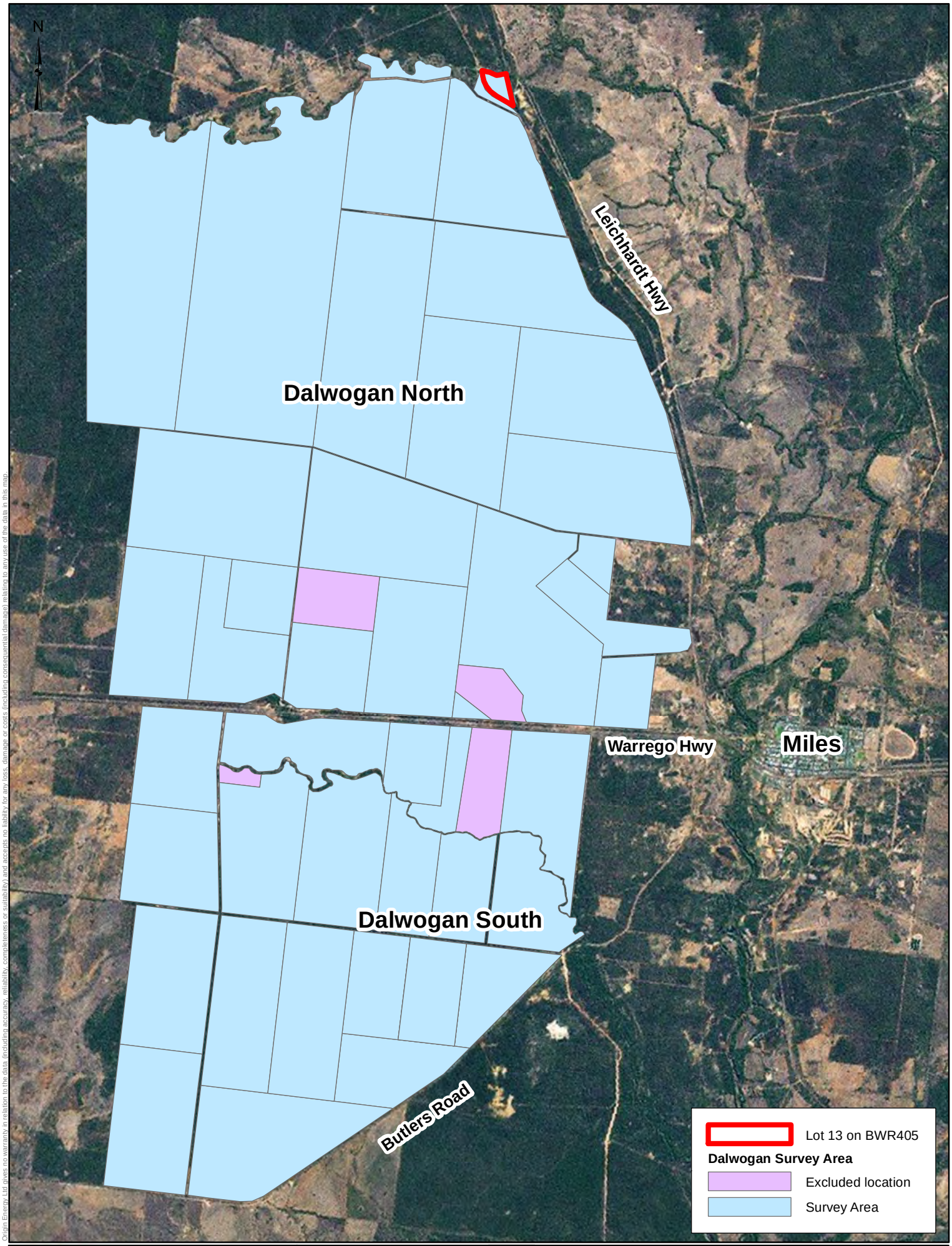

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Figure 1

Dalwogan Area Locality Map

Date: 24/01/2013

State: Queensland
Project: Dalwogan Ecological Survey
Map No: 1 of 5
Map ID:
Doc ID:

REVISIONS		
A	Issued for Use	01/08/2012
REV	DESCRIPTION	DATE

	NAME	SIGNATURE
DRAWN	CO	
CHECK	HR	
QA	KM	
APP	BD	

1,500 750 0 1,500 Meters

Projection: MGA94 Z56 Units: Kilometres
Scale 1:70,000 @ A3

Locations indicative and subject to change
Digital Cadastral Database © The State of Queensland (DERM) 2012.

GDA

4. Site Context

4.1. Location

The Site is located in the area of the Walloons EA known as 'Dalwogan', 5 km west of Miles in the Western Downs Regional Council Local Government Area. The Dalwogan area is dissected north-south by the Warrego highway and is bounded on the northeast by the Leichhardt highway and on the southeast by Butlers road (Figure 1).

The Dalwogan area is comprised of the following 40 land parcels:

- Lot 4 and 5 on BWR 218
- Lot 80 and 81 on BWR 363
- Lot 61 on BWR 361
- Lot 50 on BWR 276
- Lot 53, 58, 59, 60, 62 and 63 on BWR 279
- Lot 8 on BWR 349
- Lot 36 and 54 on BWR 601
- Lot 1 and 2 on RP 227977
- Lot 57 on BWR 276
- Lot 52 on RP 896373
- Lot 2 and 11 on BWR 421
- Lot 13 on BWR405
- Lot 1 and 2 on RP 211457
- Lot 1 and 2 on RP 175899
- Lot 56 and 57 on BWR 273
- Lot 44, 45, 46, 48 and 51 on BWR 274
- Lot 13 on BWR 789
- Lot 1, 2 and 4 on RP 175900
- Lot 5 and 6 on RP 175901
- Lot 22 on SP 132024.

This report focuses on Lot 13 on BWR405. This lot is located in the northern section of the Dalwogan area (Figure 1) and covers an area of 12.1 ha.

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4.2. Bioregion

The Site occurs within the Brigalow Belt South Bioregion. This bioregion covers an area of approximately 36,400,000 ha (WWF, 2008) and is comprised of a variety of landscapes, ranging from flat alluvial plains to hilly areas. Vegetation across the bioregion ranges from mixed eucalypt woodlands and acacia forests to Brigalow scrublands and Mitchell grasslands (Rangelands, 2008).

4.3. Current Land Use

Current land use within the greater Dalwogan area is predominantly grazing of domestic livestock, e.g. cattle and goats, with scattered areas of residential housing. Although some clearing of vegetation has occurred locally, the majority of the Dalwogan area remains vegetated. These land uses are consistent with those within the Site area subject to this report.

4.4. Soils and Geology

The greater Dalwogan area consists of flat to gently undulating plains and rolling hills that are derived from weathered sandstone. The eastern extremity was located on plateaus and low sandstone hills through to undulating plains. Three broad soil types can be found within the region. The Dalwogan area contains bleached sands over mottled, yellowish brown or brown and red clays. These are texture contrast soils (chromosols/sodosols and kurosols), with a shallow, mainly sandy surface. The soils on the ridges in the north were very shallow, gravelly, red soils and shallow, gravelly, texture contrast soils. These include skeletal soils (mainly rudosols), which are shallow stony loams derived from sediments (QGMS, 2011). The soils and geology present on the Site are consistent with that of the greater Dalwogan area.

4.5. Climate

The region has a warm to hot subtropical climate with summer-dominant rainfall. The closest weather station is Roma. Yearly average temperatures range from a maximum of 34.1^{o}C in January to a minimum of 3.9^{o}C in July. Mean annual rainfall is 596.5 mm (figures based on Roma Airport data from 1995) (BOM, 2012).

5. Methodology

The ecological assessment surveys consisted of both desktop and field investigations.

5.1. Desktop and Literature Review

The following sources were reviewed to obtain information for the desktop and literature review as follows:

- *EPBC Act* Protected Matters Search Tool (DSEWPaC, 2013)
- DEHP Remnant Ecosystem and Remnant Vegetation Map, version 7 digital GIS layer (DEHP, 2013b)
- DEHP Regrowth Vegetation map, version 2.1 digital GIS layer (DEHP, 2012a)
- DEHP Environmentally Sensitive Areas (ESA) (DEHP, 2012b)
- DEHP Essential Habitat map, version 3.1, digital GIS layer (DEHP, 2012c)
- DEHP Referrable Wetlands database (DEHP, 2012d)
- DEHP Queensland Wetlands map, version 2.0. (DEHP, 2012e)
- DEHP Wildlife Online Database (DEHP, 2013a)
- Queensland Herbarium HERBRECS database (Queensland Herbarium 2012)
- Queensland Museum database (Queensland Museum, 2012)
- BirdLife Australia's Atlas, Birdata (BAA, 2012).

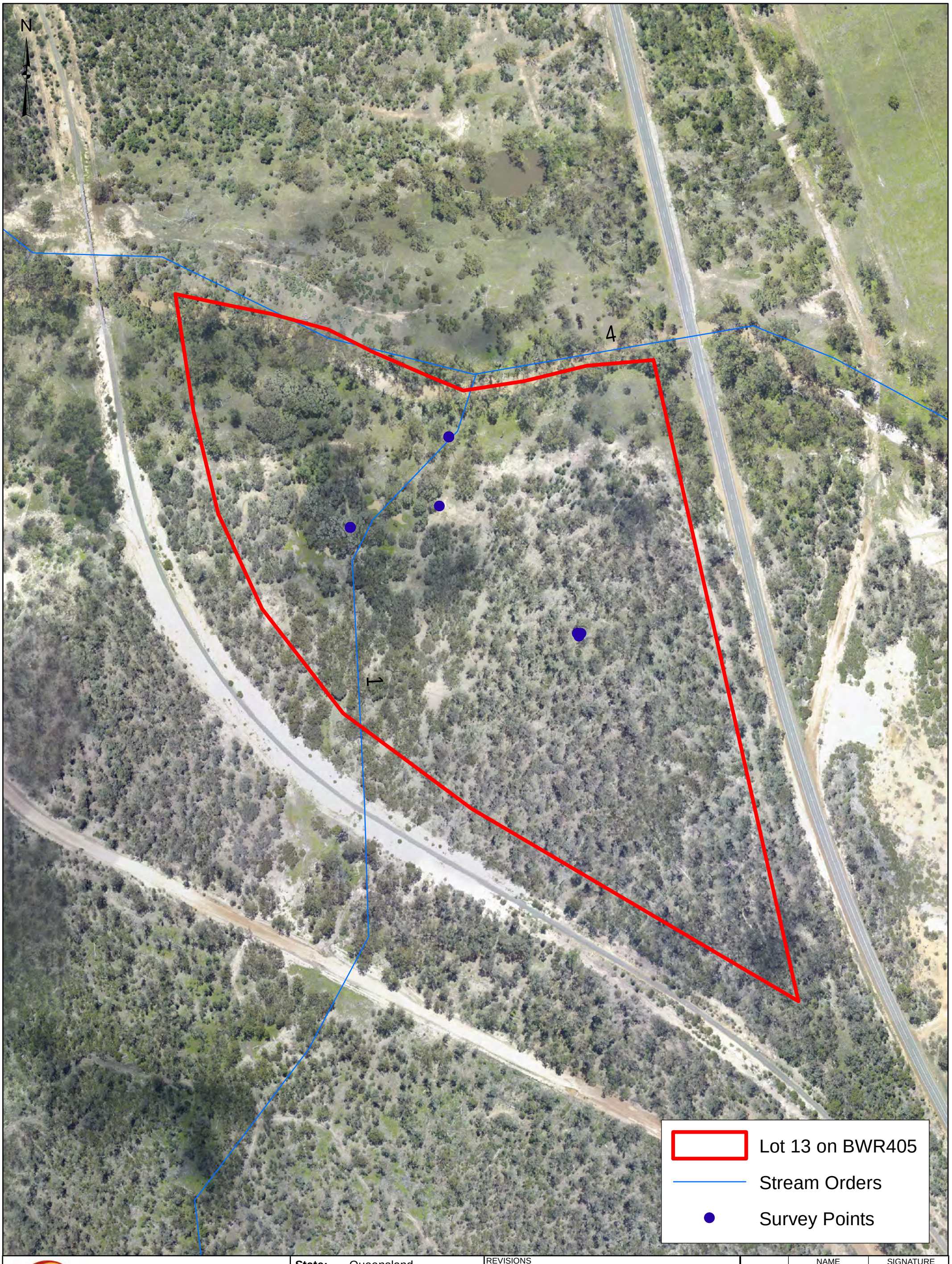
EPBC Act Protected Matters and *NC Reg* Wildlife Online searches were conducted using a 10 km buffer around the Global Positioning System (GPS) coordinates -26.61999, 150.12924, which corresponded to the approximate centre point of the Dalwogan north area.

5.2. Field Survey

Ecological assessment surveys were undertaken in general accordance with the *BioCondition – A Condition Assessment Framework for Terrestrial Biodiversity in Queensland – Assessment Manual – Version 2.1* (Biocondition Manual) (Eyre *et al.,* 2011) and the *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland* (Neldner *et al.,* 2012).

5.2.1. Site Selection

Prior to undertaking the field survey, target survey plots were selected using aerial photography and DEHP mapping (e.g. RE, HVR and wetland maps), to ensure representation of the different vegetation and habitat types present on the Site. At least one plot was surveyed for each vegetation/habitat type. Additional plots were also surveyed during field work when differences between the RE mapping and ground-truthing were identified. The survey points represented in Figure 2 represent the central point of the vegetation plots, opportunistic and targeted surveys on Sites.



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RPS

Figure 2
Survey Locations Map

Date: 01/08/2012

State: Queensland
Project: Dalwogan Ecological Survey
Map No: 2 of 5
Map ID:
Doc ID:

REVISIONS		
1	Issued for Use	01/08/2012
REV	DESCRIPTION	DATE

	NAME	SIGNATURE
DRAWN	CO	
CHECK	HR	
QA	KM	
APP	BD	

50 25 0 50 Meters

Projection: MGA94 Z56 Units: Kilometres
Scale 1:2,500 @ A3

Locations indicative and subject to change
Digital Cadastral Database © The State of Queensland (DERM) 2012.

GDA

5.2.2. Vegetation Community Survey

General baseline botanical surveys were undertaken to describe dominant flora and vegetation community structure throughout the Site. Botanical surveys were consistent with the tertiary and quaternary level of data collection as described in *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland* (Neldner *et al.*, 2012). All plant identifications for tertiary and quaternary surveys were carried out by experienced ecologists using available botanical reference material.

Vegetation community surveys were conducted within a 100m by 50m quadrat in each survey plot. The following information was recorded:

- Flora species within each vegetation stratum and their dominance
- Structural formation and ecologically dominant vegetation layer
- Observed RE/HVR and conservation status
- Cover density, height range and median height of each vegetation layer
- Connectivity of vegetation patch.

When traversing the Site by foot, opportunistic flora observations were recorded outside survey plots for threatened flora species, pest flora and Type A plants. Any observations recorded are included in Figure 4.

The mapping data for each vegetation community were entered into a Trimble Nomad Global Positioning System (GPS) and then used to cross-check the accuracy of RE and HVR mapping with the by DEHP mapping (DEHP, 2012a).

All regrowth and remnant vegetation community boundaries (polygons) were confirmed mapped and identified in accordance with DEHP RE (biodiversity status) and *EPBC Act* threatened ecological community (TEC) criteria. Photos of all vegetation structure and threatened species were taken using the Trimble unit, which recorded the GPS coordinates and the aspect data.

5.2.3. Habitat Survey

Habitat surveys were conducted within a 50 m by 10 m quadrat in each survey plot. All faunal habitat features were recorded, in order to assess the likelihood of significant species occurring in the area. The habitat features recorded include:

- Density of ground and shrub layers
- Presence of logs
- Presence of tree hollows
- Presence of trees supporting loose bark
- Presence of fallen bark and leaf litter
- Presence of rocks and rocky outcrops
- Presence of termite mounds
- Presence of mistletoe
- Presence of nests or other fauna signs, like scats, scratching and diggings
- Presence of wetland features.

Opportunistic fauna observations were also recorded, as well as habitat features with particular significance (e.g. a large tree with an unusual number of hollows). Any significant features observed are described in 6.2.

5.2.4. Threatened Flora and Fauna Survey

Potential habitats for threatened flora and fauna species were identified from desktop research prior to fieldwork. This enabled targeted habitat searches to be undertaken in the field. For the purposes of this assessment, Threatened species were defined as are those listed under the *EPBC Act 1999* and/or the Queensland *Nature Conservation (Wildlife) Regulation 2006*.

Targeted flora searches were undertaken in vegetation communities or specific habitats that are preferred by the threatened species of interest, with additional searches undertaken in good quality habitat areas identified in the field. Targeted flora searches were also undertaken where sightings had been previously reported in order to confirm species presence. As these searches were informal the specific survey locations are not reflected in Figure 2.

Targeted threatened species surveys were also conducted in additional locations based on incidental field observations of high quality habitat or identification of distinct ecological features through preliminary review of mapping and other background information for the property.

An Anabat recorder was used to record the calls of microchiropteran bats on Site. The recorder was placed over night in a number of suitable locations. Digitised bat calls were analysed by an Anabat specialist.

5.2.5. Exotic Flora and Fauna Survey

Environmental and declared pest species, as defined by the *Land Protection (Pest and Stock Route Management) Act 2002* (*LP Act*), were noted, with their abundance and GPS location both recorded.

5.2.6. Disturbance Survey

Evidence of disturbance was identified and the following attributes recorded: disturbance type, severity and estimated time of most recent occurrence. Types of disturbances recorded include track and waterway erosion, evidence of vegetation thinning and clearing, evidence of fire and gravel extraction and dump Sites.

5.2.7. Survey Limitations

The ability to detect plants and accurately identify them to species level can vary greatly with season, prevailing climatic conditions and the presence of reproductive material (e.g. flowers, fruit and seed capsules). Given that the current surveys represent a snapshot in time, they may not provide a true indication of plant presence at the Site. For example, some cryptic flora species may only be detected during particular flowering periods that were not present during the current survey. Hence, this survey should not be regarded as conclusive evidence that certain protected plants do not occur at the Site. However, every effort has been made to detect these species in their preferred habitat areas.

Areas of the property that were not directly surveyed were assessed using high quality aerial imagery and mapping datasets to refine RE mapping boundaries. Potential habitats for threatened flora and fauna species were identified by a combination of: previous field surveys undertaken, database searches, inspection of aerial imagery and extensive field experience. Detailed fauna surveys (i.e. trapping) were not undertaken as part of this assessment.

6. Results and Discussion

This section presents the results of the desktop and field assessment plus interpretation and discussion of key findings. Some results (e.g. *EPBC Act* searches) relate to the broader Dalwogan area while others relate to the Site (Lot 13 on BWR405).

6.1. Desktop and Literature Review

Data sources used during desktop searches for the Dalwogan area are listed in Section 5.1. A summary of results is presented below.

6.1.1. Matters of National Environmental Significance

There are four types of MNES that occur or have the potential to occur within the greater Dalwogan area (DSEWPaC, 2013 and Appendix A). These include: wetlands of international significance, TECs, threatened fauna/flora species and migratory species.

6.1.1.1. Threatened Ecological Communities

According to the *EPBC Act* Protected Matters Search Tool results (Appendix A**)**, four TECs occurred or have the potential to occur within the Dalwogan area (Table 4). In Queensland, these TECs have been defined with reference to the RE framework as they have known associations with specific REs.

Based on the DEHP RE mapping (DEHP, 2012a) for the Dalwogan area; the Brigalow, Coolibah and Weeping Myall TECs are considered possibilities of occurring due to the presence of their associated REs. The remaining TEC is considered unlikely to occur as the associated RE is not mapped within the Dalwogan area (Section 6.1.6).

At the Site, none of the TECs presented in Table 4 were considered possibilities of occurring as none of their associated REs are mapped on the Site (Section 6.1.6).

Table 4: Potential for Threatened Ecological Communities to occur within the Dalwogan area

Name	*EPBC Act* Status	RE Associations in the Brigalow Bioregion	Likelihood of Occurrence within the Dalwogan Area
Brigalow (*Acacia harpophylla* dominant and co-dominant)	Endangered	11.3.1, 11.4.3, 11.4.7, 11.4.8, 11.4.9, 11.4.10, 11.5.16, 11.9.1, 11.9.5, 11.9.6, 11.11.14, 11.12.21 (DSEWPaC, 2012a).	**Possible** Species or species habitat may occur within area.
Coolibah – Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered	11.3.3, 11.3.15, 11.3.16, 11.3.28, 11.3.37 (TSSC, 2011).	**Possible** Species or species habitat may occur within area.
Natural grasslands on basalt and fine textured alluvial plains of northern New South Wales and southern Queensland	Critically endangered	11.3.21, 11.3.24 (TSSC, 2008a)	**Unlikely** Species or species habitat are not present within area.
Weeping Myall Woodlands	Endangered	11.3.2, 11.3.28 (TSSC, 2008b)	**Possible** Species or species habitat may occur within area.

6.2.1.1. Listed Flora

According to the *EPBC Act* Protected Matters Search Tool results (Appendix A) and the known distribution of the flora species, five threatened flora species potentially occurred within the greater Dalwogan area (Table 5). Based on RE vegetation descriptions for the greater Dalwogan area (Section 6.1.6), four species possibly occurred due to the presence of suitable habitat. The other species were considered unlikely to occur because the Dalwogan area is outside their known distribution.

At the Site, only one of these species (Belson's Panic) was considered to potentially occur due to the presence of suitable habitat. Potential habitat for this species includes RE 11.5.16 (*Acacia harpophylla* and/or *Casuarina cristata* open forest), which is mapped over the Site as part of a mosaic with RE 11.3.25 and RE 11.7.7 (Figure 5).

6.3.1.1. Listed Fauna

According to the *EPBC Act* Protected Matters Search Tool results (Appendix A) and the distribution of fauna species, 15 threatened fauna species occurred within the greater Dalwogan area (Table 6). These include: 5 birds, 3 mammals, one fish and 6 reptile species.

One species, the Squatter Pigeon (*Geophaps scripta scripta*) was likely to occur within the greater Dalwogan area and 10 other species were considered as possible occurrences. This is based on the known distribution of species and the availability of suitable habitat (Eyre *et al*, 2011). The likelihood of occurrence for all species is shown in Table 6.

Table 5: Potential for threatened flora species to occur within the greater Dalwogan area

Scientific Name	Common Name	*EPBC Act* Status	Habitat	Likelihood of Occurrence within the greater Dalwogan Area
Cadellia pentastylis	Ooline	Vulnerable	Growth in dry forest, semi-evergreen vine thickets and sclerophyll ecological communities. It can be locally dominant or as an emergent. The known distribution of this species overlaps with the Semi-Evergreen Vine Thickets of the Brigalow Belt and Nandewar Bioregions, the Brigalow ecological communities and the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland Communities (DEC, 2005).	**Possible** Species may occur within area as preferred vegetation communities may occur within the Dalwogan area.
Homopholis belsonii	Belson's Panic	Vulnerable	Known to occur within the southern Brigalow Belt, Queensland and on the north-western slopes and plains of NSW on dry woodland on poor soils, rocky hills, flat to gently undulating alluvial areas supporting Belah (*Casuarina cristata*) forest or on soils and plant communities of Poplar Box (*E. populnea*) (Trémont & Whalley, 1993). The distribution of this species overlaps with the Brigalow (*Acacia harpophylla* dominant and co-dominant) threatened ecological community.	**Possible** Species may occur within area as preferred vegetation communities may occur within the Dalwogan area.

Scientific Name	Common Name	*EPBC Act* Status	Habitat	Likelihood of Occurrence within the greater Dalwogan Area
Pterostylis cobarensis	Cobar Greenhood Orchid	Vulnerable	This species inhabits Eucalypt woodland, open mallee, or *Callitris* shrubland on low stony ridges and slopes with skeletal sandy-loam soils. The known distribution of this species overlaps with the Semi-Evergreen Vine Thickets of the Brigalow Belt and Nandewar Bioregions, the Brigalow ecological communities and the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland communities and the Buloke Woodlands of Riverina and Murray-Darling Depression Bioregions (DSEWPaC, 2008a).	**Possible** Species preferred vegetation communities do occur within the Dalwogan area.
Tylophora linearis		Endangered	Grows in dry scrub, open forest and woodlands associated with *Melaleuca uncinata, Eucalyptus fibrosa, E. sideroxylon, E. albens, Callitris endlicheri, C. glaucophylla, Allocasuarina luehmannii, Acacia hakeoides, A. lineata, Myoporum spp.,* and *Casuarina spp*. The distribution of this species overlaps with the Brigalow (*Acacia harpophylla* dominant and co-dominant), and White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland threatened ecological communities (DSEWPaC, 2008b).	**Possible** Species preferred vegetation communities do occur within the Dalwogan area.
Westringia parvifolia		Vulnerable	Known to occur from a small area near Yelarbon and Inglewood in south-east Queensland. This species occurs within the Border Rivers Maranoa–Balonne (Queensland) Natural Resource Management Region (DSEWPaC, 2008c).	**Unlikely** Species preferred vegetation communities do not occur within the Dalwogan area.

Table 6: Potential for threatened fauna species to occur within the Dalwogan area

Class	Scientific Name	Common Name	*EPBC Act* Status	Habitat	Likelihood of Occurrence within the Dalwogan Area
Birds	*Erythrotriorchis radiatus*	Red Goshawk	Vulnerable	Occupies a range of habitat often at ecotones including coastal and sub-coastal tall open forest, tropical savannahs, woodlands and edge of rainforest and gallery forest along watercourses and wetlands that include *Melaleuca* and *Casuarina* species (DEHP, 2006).	**Possible** The Dalwogan area provides habitat resources for the species especially due to the presence of riparian vegetation, wooded and forest land.
	Geophaps scripta scripta	Squatter pigeon (southern)	Vulnerable	Range from tropical, open dry sclerophyll woodlands and savannahs of north-eastern Australia. Prefer grassy understorey of *Eucalyptus* woodland close to permanent water bodies (Garnett, 1992). Tend to avoid dense grass cover (Eyre *et al*, 2011).	**Likely** The Dalwogan area provides habitat resources for the species especially due to the presence of grassy riparian woodland.
	Lathamus discolor	Swift Parrot	Endangered	Occur in *Eucalyptus* forest and woodland, mainly box-ironbark habitats on the inland slopes of the Great Dividing range.	**Unlikely** The Dalwogan area provides habitat resources for this species. However, the Dalwogan area is located on the edge of the species known habitat distribution.
	Neochmia ruficauda ruficauda	Star Finch (eastern), Star Finch (southern)	Endangered	Occurs in Queensland and its population is extremely limited within the Desert Channel, Burdekin and Fitzroy Natural Resource Management Regions (DSEWPaC, 2012b). Inhabit mainly grasslands, sedgelands and grassy woodlands that are located close to bodies of fresh water (Holmes, 1996).	**Unlikely** The Dalwogan area is outside of the species known habitat distribution.
	Rostratula australis	Australian Painted Snipe	Vulnerable	Inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans (DSEWPaC, 2012c).	**Possible** The Dalwogan area provides habitat resources for the species especially due to the presence of creeks and floodplain.

Class	Scientific Name	Common Name	*EPBC Act* Status	Habitat	Likelihood of Occurrence within the Dalwogan Area
Fish	*Maccullochella peelii peelii*	Murray Cod	Vulnerable	Occur in diverse range of habitats, including clear rocky streams to slow flowing, turbid rivers and billabongs. Usually found near complex structural cover such as large rocks, snags, overhanging vegetation and other woody structures (National Murray Cod Recovery Team, 2009).	**Unlikely** The Dalwogan area lacks specific microhabitat preferred by the species.
Mammals	*Chalinolobus dwyeri*	Large-eared Pied Bat, Large Pied Bat	Vulnerable	Known population in Queensland are from sandstone escarpments in the Carnarvon, Expedition Ranges and Blackdown Tablelands and Isla Gorge National Parks. Prefer sandstone cliffs and fertile woodland valley habitat as well as rainforest and moist Eucalypt forest habitats on other geological substrates (DSEWPaC, 2012d).	**Possible** The Dalwogan area provides habitat resources for the species especially due to the presence of forested areas.
	Nyctophilus corbeni (South-eastern form)	South-eastern Long-eared Bat	Vulnerable	Limited distribution around the Murray-Darling Basin in south-eastern Australia. This species occurs in a range of inland woodland vegetation types, but is most common in box, ironbark and cypress pine woodlands (DSEWPaC, 2012e). Has been recorded in semi-green vine thicket with *Brachychiton sp.* emergent, inland dry sclerophyll forest, open forest with grass trees, *Callistris* forest, mixed *Eucalyptus*, Poplar Box forest and open forest with mid-storey *Allocasuarina* and *Callistris (*Churchill, 2009*)*	**Possible** The Dalwogan area contains preferred habitat and resources for the species. However, there are currently no records of this species occurring in the area.

Class	Scientific Name	Common Name	*EPBC Act* Status	Habitat	Likelihood of Occurrence within the Dalwogan Area
	Phascolarctos cinereus	Koala	Vulnerable	Common throughout the broad band of forests and woodlands dominated by *Eucalyptus* spp. extending from north Queensland to the south-eastern corner of mainland South Australia (Maxwell *et al.,* 1996). Occupy forests and woodlands where there are acceptable food trees (*Eucalyptus spp, Corymbia spp, etc*.). Distribution is affected by altitude, temperature and leaf moisture.	**Possible** The Dalwogan area contains preferred habitat and food sources for the species especially due to the presence of suitable *Eucalyptus* woodland.
Reptiles	*Anomalopus mackayi*	Five-clawed Worm-Skink	Vulnerable	Species known distribution is on the upper Condamine River Floodplain from Warwick in the south to the Jimbour region in the north and bordered by the western edge of the granite belt (DSEWPaC, 2012f). Species can occur in River Red Gum–Queensland Blue Gum–Coolibah–Bimble/Poplar Box grassy woodland/open forests, Bluegrass (*Dichanthium sericeum*) and/or Mitchell Grass dominated grasslands.	**Unlikely** The Dalwogan area is outside of the species known habitat distribution.
	Delma torquata	Collared Delma	Vulnerable	This species is found in rocky sloped or ridge-top areas often westerly-facing, in *Eucalyptus* and *Acacia* dominated woodland with a 3 to 10 cm depth of leaf litter and sparse understorey or tussock grass and shrubs or semi-evergreen vine thicket. Distribution includes south-east Queensland bioregion, extending 150km west of Ulam Range to Blackdown Tableland National Park, and west to Expedition National Park (DSEWPaC, 2012g).	**Possible** The Dalwogan area contains preferred habitat values for this species such as rocky hillsides, open Eucalypt forest and *Acacia* woodland.

Class	Scientific Name	Common Name	*EPBC Act* Status	Habitat	Likelihood of Occurrence within the Dalwogan Area
	Denisonia maculata	Ornamental Snake	Vulnerable	The species is known to prefer woodlands and open forests associated with moist areas, particularly gilgai (melon-hole) mounds and depressions in Queensland Regional Ecosystem Land Zone 4, but also lake margins and wetlands (DSEWPaC, 2012h).	**Possible** The Dalwogan area contains preferred habitat values for this species such as open eucalypt forest or *Acacia* woodland. However, this species has not yet been recorded in the area
	Egernia rugosa	Yakka Skink	Vulnerable	Occur in open dry sclerophyll forest, woodland and scrub within the Mulga Lands and Brigalow Belt South Bioregions (DSEWPaC, 2012i). Common woodland types include: *A. harpophylla, A. aneura, A. catenulata, A. shirleyi, Casuarina cristata, E. populnea, Eucalyptus spp., Callitris glaucophylla*.	**Possible** The Dalwogan area contains the dry forest types and associated habitat values preferred by the species. However, this species has not yet been recorded in the area
	Furina dunmalli	Dunmall's Snake	Vulnerable	This species is very secretive and limited records exist. Primarily occurs in the Brigalow Belt region in the south-eastern interior of Queensland (DSEWPaC, 2012j).	**Possible** The Dalwogan area contains the vegetation types and associated habitat values preferred by the species.
	Paradelma orientalis	Brigalow Scaly-foot	Vulnerable	Occurs mostly within the Brigalow Belt South bioregion found in open forests, woodlands and mixed communities dominated by *A. harpophylla, A. cambagei, A. catenulata, A. shirleyi, A. falciformis, Corymbia citriodora, Eucalyptus crebra, E. populnea, Casuarina cristata, Callitris columellaris, Allocasuarina luehmannii* (DSEWPaC, 2012k).	**Possible** The Dalwogan area contains the vegetation types and associated habitat values preferred by the species. However, this species has not yet been recorded in the area.

6.4.1.1. Migratory and Marine Species

Based on a search of the *EPBC Act* Protected Matters Search Tool (Appendix A and Birdata (BAA, 2012), 15 migratory bird species potentially occur within the greater Dalwogan area (Table 7).

According to the known distribution of species and the availability of suitable habitat (Eyre *et al*, 2011) within the study area, 6 species were considered likely occurrences within the greater Dalwogan area. The remaining species were unlikely to occur.

Table 7: Potential for listed migratory species to occur within the greater Dalwogan area

Scientific Name	Common Name	*EPBC Act* Status	Habitat[1]	Likelihood of Occurrence within the greater Dalwogan Area
Anseranas semipalmata	Magpie Goose	Marine	Occurs in floodplains and wet grasslands. Widespread throughout coastal northern and eastern Australia. Occasional visitors to inland wetland areas.	**Possible** Some floodplain habitat occurs within the northern portion of the Dalwogan area.
Apus pacificus	Fork-tailed Swift	Marine Migratory marine	Exclusively aerial, this species occurs over inland plains, cliffs and beaches, mostly over dry or open habitat including riparian woodland and tea-tree swamp. Sometimes occurs above foothills or in coastal areas.	**Possible** May overfly the Dalwogan area between September and March.
Ardea alba	Great egret, White Egret	Marine Migratory marine Migratory wetland	Occurs in a diversity of wetland habitats. Its distribution is widely spread around Australia.	**Possible** Some wetland habitat occurs within the Dalwogan area.
Ardea ibis	Cattle Egret	Marine Migratory marine Migratory wetland	Occurs in tropical and temperate grasslands, woodlands and terrestrial wetlands. Its distribution is widely spread around Australia.	**Likely** The Dalwogan area contains the vegetation types and associated habitat values preferred by the species.
Ardea intermedia	Intermediate Egret	Marine Migratory marine Migratory wetland	Occupies a great variety of habitats. Mainly found around shallow inland freshwater areas with abundant emergent aquatic vegetation.	**Likely** The Dalwogan area contains the vegetation types and associated habitat values preferred by the species. Sightings of this species have been recorded in surrounding area (BAA, 2012).
Ardea modesta	Eastern Great Egret	Marine Migratory marine Migratory wetland	Occurs in wide range of wetland habitats, such as: inland and coastal, freshwater and saline; permanent and ephemeral; open and vegetated; large and small; natural and artificial. Habitat includes swamps and marshes; margins of rivers and lakes; damp or flooded grasslands, pastures or agricultural lands; reservoirs; sewage treatment ponds; drainage channels; salt pans and salt lakes; salt marshes; estuarine mudflats, tidal streams; mangrove swamps; coastal lagoons; and offshore reefs. Usually frequents shallow waters.	**Likely** The Dalwogan area contains the vegetation types and associated habitat values preferred by the species. Sightings of this species have been recorded in surrounding area (BAA, 2102).

Scientific Name	Common Name	*EPBC Act* Status	Habitat[1]	Likelihood of Occurrence within the greater Dalwogan Area
Egretta garzetta	Little Egret	Marine Migratory marine Migratory wetland	Inhabits fresh, brackish or saline wetlands and shows a preference for shallow waters (10-15 cm) in open, unvegetated Sites where water levels and dissolved oxygen levels fluctuate daily, tidally or seasonally.	**Likely** The Dalwogan area contains the vegetation types and associated habitat values preferred by the species. Sightings of this species have been recorded in surrounding area (BAA, 2012).
Gallinago hardwickii	Latham's Snipe	Marine Migratory wetland	Occurs in permanent and ephemeral wetlands up to 2,000 m above sea-level but can also be found in saline and brackish water, modified or artificial habitat, saltmarsh, mangrove creeks, around bays and beaches. Migrates to Australia in summer. Its distribution is widely spread around the eastern side of Australia.	**Possible** The Dalwogan area hosts suitable habitat features preferred by this species.
Haliaeetus leucogaster	White-bellied Sea Eagle	Marine Migratory terrestrial	Found in coastal habitats (especially those close to the sea-shore) and around terrestrial wetlands in tropical and temperate regions of mainland Australia and its offshore islands. Habitats include the presence of large areas of open water (larger rivers, swamps, lakes, the sea).	**Possible** May overfly the Dalwogan area. However, this species has not yet been recorded in the area.
Hirundapus caudacutus	White-throated Needletail	Marine Migratory terrestrial	Exclusively aerial. Its distribution is widespread in eastern and south-eastern Australia, flying above a wide variety of habitats ranging from heavily treed forests to open habitats, such as farmland, heathland or mudflats.	**Likely** May overfly the Dalwogan area between September and March. Sightings of this species have been recorded in surrounding area (BAA, 2012).
Lathamus discolor	Swift Parrot	Marine Migratory terrestrial	Occurs in eucalyptus forest and woodland, mainly box-ironbark habitats on the inland slopes of the Great Dividing range.	**Unlikely** Although the Dalwogan area hosts suitable habitat features preferred by this species, the area is located on the edge of the species known habitat distribution.
Merops ornatus	Rainbow Bee-eater	Marine Migratory	Distributed across much of mainland Australia, this species occurs mainly in open forests and woodlands, shrublands, and in various cleared or semi-cleared	**Likely** May overfly the Dalwogan area between

Scientific Name	Common Name	*EPBC Act* Status	Habitat[1]	Likelihood of Occurrence within the greater Dalwogan Area
		terrestrial	habitats, including farmland and areas of human habitation (Higgins, 1999). The nest is located in an enlarged chamber at the end of long burrow or tunnel that is excavated in flat or sloping ground, in the banks of rivers, creeks or dams, in roadside cuttings, in the walls of gravel pits or quarries, in mounds of gravel, or in cliff-faces.	September and March and potentially breed in parts of the greater Dalwogan area with sandy substrates. This species has been sighted in the surrounding area (BAA, 2012).
Myiagra cyanoleuca	Satin Flycatcher	Marine Migratory terrestrial	Inhabits mainly Eucalypt forests, particularly wet sclerophyll forests and near wetlands or watercourses. Widespread along eastern Australia and Tasmania.	**Possible** The Dalwogan area hosts suitable habitat features preferred by this species.
Rhipidura rufifrons	Rufous Fantail	Marine Migratory terrestrial	Inhabits wet sclerophyll forests and Eucalypt dominated gullies as well as subtropical and temperate rainforests. Found along coastal northern and eastern Australia and adjacent ranges.	**Possible** The Dalwogan area hosts suitable habitat features preferred by this species. This species has been sighted in the surrounding area (BAA, 2012).
Rostratula benghalensis s. lat.	Australian Painted Snipe	Marine Migratory wetland	Inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans (DSEWPaC, 2012c).	**Possible** The Dalwogan area provides habitat resources for the species especially due to the presence of creeks and floodplain.

[1]DSEWPaC (2012l)

6.5.1.1. Weeds

Based on the *EPBC Act* Protected Matters Search Tool results (Appendix A), four weeds of national significance (WoNS) occurred or could potentially occur within the greater Dalwogan area (Table 8). All four species of weeds could possibly occur within the Dalwogan area as it lies within their known species range.

Table 8: Potential for Weeds of National Significance to occur within the greater Dalwogan area

Scientific Name	Common Name	Likelihood of Occurrence within Dalwogan Area
Hymenachne amplexicaulis	Hymenachne	**Possible**
Parkinsonia aculeata	Parkinsonia	**Possible**
Parthenium hysterophorus	Parthenium Weed	**Possible**
Salvinia molesta	Salvinia	**Possible**

6.6.1.1. Pest Fauna

According to the *EPBC Act* Protected Matters Search Tool results (Appendix A), five species of pest fauna occurred or could potentially occur in the greater Dalwogan area (Table 9). Their likelihood of occurrence was assessed based on the known distribution of species, and the availability of suitable habitat within the Dalwogan area. Four of these species are classified as declared Class 2 pest animals under the *LP Act*.

Table 9: Potential for pest fauna species to occur within the Dalwogan area

Scientific Name	Common Name	Classification Under *LP ACT*	Likelihood of Occurrence Within the Dalwogan Area
Rhinella marinus	Cane toad	N/A	**Likely**
Felis catus	Feral cat	Class 2	**Likely**
Oryctolagus cuniculus	European rabbit	Class 2	**Likely**
Sus scrofa	Pig	Class 2	**Likely**
Vulpes vulpes	Red fox	Class 2	**Likely**

6.1.2. Wetland of International Importance

One wetland of international significance was identified during desktop analysis (DSEWPaC, 2013 and Appendix A) - the Narran Lake nature reserve which is listed as a Ramsar Site. As the Dalwogan area is located approximately 550 km away from this wetland, in a different catchment area, it is not expected that this wetland would be impacted by the proposed project.

6.1.3. Nature Conservation Act

NC Reg-listed species that potentially occur in the Dalwogan area are summarised below. A copy of the Wildlife Online database search report is presented in Appendix B.

6.1.1.3. Listed Flora

The *NC Reg* Wildlife Online database (DEHP, 2013a and Appendix B) and HERBRECS database (Queensland Herbarium, 2012) identified two threatened flora species as occurring within the vicinity of the Dalwogan area (Table 10). Based on the RE vegetation descriptions in the Dalwogan area (Section 6.1.6), these species were considered to possibly occur due to the presence of suitable habitat. *Rutidosis lanata* was considered to possibly occur at the Site due to mapped RE 11.7.7.

Table 10: *NC Reg*-listed flora species with the potential to occur within the Dalwogan area

Class	Scientific Name	Common Name	*NC Reg* Status	Habitat	Likelihood of Occurrence within Dalwogan Area
Higher Dicots	*Micromyrtus carinata*	Gurulmundi Heath-Myrtle	Endangered	Previously recorded in shrubland vegetation dominated by *Hakea* spp., *Micromyrtus* spp., and associated with RE 11.7.5.	**Possible** Preferred vegetation communities occur within the Dalwogan area.
Higher Dicots	*Rutidosis lanata*	Wrinklewort	Endangered	Previously recorded in low *Eucalyptus* woodland vegetation dominated by associated with RE 11.7.7. Also found in grey loamy substrate with some gravel. Adjoins clay plain with cleared *Acacia harpophylla*/ *Casuarina cristata*.	**Possible** Preferred vegetation communities occur within the Dalwogan area.

6.2.1.3. Listed Fauna

Based on a search of the *NC Reg* Wildlife Online database (DEHP, 2013a) and Birdata (BAA, 2012), three threatened fauna species under the *NC Reg* were identified as occurring within the vicinity of the greater Dalwogan area. These species are presented in Table 11 and were considered possibilities of occurring within the Dalwogan area based on the availability of suitable habitat. These species were also considered possible to occur at the Site; however none were identified during the field survey.

Table 11: *NC Reg*-listed fauna species with the potential to occur within the greater Dalwogan area

Class	Scientific Name	Common Name	*NC Reg* Status	Habitat	Likelihood of Occurrence within the Dalwogan Area
Bird	*Calyptorhynchus lathami*	Glossy Black-Cockatoo	Vulnerable	Occurs within southern Queensland, usually feeding in remnant Belah (*Casuarina cristata*) and Bull Oak (*Allocasuarina luehmannii*) forests (Glossy Black Conservancy, 2010).	**Likely** The Dalwogan area contains suitable habitat for this species and sightings have occurred in the area.
	Lophoictinia isura	Square-tailed Kite	Near Threatened	Forages over coastal and sub-coastal Eucalypt-dominated open forests and woodlands, and inland riparian woodland. Particularly favours: productive forests on the coastal plain, box-ironbark-gum woodlands on the inland slopes, and Coolibah/River-Red-Gum on the inland plains (Marchant & Higgins 1993).	**Likely** The Dalwogan area contains suitable habitat for this species and sightings have occurred in the area.
	Melithreptus gularis	Black-chinned Honeyeater	Near Threatened	Occurs in the upper levels of open eucalypt forests and woodlands dominated by box and ironbark Eucalypts. It is often found along waterways, especially in arid and semi-arid areas and in northern Australia (Marchant & Higgins, 1993).	**Likely** The Dalwogan area contains suitable habitat for this species and sightings have occurred in the area.

6.1.4. Environmentally Sensitive Areas

ESAs mapped by DEHP as occurring within the Dalwogan area comprise Endangered REs (Category B ESA) (Appendix C).

6.1.5. Referable Wetlands

DEHP Referable Wetlands mapping (DEHP, 2012e) identified no referable wetlands to occur within the Site.

6.1.6. Regional Ecosystems

A search of the DEHP RE mapping was undertaken on 16 April 2012. A detailed map of REs (Biodiversity status) occurring on the Site is provided in Figure 3. These REs are described below.

6.1.1.6. Endangered Regional Ecosystems

No Endangered REs were identified as occurring on the Site during the desktop analysis (DEHP, 2012a) (Figure 3).

6.2.1.6. Of Concern Regional Ecosystems

All Of Concern REs identified as occurring within the Site (DEHP, 2012a) are presented in Figure 3 and their vegetation descriptions summarised below (Table 12).

Table 12: Of Concern Regional Ecosystems mapped as being present on the Site

RE code	General description	Description
11.3.2	*Eucalyptus populnea* woodland on alluvial plains	*Eucalyptus populnea* woodland to open-woodland. *E. melanophloia* may be present and locally dominant. There is sometimes a distinct low tree layer dominated by species such as *Geijera parviflora, Eremophila mitchellii, Acacia salicina, Acacia pendula, Lysiphyllum* spp., *Cassia brewsteri, Callitris glaucophylla* and *Acacia excelsa*. The ground layer is grassy dominated by a range of species depending on soil and management conditions. Species include: *Bothriochloa decipiens, Enteropogon acicularis, Aristida ramosa* and *Tripogon loliiformis*. Occurs on Cainozoic alluvial plains with variable soil types including: texture contrast, deep uniform clays, massive earths and sometimes cracking clays.
11.3.4	*Eucalyptus tereticornis* and/or *Eucalyptus spp*. tall woodland on alluvial plains	*Eucalyptus tereticornis* woodland to open-forest. Other tree species that may be present and locally dominant include: *E. camaldulensis, Corymbia tessellaris, E. coolabah, C. clarksoniana, E. populnea or E. brownii, E. melanophloia, E. platyphylla* or *Angophora floribunda. E. crebra and Lophostemon suaveolens* may be locally dominant (subregion 14). A shrub layer is usually absent, and a tall grassy ground layer is often prominent, and may include any of *Bothriochloa bladhii* subsp*. bladhii, Aristida spp., Heteropogon contortus, Dichanthium* spp. and *Themeda triandra*. Heavily grazed areas tend to have shorter or annual grasses such as *Dactyloctenium radulans* or *Bothriochloa* spp. Occurs on Cainozoic alluvial plains and terraces. Occurs on a variety of soils, including deep cracking clays, medium to fine textured soils, and deep texture-contrast soils.
11.3.25	*Eucalyptus tereticornis* or *E. camaldulensis* woodland fringing drainage lines	*Eucalyptus camaldulensis* or *E. tereticornis* open-forest to woodland. Other tree species such as: *Casuarina cunninghamiana, E. coolabah, Melaleuca bracteata, Melaleuca viminalis, Livistona* spp. (in north), *Melaleuca* spp. and *Angophora floribunda* are commonly present and may be locally dominant. An open to sparse, tall shrub layer is frequently present dominated by species including: *Acacia salicina, A. stenophylla* or *Lysiphyllum carronii*. Low shrubs are present but rarely form a conspicuous layer. The ground layer is open to sparse and dominated by perennial grasses, sedges or forbs such as: *Imperata*

RE code	General description	Description
		cylindrica, Bothriochloa bladhii, B. ewartiana, Chrysopogon fallax, Cyperus dactylotes, C. difformis, C. exaltatus, C. gracilis, C. iria, C. rigidellus, C. victoriensis, Dichanthium sericeum, Leptochloa digitata, Lomandra longifolia or *Panicum* spp. Occurs on fringing levees and banks of major rivers and drainage lines of alluvial plains throughout the region. Soils are very deep, alluvial, grey and brown cracking clays with or without some texture contrast. These are usually moderately deep to deep, soft or firm, acid, neutral or alkaline brown sands, loams or black cracking or non-cracking clays, and may be sodic at depth.

6.3.1.6. No Concern at Present Regional Ecosystems

No Concern at Present REs identified as occurring within the Site during the desktop analysis (DEHP, 2012a) are presented in Figure 3 and their vegetation descriptions are summarised below (Table 13).

Table 13: No Concern at Present Regional Ecosystems mapped as being present on the Site

RE code	General description	Description
11.5.1	*Eucalyptus crebra, Callitris glaucophylla Angophora leiocarpa, Allocasuarina luehmannii* woodland on Cainozoic sand plains/remnant surfaces	*Eucalyptus crebra* and/or *E. populnea* +/- *Angophora leiocarpa* +/- *E. woollsiana* (in south of bioregion) dominate the woodland (to open-woodland) canopy. A low tree layer dominated by *Allocasuarina luehmannii* +/- *Melaleuca decora* +/- *Callitris glaucophylla* +/- *C. endlicheri is* usually present. In some areas *Allocasuarina luehmannii* low woodland is the dominant layer. The ground cover is usually sparse and dominated by perennial grasses. Occurs on Cainozoic sandplains, especially outwash from weathered sandstones. Duplex soils with sandy surfaces. Major vegetation communities include: 11.5.1a: *Eucalyptus populnea* woodland with *Allocasuarina luehmannii* low tree layer.
11.7.4	*Eucalyptus decorticans* and/or *Eucalyptus* spp., *Corymbia* spp., *Acacia* spp., *Lysicarpus angustifolius* on lateritic duricrust	Mixed *Eucalyptus* spp. woodland on Cainozoic lateritic duricrusts. Species can include *Eucalyptus crebra, E. decorticans, Corymbia trachyphloia, E. tenuipes, C. watsoniana* and *Callitris glaucophylla*. There is usually a distinct low tree to tall shrub layer comprising species including *Lysicarpus angustifolius* or *Acacia* spp. Occurs on low hills and ranges with shallow soils.
11.7.7	*Eucalyptus fibrosa* *subsp. nubila* +/- *Corymbia spp.* +/- *Eucalyptus spp.* on lateritic duricrust	*Eucalyptus fibrosa* subsp. *nubila* predominates and forms a distinct but discontinuous open-forest to woodland canopy (22-25m high*). E. crebra* often co-dominates or be locally dominant, particularly on lower slopes. Also includes areas with *Corymbia citriodora* as a co-dominant. Other frequently occurring sub-dominant tree species include *Corymbia trachyphloia, E. apothalassica, E. sideroxylon, Acacia shirleyi* and *Callitris glaucophylla*. There is usually a low woodland mid layer dominated by *Acacia* spp. or sometimes *Allocasuarina luehmannii* and *Callitris endlicheri*. Scattered tall shrubs may occur, but rarely form a prominent layer. There is usually a moderately dense, low shrub layer developed with a variable floristic composition. The ground layer is open to moderately dense and dominated by grasses. Occurs on low hills and ranges formed from deeply weathered sediments. Soils are usually shallow (< 30cm deep) uniform sands with stone or rocks covering much of the ground surface.

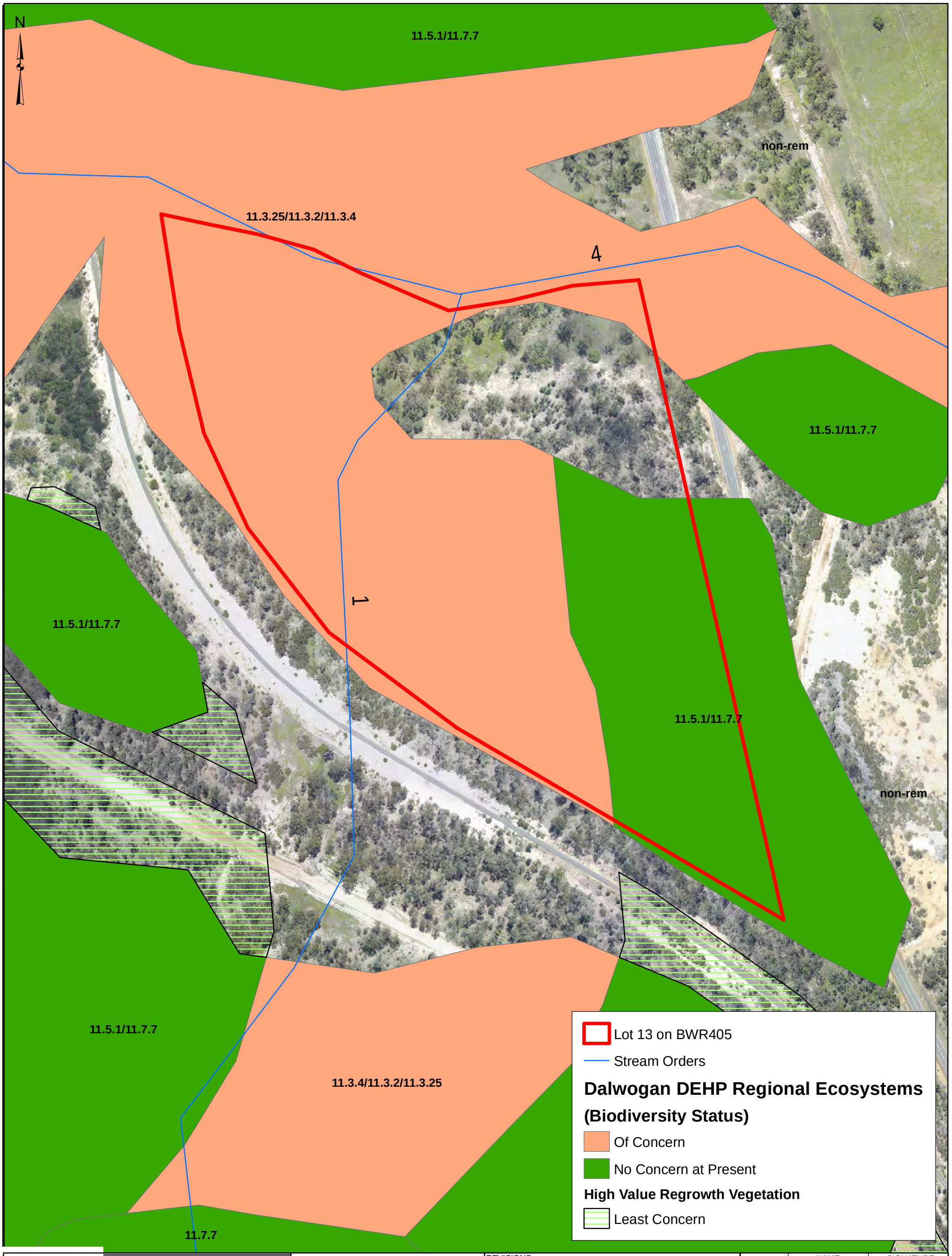

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Figure 3
DEHP RE & HVR Vegetation Map
Date: 11/02/2013

State: Queensland
Project: Dalwogan Ecological Survey
Map No: 3 of 5
Map ID:
Doc ID:

REVISIONS		
1	Issued for Use	20/06/2012
REV	DESCRIPTION	DATE

	NAME	SIGNATURE
DRAWN	CO	
CHECK	HR	
QA	KM	
APP	BD	

50 25 0 50 Meters

Projection: MGA94 Z56 Units: Kilometres
Scale 1:2,500 @ A3

Locations indicative and subject to change
Digital Cadastral Database © The State of Queensland (DERM) 2012.

GDA

6.4.1.6. High Value Regrowth

A search of the DEHP Regrowth Vegetation Map (DEHP, 2012a) was undertaken on 16 April 2012. A detailed map of HVR occurring on the Site is provided in Figure 3.

One type of HVR vegetation was identified as occurring on the Site (Figure 3 and Table 14).

Table 14: HVR mapped as being present on the Site

HVR code	General description
HVR containing Least Concern REs	Woody regrowth > 15 yrs old

6.5.1.6. Essential Habitat

DEHP Essential Habitat Mapping (DEHP, 2012c) identified that no Essential Habitat occurred within the Site.

6.2. Field Survey

The field survey for the Site was undertaken on 26 April 2012 by six RPS qualified ecologists. Sites targeted for survey are presented in Figure 2 and field results are summarised in the following sections.

6.2.1. Matters of National Environmental Significance

6.1.2.1. Threatened Ecological Communities

One TEC was identified as occurring within the Site, namely the Brigalow (*Acacia harpophylla* dominant and co-dominant) TEC. In Queensland, the Brigalow TEC is analogous to 16 REs, all of which are listed as Endangered under the *VM Act*. The field survey confirmed the presence of RE 11.5.16 at the Site, described as *A. harpophylla* and/or *Casuarina cristata* open forest in depressions on Cainozoic sand plains/remnant surfaces.

The ground-truthed extent of the Brigalow TEC (and associated RE) is presented in Figure 5.

6.2.2.1. Listed Flora

No *EPBC Act* protected flora species were identified during field investigations. However, one species has the potential to occur based on the identification of suitable habitat at the Site – RE 11.5.16 (Table 15). A large patch of this habitat was identified on Site.

All flora species identified within the Site during the field survey are listed in Appendix D**.**

Table 15: *EPBC Act*-protected flora species with potential to occur within the Site

Scientific Name	Common Name	*EPBC act* Status	Likelihood of Occurrence at the Site
Cadellia pentastylis	Ooline	Vulnerable	Possible due to the presence of the Brigalow (*A. harpophylla* dominant and co-dominant) TEC (analogous to RE 11.5.16).

6.3.2.1. Listed Fauna

No fauna species listed as threatened under the *EPBC Act* were detected during the field survey. However, potential habitat was identified within the Site for the species listed in Table 15.

All fauna species identified within the Site during the field survey are listed in Appendix D.

Table 16: *EPBC Act*-protected fauna species with potential to occur within the Site

Class	Scientific Name	Common Name	*EPBC act* Status	Likelihood of Occurrence at the Site
Birds	*Erythrotriorchis radiatus*	Red Goshawk	Vulnerable	**Possible** Suitable habitat in the form of Eucalypt woodland occurs within the Site.
	Geophaps scripta scripta	Squatter Pigeon (southern)	Vulnerable	**Likely** Suitable habitat for this species includes grassy understoreys and cleared areas.
	Rostratula australis	Australian Painted Snipe	Vulnerable	**Possible** Some aquatic habitat occurs on the Site.
Mammals	*Chalinolobus dwyeri*	Large-eared Pied Bat, Large Pied Bat	Vulnerable	**Possible** Suitable habitat features identified (e.g. forested areas).
	Nyctophilus corbeni (South-eastern form)	Greater Long-eared Bat, South-eastern Long-eared Bat	Vulnerable	**Possible** The genus *Nyctophilus* were positively identified from Anabat call data on adjacent properties. However, the species could not be reliably identified due to similarities between their calls, and other species. Suitable habitat features identified (e.g. hollow trees within remnant vegetation).
	Phascolarctos cinereus	Koala	Vulnerable	**Possible** Presence of suitable feed trees (e.g. *Eucalyptus spp., Corymbia spp.*).
Reptiles	*Delma torquata*	Collared Delma	Vulnerable	**Possible** Presence of suitable habitat, including rocky areas and *Eucalyptus* and *Acacia* woodlands with deep leaf litter.
	Denisonia maculata	Ornamental Snake	Vulnerable	**Possible** Some suitable habitat features identified (e.g. Eucalypt woodlands adjacent to wetlands).
	Egernia rugosa	Yakka Skink	Vulnerable	**Possible** Presence of suitable habitat including dry *Eucalyptus* and *Acacia* woodlands.
	Furina dunmalli	Dunmall's Snake	Vulnerable	**Possible** Suitable habitat features identified (e.g. logs and fallen bark in remnant vegetation).
	Paradelma orientalis	Brigalow Scaly-foot	Vulnerable	**Possible** Presence of suitable habitat including *Eucalyptus* and *Acacia* woodlands.

6.4.2.1. Migratory Species

No fauna species listed as migratory under the *EPBC Act* were detected during the field survey. However, suitable habitat was confirmed for the species listed in Table 17.

Table 17: *EPBC Act*-protected Migratory Fauna Species with potential to occur within the Site

Scientific Name	Common Name	*EPBC act* Status	Likelihood of Occurrence at the Site
Apus pacificus	Fork-tailed swift	Marine Migratory marine	**Possible** May fly over the Site between September and March
Ardea alba	Great egret, white egret	Marine Migratory marine Migratory wetland	**Possible** Some aquatic habitat present.
Ardea ibis	Cattle egret	Marine Migratory marine Migratory wetland	**Possible** Habitat is present within cleared areas and woodlands. However, this species is generally uncommon around Miles.
Ardea intermedia	Intermediate Egret	Marine Migratory marine Migratory wetland	**Possible** Some aquatic habitat present. Species has also been recorded in the surrounding area.
Ardea modesta	Eastern Great Egret	Marine Migratory marine Migratory wetland	**Likely** Some aquatic habitat present. Species has also been recorded in the surrounding area.
Egretta garzetta	Little Egret	Marine Migratory marine Migratory wetland	**Likely** Some aquatic habitat present. Species has also been recorded in the surrounding area.
Haliaeetus leucogaster	White-bellied sea eagle	Marine Migratory terrestrial	**Unlikely** May fly over the Site, no large water bodies present.
Hirundapus caudacutus	White-throated needletail	Marine Migratory terrestrial	**Likely** May fly over the Site between September and March. Species has been recorded in the surrounding area.
Lathamus discolor	Swift parrot	Marine Migratory terrestrial	**Possible** Presence of suitable habitat including *Eucalyptus* woodlands.
Merops ornatus	Rainbow bee-eater	Marine Migratory terrestrial	**Likely** Presence of suitable habitat and species has been recorded in the surrounding area.
Rostratula australis	Australian Painted Snipe	Marine Migratory wetland	**Possible** Some aquatic habitat present.

6.5.2.1. Weeds

One weed species was recorded during the field survey, as listed in Table 18 and presented in Figure 4. This species is not a WoNS.

Table 18: Weed species identified as being present within the Site

Scientific Name	Common Name	Classification under *LP Act*
Verbena aristigera	Mayne's Pest	Not listed

6.6.2.1. Pest Fauna

There were no pest fauna species recorded on the Site during the field survey. However, the species listed in Table 19 are considered likely to occur based on the presence of suitable habitat and their prevalence within the region. The predation by all of these species except for the Wild Dog (*Canis familiaris*) is listed as key threatening processes under the *EPBC Act*.

Table 19: Pest animal species identified as likely present within the Site

Scientific Name	Common Name	Classification under *LP Act*
Canis familiaris	Wild dog	Class 2
Felis catus	Feral Cat	Class 2
Oryctolagus cuniculus	European Rabbit	Class 2
Rhinella marinus	Cane Toad	Not listed
Sus scrofa	Pig	Class 2
Vulpes vulpes	Red fox	Class 2

Most of the species listed in Table 19 are classified under the *LP Act* as Class 2 pests. The management of Class 2 pests requires coordination and they are subject to programs led by local government, community or landowners. There is a legal requirement for the landowners to take reasonable steps to keep land free of Class 2 pests.

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origin

RPS

Figure 4

Pest Flora Species Map

Date: 25/02/2013

State: Queensland
Project: Dalwogan Ecological Survey
Map No: 4 of 5
Map ID:
Doc ID:

REVISIONS		
1	Issued for Use	01/08/2012
REV	DESCRIPTION	DATE

	NAME	SIGNATURE
DRAWN	CO	
CHECK	HR	
QA	KM	
APP	BD	

50 25 0 50 Meters

Projection: MGA94 Z56 Units: Kilometres
Scale 1:2,000 @ A3

Locations indicative and subject to change
Digital Cadastral Database © The State of Queensland (DERM) 2012.

GDA

6.2.2. Nature Conservation Act

Field survey results concerning *NC Reg* listed flora and fauna are contained in Table 20 and Table 21. All flora species identified within the Site during the field survey are listed in Appendix D.

6.1.2.2. Listed Flora

No flora species listed under the *NC Reg* were recorded at the Site. However three threatened species are considered possible occurrences based on the presence of suitable habitat and are presented in Table 20.

Table 20: *NC Reg*-listed flora with potential to occur within the Site as identified from the field survey

Class	Scientific Name	Common Name	*NC Reg* Status	Likelihood of Occurrence
Higher Dicots	*Acacia tenuinervis*	Scrub Wattle	Near Threatened	**Possible**
Higher Dicots	*Micromyrtus carinata*	Gurulmundi Heath-Myrtle	Endangered	**Possible**
Higher Dicots	*Rutidosis lanata*	Red-soil Woolly Wrinklewort	Endangered	**Possible**

Several acacia individuals were collected throughout the greater Dalwogan area that may have been Scrub Wattle *(Acacia tenuinervis*). However, the specimens were not fruiting or flowering at the time of collection and therefore identification could not be confirmed. The samples were collected within Eucalypt woodland on shallow, sandy soils. This species is considered as possibly occurring within the Site.

Gurulmundi Heath-Myrtle (*Micromyrtus carinata)* is found in elevated rocky areas in association with RE11.7.5 - shrubland on natural scalds on deeply weathered coarse-grained sedimentary rocks. Scrub Wattle occurs within Eucalypt forest and on shallow, sandy soils.

Rutidosis lanata was not detected within the Site. However, this species has previously been recorded at the boundary between land zone 4 and land zone 5 associated with the following canopy species: *Eucalyptus populnea, Eucalyptus woollsiana* and *Acacia harpophylla*. This species is considered a possibility of occurring throughout the Site.

6.2.2.2. Listed Fauna

No fauna species listed under the *NC Reg* were recorded within the Site. However, three threatened fauna species are considered possible occurrences based on the presence of suitable habitat. These species are presented in Table 21.

Table 21: *NC Reg* -listed fauna with potential to occur within the Site as identified from field survey

Scientific Name	Common Name	*NC Reg* Status	Habitat	Likelihood of Occurrence
Calyptorhynchus lathami	Glossy Black Cockatoo	Vulnerable	Within southern Queensland, usually feed in remnant Belah (*Casuarina cristata*) and Bull Oak (*Allocasuarina luehmannii*) forests (Glossy Black Conservancy, 2010).	**Possible** Preferred habitat present on Site. The presence of this species was confirmed on adjacent properties.
Chalinolobus picatus	Little Pied Bat	Near Threatened	This species occurs in eucalypt and acacia-dominated open woodlands, semi-arid tall scrublands, dry sclerophyll forests, and *Araucarian notophyll* vine forests. It is found in subterranean roosts, tree hollows, and abandoned buildings (IUCN Red List 2012).	**Possible** This species was positively identified from Anabat call data in adjacent properties. Suitable habitat features exist within the Site (e.g. hollow trees within remnant vegetation).
Strophurus taenicauda	Golden-tailed Gecko	Near Threatened	Occurs within open woodland and open forest where it shelters under loose bark and hollow limbs (DEHP, 2010).	**Possible** Preferred habitat present on Site. The presence of this species was confirmed on adjacent properties.

6.3.2.2. Other Significant Flora and Fauna

A number of Type A restricted plants were identified within the greater Dalwogan area, including Grass Trees (*Xanthorrhoea johnsonii*), Black Orchids (*Cymbidium canaliculatum*) and a number of species in the genus *Brachychiton*.

No Type A restricted plants were identified on the Site.

6.2.3. Environmentally Sensitive Areas

The distribution of REs on the Site has been re-mapped based on this detailed Site-level assessment. A number of inaccuracies in the current DEHP mapping were identified, including the extent and classification of several REs.

In particular, the following inaccuracies were identified:

- The area southwest of the Site mapped as RE 11.5.1/11.7.7 was ground-truthed to contain patches of RE 11.3.25, RE 11.5.16 and RE 11.7.7. The mapped non-remnant vegetation was not identified on the Site;
- The majority of the Site was ground-truthed to mostly be RE 11.3.25, an Of Concern RE and 11.5.16, an Endangered RE. This is inconsistent with the mapped DEHP REs.

All REs identified during the field survey and their conservation status are discussed below and mapped in Figure 5.

6.1.2.3. Endangered Regional Ecosystems

One Endangered RE was identified during the field survey and is presented in Table 22.

The RE was dominated by *Acacia harpophylla* with tree height ranging from 10 to 15m in height, and a low open forest with *Casuarina cristata* codominant.

Table 22: Endangered Regional Ecosystems identified as being present within the Site

RE Code	General Description	Description
11.5.16	*Acacia harpophylla* and/or *Casuarina cristata* open forest in depressions on Cainozoic sand plains/remnant surfaces.	*Casuarina cristata* and/or *Acacia harpophylla* open-forest. Occurs in depressions on Cainozoic sandplains. Associated with gilgai with 1 m local relief and 5-6 m in diameter.

6.2.2.3. Of Concern Regional Ecosystems

One Of Concern RE was identified during the field survey, as mapped in Figure 5 and described in Table 23.

Table 23: Of Concern Regional Ecosystems identified as being present within the Site

RE Code	General Description	Description
11.3.25	*Eucalyptus tereticornis* or *E. camaldulensis* woodland fringing drainage lines.	*Eucalyptus camaldulensis* or *E. tereticornis* open-forest to woodland. Other tree species such as *Casuarina cunninghamiana, E. coolabah, Melaleuca bracteata, Melaleuca viminalis, Livistona* spp. (in north), *Melaleuca* spp. and *Angophora floribunda* are commonly present and may be locally dominant. An open to sparse, tall shrub layer is frequently present dominated by species including *Acacia salicina, A. stenophylla* or *Lysiphyllum carronii.* Low shrubs are present, but rarely form a conspicuous layer. The ground layer is open to sparse and dominated by perennial grasses, sedges or forbs such as *Imperata cylindrica, Bothriochloa bladhii, B. ewartiana, Chrysopogon fallax, Cyperus dactylotes, C. difformis, C. exaltatus, C. gracilis, C. iria, C. rigidellus, C. victoriensis, Dichanthium sericeum, Leptochloa digitata, Lomandra longifolia* or *Panicum* spp. Occurs on fringing levees and banks of major rivers and drainage lines of alluvial plains throughout the region. Soils are very deep, alluvial, grey and brown cracking clays with or without some texture contrast. These are usually moderately deep to deep, soft or firm, acid, neutral or alkaline brown sands, loams or black cracking or non-cracking clays, and may be sodic at depth.

6.2.4. Other Environmental Values (DEHP Mapping)

6.1.2.4. No Concern at Present Regional Ecosystems

One No Concern at Present RE was identified during the field survey, as mapped in Figure 5 and described below in Table 24.

Table 24: No Concern at Present Regional Ecosystems identified as being present within the Site

RE Code	General Description	Description
11.7.7	*Eucalyptus fibrosa* subsp. *nubila* +/- *Corymbia* spp. +/- *Eucalyptus* spp. on lateritic duricrust.	*Eucalyptus fibrosa* subsp. *nubila* predominates and forms a distinct but discontinuous open-forest to woodland canopy (22-25m high). *E. crebra* often co dominates or can be locally dominant, particularly on lower slopes. Also includes areas with *Corymbia citriodora* as a codominant. Other frequently occurring sub-dominant tree species include *Corymbia trachyphloia, E. apothalassica, E. sideroxylon, Acacia shirleyi* and *Callitris glaucophylla*. There is usually a low woodland mid layer dominated by *Acacia* spp. or sometimes *Allocasuarina luehmannii* and *Callitris endlicheri*. Scattered tall shrubs may occur, but rarely form a prominent layer. There is usually a moderately dense, low shrub layer developed with a variable floristic composition. The ground layer is open to moderately dense and dominated by grasses. Occurs on low hills and ranges formed from deeply weathered sediments. Soils are usually shallow (< 30cm deep) uniform sands with stone or rocks covering much of the ground surface.

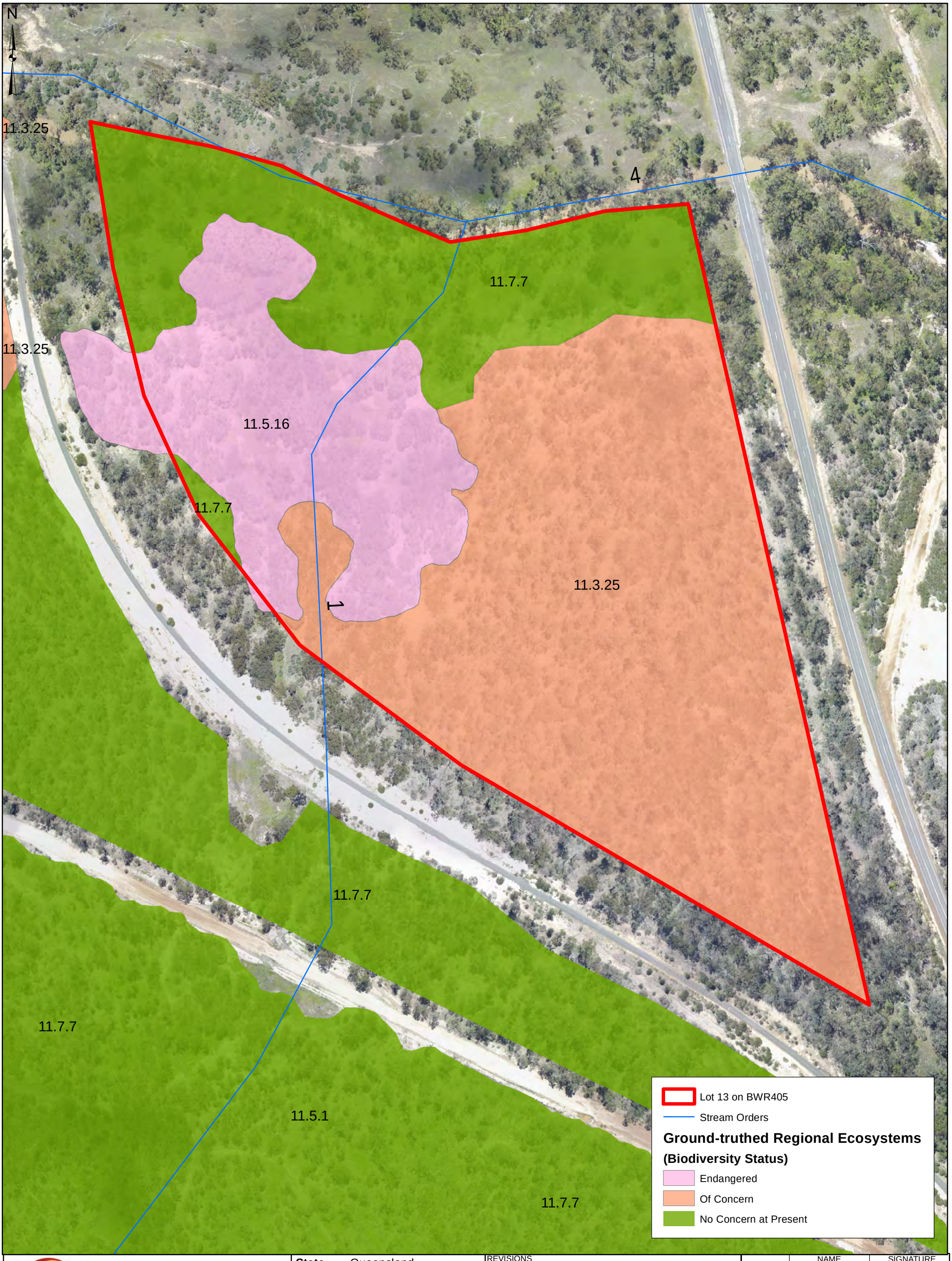
6.2.2.4. High Value Regrowth

The field investigation revealed that no HVR occurs on the Site.

6.2.5. Wetland Ecosystems

Desktop and field investigations identified 49 ephemeral streams lines or drainage lines running through the greater Dalwogan area. All streams are headwater streams (first through third-order streams).

All creek lines and water bodies associated with the Site are presented in Figure 3.



Origin Energy Ltd gives no warranty in relation to the data (including accuracy, reliability, completeness or suitability) and accepts no liability for any loss, damage or costs (including consequential damage) relating to any use of the data in this map.

origin RPS

Figure 5
Ground-truthed RE Map
Date: 01/08/2012

State: Queensland
Project: Dalwogan Ecological Survey
Map No: 5 of 5
Map ID:
Doc ID:

REVISIONS		
1	Issued for Use	01/08/2012
REV	DESCRIPTION	DATE

	NAME	SIGNATURE
DRAWN	CO	
CHECK	HR	
QA	KM	
APP	BD	

50 25 0 50 Meters

Projection: MGA94 Z56 Units: Kilometres
Scale 1:2,000 @ A3

Locations indicative and subject to change
Digital Cadastral Database © The State of Queensland (DERM) 2012.

GDA

6.2.6. Habitat Condition

The Site survey revealed the vegetation to be generally in good condition, providing relatively intact and highly connected habitat.

The Site was well vegetated and structurally diverse, offering a good range of habitats including: waterway corridors and Eucalypt woodlands. Deep leaf litter, course woody debris and numerous fallen logs and termite mounds provided habitat for small mammals and reptiles, while the presence of hollow-bearing trees provided important habitat for birds. Tree hollows also indicated the presence of arboreal fauna, such as possums (*Trichosurus* sp.) and may have provided roost Sites for threatened species such as the Greater Long-eared Bat (*Nyctophilus corbeni* [South-eastern form]).

One TEC was identified within the Site and which was found to be in good condition with the presence of *Acacia harpophylla* in the tree (12-15 m in height) and shrub layers (hence showing evidence of continual recruitment). *Casuarina cristata* found on the Site could be used as feed trees by the Glossy Black Cockatoo *(Calyptorhynchus lathami)*. The ground and shrub layer was dominated by a range of native species, with limited weed species. The ecosystem is considered to be functioning well without any disturbances.

6.2.7. Disturbance

The field survey confirmed vegetated areas of the Site to be in relatively good condition. However, an area to the south of the Site is disturbed as a result of land clearing and grazing. Some infrastructure is present within this area, including: a homestead, stockyards and dam. Numerous internal vehicle tracks and fence lines are also present across the Site.

7. Conclusion

This ecological assessment survey identified a number of ecological constraints at the Site, including:

- The presence of an Endangered RE (Biodiversity Status) (Figure 5)
- Threatened species habitat, described in Section 6.3.2.1 and Section 6.2.6
- One MNES was found on Site: the endangered TEC RE 11.5.16 Brigalow (*Acacia harpophylla* dominant and co-dominant. If work is to be undertaken within the TEC, an EPBC Act referral will be required for the Site.

It is recommended the findings in this report be considered during planning and operational phases to ensure that environmental impacts are avoided and mitigated at the Site (Lot 13 on BWR405). Wherever possible, identified constraints should be avoided during all seismic activities, or appropriate mitigation actions are put in place.

Compliance with Australia Pacific LNG management plans, guidelines, and permits (under both the state of Queensland and the Commonwealth of Australia) will ensure that impacts to ecological constraints identified within this report will be avoided and minimised where possible.

8. Appendix A: Results of EPBC Act Protected Matters Search Tool

Australian Government

Department of Sustainability, Environment, Water, Population and Communities

EPBC Act Protected Matters Report

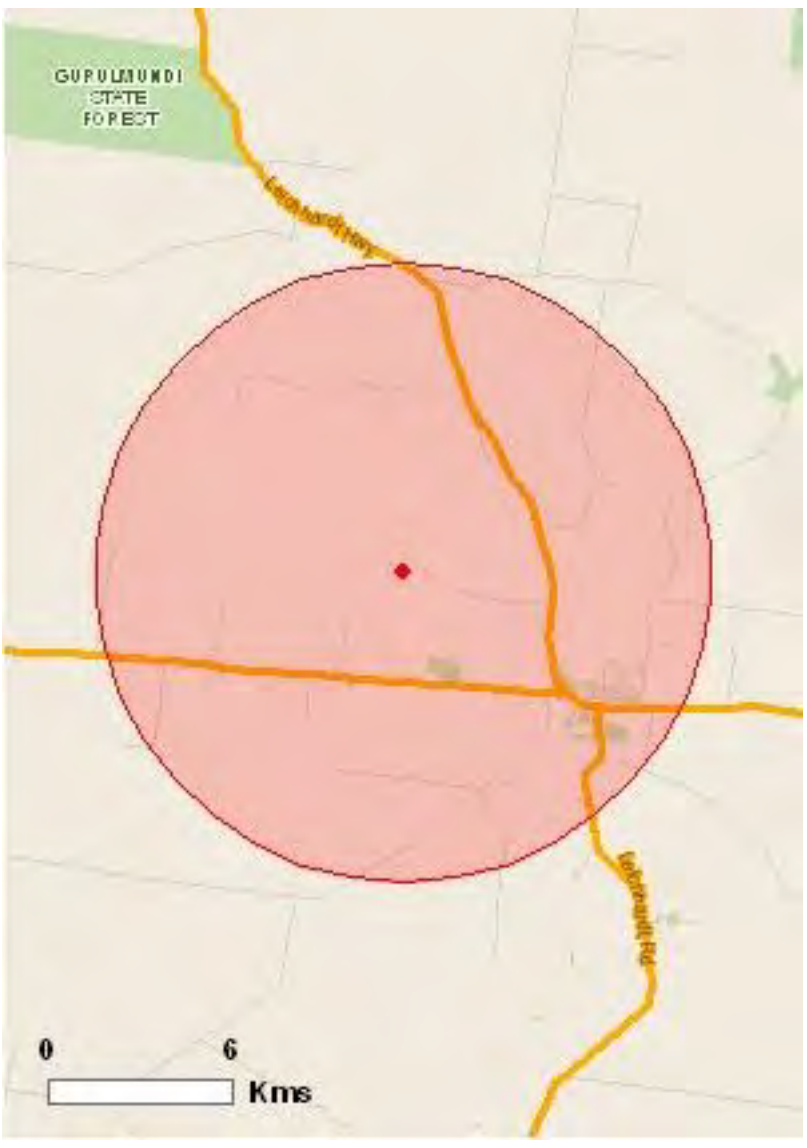
This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

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: 03/08/12 16:24:23

Summary
Details
Matters of NES
Other Matters Protected by the EPBC Act
Extra Information
Caveat
Acknowledgements



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

Coordinates

Buffer: 10.0Km

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	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Areas:	None
Threatened Ecological Communities:	5
Threatened Species:	20
Migratory Species:	10

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:	10
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:	None
Regional Forest Agreements:	None
Invasive Species:	9
Nationally Important Wetlands:	None

Details

Matters of National Environmental Significance

Wetlands of International Significance (RAMSAR)	[Resource Information]
Name	Proximity
Narran lake nature reserve	Upstream from Ramsar

Threatened Ecological Communities	[Resource Information]

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

Name	Status	Type of Presence
Brigalow (Acacia harpophylla dominant and co-	Endangered	Community known to

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.

Name	Status	Type of Presence
dominant)		occur within area
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered	Community likely to occur within area
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland	Critically Endangered	Community may occur within area
Weeping Myall Woodlands	Endangered	Community likely to occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may occur within area

Threatened Species [Resource Information]

Name	Status	Type of Presence
BIRDS		
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area
Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat likely to occur within area
Lathamus discolor Swift Parrot [744]	Endangered	Species or species habitat may occur within area
Neochmia ruficauda ruficauda Star Finch (eastern), Star Finch (southern) [26027]	Endangered	Species or species habitat likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Vulnerable	Species or species habitat may occur within area
FISH		
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area
MAMMALS		
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat may occur within area
Nyctophilus corbeni South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat may occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat likely to occur within area
PLANTS		
Cadellia pentastylis Ooline [9828]	Vulnerable	Species or species habitat likely to occur within area
Homopholis belsonii [2406]	Vulnerable	Species or species habitat may occur within area
Pterostylis cobarensis Cobar Greenhood Orchid [12993]	Vulnerable	Species or species habitat likely to occur within area
Tylophora linearis [55231]	Endangered	Species or species

Name	Status	Type of Presence
		habitat may occur within area
Westringia parvifolia [4822]	Vulnerable	Species or species habitat likely to occur within area
REPTILES		
Anomalopus mackayi Five-clawed Worm-skink, Long-legged Worm-skink [25934]	Vulnerable	Species or species habitat may occur within area
Delma torquata Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area
Denisonia maculata Ornamental Snake [1193]	Vulnerable	Species or species habitat may occur within area
Egernia rugosa Yakka Skink [1420]	Vulnerable	Species or species habitat likely to occur within area
Furina dunmalli Dunmall's Snake [59254]	Vulnerable	Species or species habitat known to occur within area
Paradelma orientalis Brigalow Scaly-foot [59134]	Vulnerable	Species or species habitat likely to 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		
Apus 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		
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]		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
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species

Name	Threatened	Type of Presence
		habitat may occur within area
[Rostratula benghalensis (sensu lato)]		
Painted Snipe [889]	Vulnerable*	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		
[Anseranas semipalmata]		
Magpie Goose [978]		Species or species habitat may occur within area
[Apus 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
[Gallinago hardwickii]		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
[Haliaeetus leucogaster]		
White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
[Hirundapus caudacutus]		
White-throated Needletail [682]		Species or species habitat may occur within area
[Lathamus discolor]		
Swift Parrot [744]	Endangered	Species or species habitat may occur within area
[Merops ornatus]		
Rainbow Bee-eater [670]		Species or species habitat may occur within area
[Rostratula benghalensis (sensu lato)]		
Painted Snipe [889]	Vulnerable*	Species or species habitat may occur within area

Extra Information

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 Resouces Audit,

Name	Status	Type of Presence
Frogs		
Bufo marinus Cane Toad [1772]		Species or species habitat likely to occur within area
Mammals		
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 [6]		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		
Hymenachne amplexicaulis Hymenachne, Olive Hymenachne, Water Stargrass, West Indian Grass, West Indian Marsh Grass [31754]		Species or species habitat likely to occur within area
Parkinsonia aculeata Parkinsonia, Jerusalem Thorn, Jelly Bean Tree, Horse Bean [12301]		Species or species habitat likely to occur within area
Parthenium hysterophorus Parthenium Weed, Bitter Weed, Carrot Grass, False Ragweed [19566]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area

Coordinates

-26.61999 150.12924

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.

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+61 2 6274 1111

9. Appendix B: Results of Wildlife Online database search

Queensland Government

Wildlife Online Extract

Search Criteria: Species List for a Specified Point
Species: All
Type: All
Status: All
Records: All
Date: All
Latitude: 26.6201
Longitude: 150.1292
Distance: 10
Email: sarah.weiss@rpsgroup.com.au
Date submitted: Friday 03 Aug 2012 16:19:59
Date extracted: Friday 03 Aug 2012 16:20:03

The number of records retrieved = 267

Disclaimer

As the DERM is still in a process of collating and vetting data, it is possible the information given is not complete. The information provided should only be used for the project for which it was requested and it should be appropriately acknowledged as being derived from Wildlife Online when it is used.

The State of Queensland does not invite reliance upon, nor accept responsibility for this information. Persons should satisfy themselves through independent means as to the accuracy and completeness of this information.

No statements, representations or warranties are made about the accuracy or completeness of this information. The State of Queensland disclaims all responsibility for this information and all liability (including without limitation, liability in negligence) for all expenses, losses, damages and costs you may incur as a result of the information being inaccurate or incomplete in any way for any reason.

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Bufonidae	*Rhinella marina*	cane toad	Y			2
animals	amphibians	Hylidae	*Litoria peronii*	emerald spotted treefrog		C		1
animals	amphibians	Hylidae	*Litoria latopalmata*	broad palmed rocketfrog		C		5
animals	amphibians	Hylidae	*Litoria fallax*	eastern sedgefrog		C		1
animals	amphibians	Hylidae	*Litoria rubella*	ruddy treefrog		C		1
animals	birds	Acanthizidae	*Chthonicola sagittata*	speckled warbler		C		1
animals	birds	Acanthizidae	*Acanthiza nana*	yellow thornbill		C		1
animals	birds	Acanthizidae	*Gerygone fusca*	western gerygone		C		2
animals	birds	Acanthizidae	*Acanthiza pusilla*	brown thornbill		C		1
animals	birds	Acanthizidae	*Smicrornis brevirostris*	weebill		C		9
animals	birds	Acanthizidae	*Acanthiza reguloides*	buff-rumped thornbill		C		2
animals	birds	Acanthizidae	*Acanthiza chrysorrhoa*	yellow-rumped thornbill		C		2
animals	birds	Acanthizidae	*Gerygone albogularis*	white-throated gerygone		C		4
animals	birds	Acanthizidae	*Acanthiza apicalis*	inland thornbill		C		3
animals	birds	Accipitridae	*Aquila audax*	wedge-tailed eagle		C		5
animals	birds	Accipitridae	*Milvus migrans*	black kite		C		1
animals	birds	Accipitridae	*Elanus axillaris*	black-shouldered kite		C		1
animals	birds	Accipitridae	*Aviceda subcristata*	Pacific baza		C		3
animals	birds	Accipitridae	*Haliastur sphenurus*	whistling kite		C		2
animals	birds	Accipitridae	*Accipiter cirrocephalus*	collared sparrowhawk		C		1
animals	birds	Acrocephalidae	*Acrocephalus australis*	Australian reed-warbler		C		1
animals	birds	Anatidae	*Anas gracilis*	grey teal		C		2
animals	birds	Anatidae	*Anas superciliosa*	Pacific black duck		C		3
animals	birds	Anatidae	*Chenonetta jubata*	Australian wood duck		C		6
animals	birds	Anhingidae	*Anhinga novaehollandiae*	Australasian darter		C		4
animals	birds	Apodidae	*Hirundapus caudacutus*	white-throated needletail		C		1
animals	birds	Ardeidae	*Ardea pacifica*	white-necked heron		C		5
animals	birds	Ardeidae	*Egretta garzetta*	little egret		C		1
animals	birds	Ardeidae	*Egretta novaehollandiae*	white-faced heron		C		3
animals	birds	Ardeidae	*Ardea modesta*	eastern great egret		C		3
animals	birds	Artamidae	*Cracticus tibicen*	Australian magpie		C		12
animals	birds	Artamidae	*Artamus personatus*	masked woodswallow		C		1
animals	birds	Artamidae	*Strepera graculina*	pied currawong		C		14
animals	birds	Artamidae	*Cracticus torquatus*	grey butcherbird		C		8
animals	birds	Artamidae	*Artamus leucorynchus*	white-breasted woodswallow		C		2
animals	birds	Artamidae	*Cracticus nigrogularis*	pied butcherbird		C		5
animals	birds	Cacatuidae	*Cacatua galerita*	sulphur-crested cockatoo		C		15
animals	birds	Cacatuidae	*Calyptorhynchus funereus*	yellow-tailed black-cockatoo		C		1
animals	birds	Cacatuidae	*Calyptorhynchus lathami*	glossy black-cockatoo		V		1
animals	birds	Cacatuidae	*Eolophus roseicapillus*	galah		C		15
animals	birds	Cacatuidae	*Nymphicus hollandicus*	cockatiel		C		3
animals	birds	Cacatuidae	*Cacatua sanguinea*	little corella		C		2
animals	birds	Campephagidae	*Coracina papuensis*	white-bellied cuckoo-shrike		C		1/1
animals	birds	Campephagidae	*Coracina novaehollandiae*	black-faced cuckoo-shrike		C		1
animals	birds	Charadriidae	*Vanellus miles*	masked lapwing		C		4
animals	birds	Charadriidae	*Vanellus miles novaehollandiae*	masked lapwing (southern subspecies)		C		2

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Charadriidae	*Elseyornis melanops*	black-fronted dotterel		C		1
animals	birds	Columbidae	*Columba livia*	rock dove	Y			4
animals	birds	Columbidae	*Geopelia cuneata*	diamond dove		C		1
animals	birds	Columbidae	*Ocyphaps lophotes*	crested pigeon		C		9
animals	birds	Columbidae	*Geopelia humeralis*	bar-shouldered dove		C		1
animals	birds	Columbidae	*Streptopelia chinensis*	spotted dove	Y			1
animals	birds	Columbidae	*Geopelia striata*	peaceful dove		C		5
animals	birds	Coraciidae	*Eurystomus orientalis*	dollarbird		C		1
animals	birds	Corcoracidae	*Corcorax melanorhamphos*	white-winged chough		C		8
animals	birds	Corcoracidae	*Struthidea cinerea*	apostlebird		C		10
animals	birds	Corvidae	*Corvus orru*	Torresian crow		C		19
animals	birds	Corvidae	*Corvus coronoides*	Australian raven		C		2
animals	birds	Corvidae	*Corvus bennetti*	little crow		C		2
animals	birds	Corvidae	*Corvus sp.*					1
animals	birds	Cuculidae	*Centropus phasianinus*	pheasant coucal		C		1
animals	birds	Cuculidae	*Eudynamys orientalis*	eastern koel		C		3
animals	birds	Cuculidae	*Chalcites lucidus*	shining bronze-cuckoo		C		1
animals	birds	Dicruridae	*Dicrurus bracteatus*	spangled drongo		C		1
animals	birds	Estrildidae	*Lonchura punctulata*	nutmeg mannikin	Y			1
animals	birds	Estrildidae	*Taeniopygia bichenovii*	double-barred finch		C		2
animals	birds	Estrildidae	*Neochmia modesta*	plum-headed finch		C		1
animals	birds	Falconidae	*Falco cenchroides*	nankeen kestrel		C		2
animals	birds	Falconidae	*Falco berigora*	brown falcon		C		1
animals	birds	Halcyonidae	*Dacelo novaeguineae*	laughing kookaburra		C		6
animals	birds	Halcyonidae	*Todiramphus sanctus*	sacred kingfisher		C		3
animals	birds	Hirundinidae	*Petrochelidon nigricans*	tree martin		C		2
animals	birds	Hirundinidae	*Petrochelidon ariel*	fairy martin		C		3
animals	birds	Hirundinidae	*Hirundo neoxena*	welcome swallow		C		9
animals	birds	Maluridae	*Malurus cyaneus*	superb fairy-wren		C		8/1
animals	birds	Maluridae	*Malurus lamberti*	variegated fairy-wren		C		3
animals	birds	Meliphagidae	*Meliphaga lewinii*	Lewin's honeyeater		C		1
animals	birds	Meliphagidae	*Caligavis chrysops*	yellow-faced honeyeater		C		1
animals	birds	Meliphagidae	*Entomyzon cyanotis*	blue-faced honeyeater		C		11
animals	birds	Meliphagidae	*Manorina flavigula*	yellow-throated miner		C		2
animals	birds	Meliphagidae	*Gavicalis virescens*	singing honeyeater		C		1
animals	birds	Meliphagidae	*Lichmera indistincta*	brown honeyeater		C		8
animals	birds	Meliphagidae	*Nesoptilotis leucotis*	white-eared honeyeater		C		8/1
animals	birds	Meliphagidae	*Philemon corniculatus*	noisy friarbird		C		9
animals	birds	Meliphagidae	*Manorina melanocephala*	noisy miner		C		17
animals	birds	Meliphagidae	*Myzomela sanguinolenta*	scarlet honeyeater		C		2
animals	birds	Meliphagidae	*Philemon citreogularis*	little friarbird		C		9
animals	birds	Meliphagidae	*Ptilotula penicillatus*	white-plumed honeyeater		C		4
animals	birds	Meliphagidae	*Acanthagenys rufogularis*	spiny-cheeked honeyeater		C		2
animals	birds	Meliphagidae	*Plectorhyncha lanceolata*	striped honeyeater		C		5
animals	birds	Meliphagidae	*Melithreptus brevirostris*	brown-headed honeyeater		C		2/1
animals	birds	Meropidae	*Merops ornatus*	rainbow bee-eater		C		5

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Monarchidae	*Grallina cyanoleuca*	magpie-lark		C		18
animals	birds	Monarchidae	*Myiagra rubecula*	leaden flycatcher		C		1
animals	birds	Motacillidae	*Anthus novaeseelandiae*	Australasian pipit		C		1
animals	birds	Nectariniidae	*Dicaeum hirundinaceum*	mistletoebird		C		3
animals	birds	Neosittidae	*Daphoenositta chrysoptera*	varied sittella		C		1
animals	birds	Oriolidae	*Oriolus sagittatus*	olive-backed oriole		C		2
animals	birds	Oriolidae	*Sphecotheres vieilloti*	Australasian figbird		C		2
animals	birds	Otididae	*Ardeotis australis*	Australian bustard		C		2
animals	birds	Pachycephalidae	*Pachycephala rufiventris*	rufous whistler		C		4
animals	birds	Pachycephalidae	*Colluricincla harmonica*	grey shrike-thrush		C		4
animals	birds	Pachycephalidae	*Pachycephala pectoralis*	golden whistler		C		3
animals	birds	Pardalotidae	*Pardalotus punctatus*	spotted pardalote		C		2
animals	birds	Pardalotidae	*Pardalotus striatus*	striated pardalote		C		17/1
animals	birds	Passeridae	*Passer domesticus*	house sparrow	Y			3
animals	birds	Pelecanidae	*Pelecanus conspicillatus*	Australian pelican		C		1
animals	birds	Petroicidae	*Petroica goodenovii*	red-capped robin		C		1
animals	birds	Petroicidae	*Microeca fascinans*	jacky winter		C		1
animals	birds	Petroicidae	*Eopsaltria australis*	eastern yellow robin		C		1
animals	birds	Phalacrocoracidae	*Phalacrocorax sulcirostris*	little black cormorant		C		1
animals	birds	Phalacrocoracidae	*Phalacrocorax carbo*	great cormorant		C		2
animals	birds	Phasianidae	*Coturnix pectoralis*	stubble quail		C		1
animals	birds	Podargidae	*Podargus strigoides*	tawny frogmouth		C		2
animals	birds	Pomatostomidae	*Pomatostomus temporalis*	grey-crowned babbler		C		5
animals	birds	Psittacidae	*Melopsittacus undulatus*	budgerigar		C		1
animals	birds	Psittacidae	*Platycercus adscitus*	pale-headed rosella		C		6
animals	birds	Psittacidae	*Trichoglossus chlorolepidotus*	scaly-breasted lorikeet		C		8
animals	birds	Psittacidae	*Psephotus varius*	mulga parrot		C		2
animals	birds	Psittacidae	*Aprosmictus erythropterus*	red-winged parrot		C		7
animals	birds	Psittacidae	*Trichoglossus haematodus moluccanus*	rainbow lorikeet		C		7
animals	birds	Psittacidae	*Alisterus scapularis*	Australian king-parrot		C		1
animals	birds	Rallidae	*Gallinula tenebrosa*	dusky moorhen		C		2
animals	birds	Rhipiduridae	*Rhipidura leucophrys*	willie wagtail		C		16
animals	birds	Rhipiduridae	*Rhipidura albiscapa*	grey fantail		C		4
animals	birds	Threskiornithidae	*Platalea regia*	royal spoonbill		C		3
animals	birds	Threskiornithidae	*Platalea flavipes*	yellow-billed spoonbill		C		1
animals	birds	Threskiornithidae	*Threskiornis molucca*	Australian white ibis		C		2
animals	birds	Turnicidae	*Turnix velox*	little button-quail		C		1
animals	mammals	Macropodidae	*Macropus giganteus*	eastern grey kangaroo		C		1
animals	mammals	Macropodidae	*Macropus rufogriseus*	red-necked wallaby		C		2
animals	mammals	Phalangeridae	*Trichosurus vulpecula*	common brushtail possum		C		1
animals	mammals	Phascolarctidae	*Phascolarctos cinereus*	koala		C	V	1
animals	mammals	Potoroidae	*Aepyprymnus rufescens*	rufous bettong		C		1
animals	mammals	Tachyglossidae	*Tachyglossus aculeatus*	short-beaked echidna		C		3
animals	reptiles	Agamidae	*Pogona barbata*	bearded dragon		C		1
animals	reptiles	Diplodactylidae	*Lucasium steindachneri*	Steindachner's gecko		C		1
animals	reptiles	Gekkonidae	*Heteronotia binoei*	Bynoe's gecko		C		3

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	reptiles	Gekkonidae	*Gehyra dubia*			C		1
animals	reptiles	Scincidae	*Cryptoblepharus pulcher pulcher*	elegant snake-eyed skink		C		2
animals	reptiles	Scincidae	*Lygisaurus foliorum*			C		1
animals	reptiles	Scincidae	*Ctenotus robustus*			C		1
animals	reptiles	Scincidae	*Lerista fragilis*			C		1
animals	reptiles	Scincidae	*Morethia sp.*					1
animals	reptiles	Scincidae	*Carlia pectoralis*			C		2
plants	conifers	Cupressaceae	*Callitris glaucophylla*	white cypress pine		C		1/1
plants	ferns	Ophioglossaceae	*Ophioglossum reticulatum*			C		1/1
plants	higher dicots	Anacardiaceae	*Schinus molle var. areira*	pepper tree	Y			1/1
plants	higher dicots	Apiaceae	*Actinotus gibbonsii*	dwarf flannel flower		C		1/1
plants	higher dicots	Araliaceae	*Trachymene ochracea*	white parsnip		C		1/1
plants	higher dicots	Asteraceae	*Cassinia laevis*			C		1/1
plants	higher dicots	Asteraceae	*Ozothamnus diotophyllus*			C		3/3
plants	higher dicots	Asteraceae	*Solenogyne bellioides*			C		1/1
plants	higher dicots	Asteraceae	*Leptorhynchos baileyi*			C		1/1
plants	higher dicots	Asteraceae	*Sonchus oleraceus*	common sowthistle	Y			1/1
plants	higher dicots	Asteraceae	*Senecio pinnatifolius var. pinnatifolius*			C		1/1
plants	higher dicots	Asteraceae	*Brachyscome multifida var. dilatata*			C		1/1
plants	higher dicots	Asteraceae	*Olearia ramulosa*			C		1/1
plants	higher dicots	Asteraceae	*Sigesbeckia fugax*			C		1/1
plants	higher dicots	Byttneriaceae	*Commersonia pedleyi*			C		3/3
plants	higher dicots	Caesalpiniaceae	*Petalostylis labicheoides*			C		1/1
plants	higher dicots	Capparaceae	*Capparis lasiantha*	nipan		C		1/1
plants	higher dicots	Casuarinaceae	*Allocasuarina luehmannii*	bull oak		C		1/1
plants	higher dicots	Crassulaceae	*Bryophyllum delagoense*		Y			1/1
plants	higher dicots	Ericaceae	*Leucopogon biflorus*			C		2/2
plants	higher dicots	Ericaceae	*Leucopogon mitchellii*			C		1/1
plants	higher dicots	Euphorbiaceae	*Monotaxis macrophylla*			C		2/2
plants	higher dicots	Euphorbiaceae	*Euphorbia hirta*		Y			1/1
plants	higher dicots	Fabaceae	*Hardenbergia violacea*			C		1/1
plants	higher dicots	Fabaceae	*Mirbelia aotoides*			C		1/1
plants	higher dicots	Fabaceae	*Cullen patens*	bullamon lucerne		C		1/1
plants	higher dicots	Fabaceae	*Chorizema parviflorum*	eastern flame pea		C		1/1
plants	higher dicots	Fabaceae	*Dillwynia retorta*			C		1/1
plants	higher dicots	Geraniaceae	*Geranium solanderi var. solanderi*	native geranium		C		1/1
plants	higher dicots	Goodeniaceae	*Goodenia delicata*			C		1/1
plants	higher dicots	Goodeniaceae	*Brunonia australis*	blue pincushion		C		1/1
plants	higher dicots	Goodeniaceae	*Goodenia disperma*			C		1/1
plants	higher dicots	Haloragaceae	*Gonocarpus urceolatus*			C		2/2
plants	higher dicots	Lamiaceae	*Westringia cheelii*			C		3/3
plants	higher dicots	Lamiaceae	*Prostanthera ringens*			C		1/1
plants	higher dicots	Lamiaceae	*Spartothamnella puberula*			C		1/1
plants	higher dicots	Lamiaceae	*Prostanthera sp. (Baking Board V.Hando 135)*			C		2/2
plants	higher dicots	Lamiaceae	*Prostanthera cryptandroides subsp. euphrasioides*			C		1/1
plants	higher dicots	Loranthaceae	*Lysiana exocarpi subsp. tenuis*			C		1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	higher dicots	Meliaceae	*Owenia acidula*	emu apple		C		1/1
plants	higher dicots	Mimosaceae	*Acacia aprepta*	Miles mulga		C		5/5
plants	higher dicots	Mimosaceae	*Acacia excelsa*			C		1/1
plants	higher dicots	Mimosaceae	*Acacia falcata*	sickle wattle		C		1/1
plants	higher dicots	Mimosaceae	*Acacia burrowii*			C		1/1
plants	higher dicots	Mimosaceae	*Acacia conferta*			C		2/2
plants	higher dicots	Mimosaceae	*Acacia triptera*			C		1/1
plants	higher dicots	Mimosaceae	*Acacia ixiophylla*			C		6/6
plants	higher dicots	Mimosaceae	*Acacia macradenia*	zig-zag wattle		C		1/1
plants	higher dicots	Mimosaceae	*Acacia neriifolia*	pechey wattle		C		1/1
plants	higher dicots	Mimosaceae	*Acacia semilunata*	crescent-leaved wattle		C		4/4
plants	higher dicots	Mimosaceae	*Acacia spectabilis*	pilliga wattle		C		1/1
plants	higher dicots	Mimosaceae	*Acacia julifera subsp. julifera*			C		1/1
plants	higher dicots	Mimosaceae	*Acacia leiocalyx subsp. leiocalyx*			C		2/2
plants	higher dicots	Myrsinaceae	*Lysimachia arvensis*		Y			1/1
plants	higher dicots	Myrtaceae	*Eucalyptus fibrosa subsp. nubila*			C		1/1
plants	higher dicots	Myrtaceae	*Eucalyptus tereticornis subsp. tereticornis*			C		1/1
plants	higher dicots	Myrtaceae	*Corymbia citriodora subsp. variegata*			C		1/1
plants	higher dicots	Myrtaceae	*Eucalyptus fibrosa subsp. fibrosa*			C		1/1
plants	higher dicots	Myrtaceae	*Eucalyptus panda*			C		4/4
plants	higher dicots	Myrtaceae	*Kardomia jucunda*			C		2/2
plants	higher dicots	Myrtaceae	*Melaleuca nodosa*			C		1/1
plants	higher dicots	Myrtaceae	*Eucalyptus bakeri*	Baker's mallee		C		1/1
plants	higher dicots	Myrtaceae	*Eucalyptus crebra*	narrow-leaved red ironbark		C		1/1
plants	higher dicots	Myrtaceae	*Eucalyptus elegans*			C		3/3
plants	higher dicots	Myrtaceae	*Eucalyptus exserta*	Queensland peppermint		C		2/2
plants	higher dicots	Myrtaceae	*Angophora leiocarpa*	rusty gum		C		1/1
plants	higher dicots	Myrtaceae	*Eucalyptus tenuipes*	narrow-leaved white mahogany		C		1/1
plants	higher dicots	Myrtaceae	*Angophora floribunda*	rough-barked apple		C		1/1
plants	higher dicots	Myrtaceae	*Melaleuca pallescens*			C		4/4
plants	higher dicots	Myrtaceae	*Micromyrtus carinata*	Gurulmundi heath-myrtle		E		1/1
plants	higher dicots	Myrtaceae	*Micromyrtus sessilis*			C		2/2
plants	higher dicots	Myrtaceae	*Eucalyptus microcarpa*	inland grey box		C		1/1
plants	higher dicots	Myrtaceae	*Eucalyptus woollsiana*			C		1/1
plants	higher dicots	Myrtaceae	*Eucalyptus chloroclada*	Baradine red gum		C		3/3
plants	higher dicots	Myrtaceae	*Melaleuca densispicata*			C		1/1
plants	higher dicots	Myrtaceae	*Lysicarpus angustifolius*	budgeroo		C		1/1
plants	higher dicots	Onagraceae	*Oenothera lindheimeri*		Y			1/1
plants	higher dicots	Oxalidaceae	*Oxalis radicosa*			C		1/1
plants	higher dicots	Portulacaceae	*Calandrinia*			C		1/1
plants	higher dicots	Portulacaceae	*Portulaca bicolor*			C		1/1
plants	higher dicots	Portulacaceae	*Portulaca*			C		1/1
plants	higher dicots	Portulacaceae	*Grahamia australiana*			C		1/1
plants	higher dicots	Proteaceae	*Hakea purpurea*			C		1/1
plants	higher dicots	Rhamnaceae	*Cryptandra armata*			C		2/2
plants	higher dicots	Rhamnaceae	*Cryptandra propinqua*			C		1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	higher dicots	Rutaceae	*Zieria aspalathoides subsp. aspalathoides*			C		1/1
plants	higher dicots	Rutaceae	*Philotheca difformis subsp. difformis*			C		2/2
plants	higher dicots	Rutaceae	*Boronia occidentalis*			C		3/3
plants	higher dicots	Rutaceae	*Phebalium nottii*	pink phebalium		C		2/2
plants	higher dicots	Rutaceae	*Boronia bipinnata*	rock boronia		C		1/1
plants	higher dicots	Sapindaceae	*Dodonaea peduncularis*			C		2/2
plants	higher dicots	Sapindaceae	*Dodonaea biloba*			C		8/8
plants	higher dicots	Sapindaceae	*Dodonaea macrossanii*			C		3/3
plants	higher dicots	Sapindaceae	*Dodonaea vestita*			C		1/1
plants	higher dicots	Scrophulariaceae	*Linaria pelisseriana*	Pelisser's toadflax	Y			1/1
plants	higher dicots	Scrophulariaceae	*Misopates orontium*	lesser snapdragon	Y			1/1
plants	higher dicots	Solanaceae	*Solanum parvifolium subsp. parvifolium*			C		1/1
plants	higher dicots	Solanaceae	*Solanum nemophilum*			C		1/1
plants	higher dicots	Sterculiaceae	*Brachychiton populneus subsp. trilobus*			C		2/2
plants	higher dicots	Sterculiaceae	*Brachychiton australis*	broad-leaved bottle tree		C		1/1
plants	higher dicots	Verbenaceae	*Glandularia aristigera*		Y			1/1
plants	higher dicots	Viscaceae	*Viscum whitei subsp. whitei*			C		1/1
plants	monocots	Iridaceae	*Sisyrinchium sp. (Peregian P.R.Sharpe 4970)*	scourweed	Y			1/1
plants	monocots	Juncaceae	*Juncus usitatus*			C		1/1
plants	monocots	Juncaceae	*Juncus psammophilus*			C		2/2
plants	monocots	Poaceae	*Paspalum urvillei*	vasey grass	Y			1/1
plants	monocots	Poaceae	*Sporobolus creber*			C		3/3
plants	monocots	Poaceae	*Chrysopogon fallax*			C		1/1
plants	monocots	Poaceae	*Eragrostis brownii*	Brown's lovegrass		C		1/1
plants	monocots	Poaceae	*Aristida caput-medusae*			C		1/1
plants	monocots	Poaceae	*Cleistochloa subjuncea*			C		1/1
plants	monocots	Poaceae	*Eragrostis trichophora*		Y			1/1
plants	monocots	Poaceae	*Thyridolepis xerophila*			C		1/1
plants	monocots	Poaceae	*Urochloa mosambicensis*	sabi grass	Y			1/1
plants	monocots	Poaceae	*Digitaria eriantha cv. Pangola*		Y			1/1
plants	monocots	Poaceae	*Aristida calycina var. praealta*			C		1/1
plants	monocots	Poaceae	*Cynodon nlemfuensis var. robustus*		Y			1/1
plants	monocots	Poaceae	*Cenchrus spinifex*		Y			1/1
plants	monocots	Poaceae	*Cenchrus ciliaris*		Y			1/1
plants	monocots	Poaceae	*Melinis repens*	red natal grass	Y			1/1
plants	monocots	Poaceae	*Aristida echinata*			C		1/1
plants	monocots	Potamogetonaceae	*Potamogeton tricarinatus*	floating pondweed		C		1/1

CODES

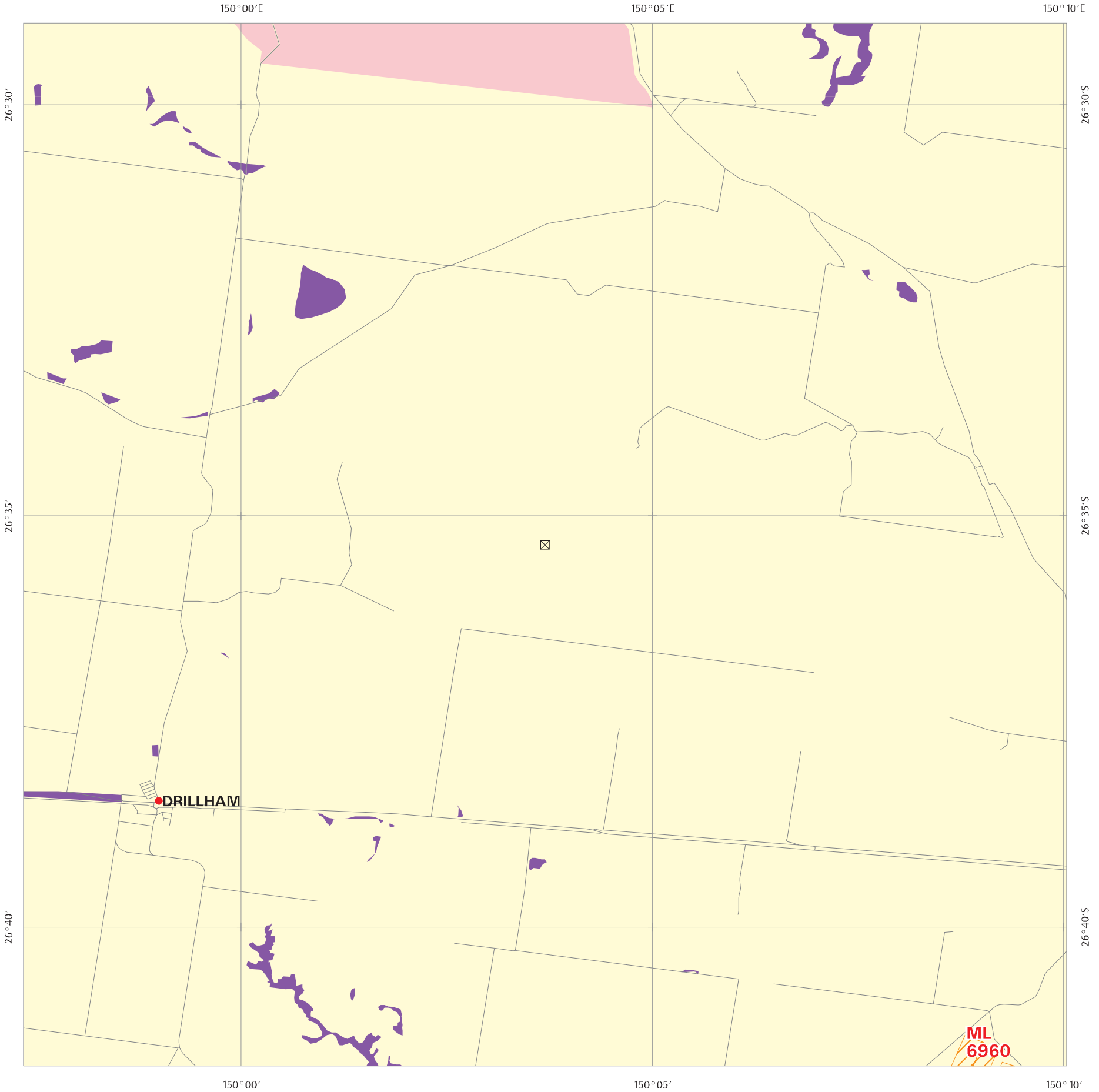
I - Y indicates that the taxon is introduced to Queensland and has naturalised.

Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992.* The codes are Extinct in the Wild (PE), Endangered (E), Vulnerable (V), Near Threatened (NT), Least Concern (C) or Not Protected ( ).

A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999.* The values of EPBC are Conservation Dependent (CD), Critically Endangered (CE), Endangered (E), Extinct (EX), Extinct in the Wild (XW) and Vulnerable (V).

Records – The first number indicates the total number of records of the taxon for the record option selected (i.e. All, Confirmed or Specimens).
This number is output as 99999 if it equals or exceeds this value. The second number located after the / indicates the number of specimen records for the taxon.
This number is output as 999 if it equals or exceeds this value.

10. Appendix C: Environmental Sensitive Areas mapping



ENVIRONMENTALLY SENSITIVE AREAS - Mining Activities

Requested By: KELLY.MATTHEWS@RPSGROUP.COM.AU
Date: 21 Jun 12 Time: 18.06.53

Legend

- Mining Leases

CATEGORY A
- National Parks
- Conservation Parks
- Forest Reserves
- Wet Tropics World Heritage Area
- Great Barrier Reef Marine Park Region
- Marine Parks other than General Use Zones

CATEGORY B
- World Heritage Areas
- Queensland Heritage Register Places
- Ramsar Sites
- Cultural Heritage Registered Areas and DLA's other than Stanbroke
- Special Forestry Areas
- Fish Habitat Areas
- Koala Plan
- Coordinated Conservation Areas
- Endangered Regional Ecosystems (Biodiversity Status)
- General Use Zones of Marine Parks
- Marine Plants

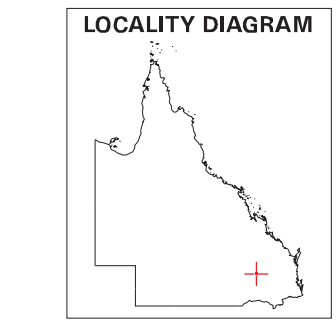
CATEGORY C
- Nature Refuges
- Resources Reserves
- Declared Catchment Areas
- Declared Irrigation Areas
- Drainage Areas
- River Improvement Areas
- Stanbroke DLA
- State Forests
- Timber Reserves
- Coastal Management District
- Dams and Weirs

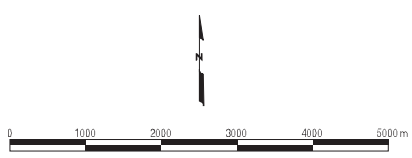
OTHERS
- Roads
  © Pitney Bowes Software 2012
- Towns
- Wild River Nominated Waterways
- Wild River High Preservation Areas
- Wild River Preservation Areas
- Mahogany Glider Habitat
- Directory of Important Wetlands
- Queensland

Centered on point position:
Latitude: -26.589141 Longitude: 150.061569
(decimal degrees)

Queensland Government

LOCALITY DIAGRAM





This scale bar is approximate only
Horizontal Datum: Geocentric Datum of Australia 1994 (GDA94)
This product is unprojected and is not suitable for measuring distances

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NOTE TO USER: Themes presented in this map are indicative only. Field survey may be required to verify the 'true' spatial extent and value. Not all environmentally sensitive areas are presented in this map. A user should refer to the particular circumstances relevant to their situation to assess the 'completeness' of themes provided.

The user should note that some boundaries and indicated values are ambient and may change over time (e.g. regional ecosystem boundaries and conservation status, watercourse mapping etc).

The user should be aware that due to multiple overlapping themes/ layers present, some themes/layers may be obscured by others. Ordering in the Legend does not accurately reflect the order by which themes/layers are displayed.

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11. Appendix D: Flora species recorded on Site during field survey

Scientific Name	Common Name
Acacia blakei	
Acacia excelsa	
Acacia harpophylla	Brigalow
Acacia neriifolia	Pechey Wattle
Acacia salicina	Doolan
Acacia semilunata	Crescent-Leaved Wattle
Acacia shirleyi	Lancewood
Allocasuarina luehmannii	Bull Oak
Angophora floribunda	Rough-Barked Apple
Aristida calycina	
Aristida caput-medusae	
Arundinella nepalensis	Reedgrass
Bothriochloa decipiens	
Brachyscome multifida var. multifida	
Callitris glaucophylla	White Cypress Pine
Citrus glauca	Desert Lime
Corymbia tessellaris	Moreton Bay Ash
Cymbopogon refractus	Barbed-Wire Grass
Cyperus gracilis	
Cyperus haspan	
Dichanthium sericeum	
Dodonaea triangularis	
Eriocaulon australe	
Eucalyptus camaldulensis	River Red Gum
Eucalyptus crebra	Narrow-Leaved Red Ironbark
Eucalyptus fibrosa	Blue-Leaved Ironbark
Eucalyptus microcarpa	Inland Grey Box
Eucalyptus populnea	Poplar Box
Eucalyptus tereticornis	Qld Blue Gum/Forest Red Gum
Gahnia aspera	
Gomphocarpus physocarpus	Balloon Cottonbush
Juncus usitatus	
Leptochloa decipiens	
Lomandra longifolia	

Scientific Name	Common Name
Maireana microphylla	
Megathyrsus maximus	Green Panic
Opuntia tomentosa	Velvety Tree Pear
Panicum effusum	
Panicum queenslandicum	
Sclerolaena	
Verbena aristigera	Mayne's Pest