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AUSTRALIA PACIFIC LNG

REPORT

Ecology Assessment Report

Q-4500-15-RP-0020

Australia Pacific LNG Upstream Phase 1

Lot 2 on RP90330

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- **Should** indicates a recommended course of action
- **May** or **can** indicate a possible course of action.

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1. Definitions & Abbreviations

1.1. Definitions

Table 1: Definitions

Term	Definition
Project	Australia Pacific LNG Upstream Phase 1 Project
Study area	Lot 2 on RP90330 of Australia Pacific LNG Upstream gas fields
Unidel	Unidel Group Pty Ltd

1.2. Abbreviations

Table 2: Abbreviations

Abbreviation	Description
BAAM	Biodiversity Assessment and Mapping Methodology
DBH	Diameter at breast height
DERM	Department of Environment and Resource Management
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities
EIS	Environmental impact statement
EP Act	Environmental Protection Act (Qld) 1994
EPBC Act	Environment Protection and Biodiversity Conservation Act (C'wlth) 1999
ESA	Environmentally sensitive area
HVR	High value regrowth
MNES	Matters of national environmental significance
NC Act	Nature Conservation Act (Qld) 1992
NC Reg	Nature Conservation (Wildlife) Regulation (Qld) 2006
RE	Regional ecosystem

2. Introduction

Unidel Group Pty Ltd (Unidel) has been commissioned by Australia Pacific LNG to prepare an ecology assessment report on Lot 2 on RP90330, within the Australia Pacific LNG petroleum lease (PL) 265.

This report provides a description of the ecological constraints within Lot 2 on RP90330 (the study area). The results are based on an initial desktop assessment followed by a field survey to confirm the vegetation communities, flora and fauna species, habitat values and areas of disturbance.

2.1. Purpose and Scope

This ecology assessment report builds on the results of the ecology studies undertaken as part of the Australia Pacific LNG Environmental Impact Statement (EIS) and identifies ecological values at a property scale to inform the design and placement of infrastructure within the study area.

This report addresses specific requirements contained within the Environmental Constraints Planning and Field Development Protocol (Q-LNG01-15-MP-0109) as per *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (Commonwealth Government 1999) approval 2009/4971 condition 5c and 5d and the Coordinator-General's Report (A3P4E16) for the production of an ecological assessment. These conditions include requirements to:

- Ground-truth and map any category A, B or C environmentally sensitive area (ESA), threatened ecological communities, areas of ecological sensitivity (Biodiversity Assessment and Mapping Methodology (BAAM) class 1-4), or the presence of endangered, vulnerable, or near threatened (EVNT) species under the *Nature Conservation Act 1992* (NC Act) (Queensland Government 1992);
- Ground-truth and map any regional ecosystem (RE) that differs in extent or type from the Department of Environment and Resource Management (DERM) mapping database;
- Ground-truth and map any pre-existing areas of significant disturbance within category B or C ESAs;
- Identify and map areas of *Environment Protection and Biodiversity Conservation Act 1999* EPBC listed ecological communities that may provide habitat for EPBC listed species;
- Evaluate habitat quality and indicate likelihood of occurrence of threatened species;
- Identify and evaluate any exceptional environmental features;
- Map and report any significant weed or pest infestations;
- Provide site specific management recommendations to minimise impacts; and
- Provide site specific advice on potential for development to cause impacts on Matters of National Environmental Significance (MNES).

2.2. Limitations

The field ecology survey was completed prior to finalising the Environmental Constraints Planning and Field Development Protocol (Australia Pacific LNG 2011). Field survey efforts were focused on areas of the property in the vicinity of proposed development only.

Other areas of the property not directly surveyed were assessed using high quality aerial imagery and mapping datasets to refine RE mapping boundaries. Inference of threatened species likelihood and species habitats was derived though a combination of the previous field surveys, database searches, inspection of aerial imagery and extensive field experience.

Further surveys in accordance with relevant guidelines may be required for the study area following the completion of detailed design and the confirmation of infrastructure siting. This broader process will be informed by the constraints identified in this report.

Moreover, detailed fauna surveys were not undertaken as part of this assessment (i.e. no trapping). The field survey aimed to identify fauna species using opportunistic observations only within the designated

time frame and in the prevailing weather conditions and season. Additional fauna species would likely be identified with an intensive survey effort.

3. Site Context

3.1. Location

The site of the proposed works is located south of Old Cameby Road, approximately 5km south-east of the township of Miles, in the Western Downs District. The site is within the Brigalow Belt South Bioregion.

3.2. Climate

The climate of the region is typical of sub-tropical Queensland. The proposed works are located between the townships of Miles and Chinchilla. Miles has a mean long term (1908 – 2005) annual maximum temperature of 27.1°C and mean annual minimum of 12.2°C (BOM 2011). Mean long term (1885 – 2011) annual rainfall is 653.4mm and approximately 40% of annual rainfall occurs in the summer months of December, January and February (BOM 2011).

3.3. Geology and Soils

The Australian Soils Resource Information System shows the study area as occurring on Sodosol soils, as mapped by the Atlas of Australian Soils (Northcote *et al*. 1960-68). Sodosols are described as soils with an abrupt clay increase down the profile and high sodium content, which may lead to soil dispersion and instability (CSIRO 2011).

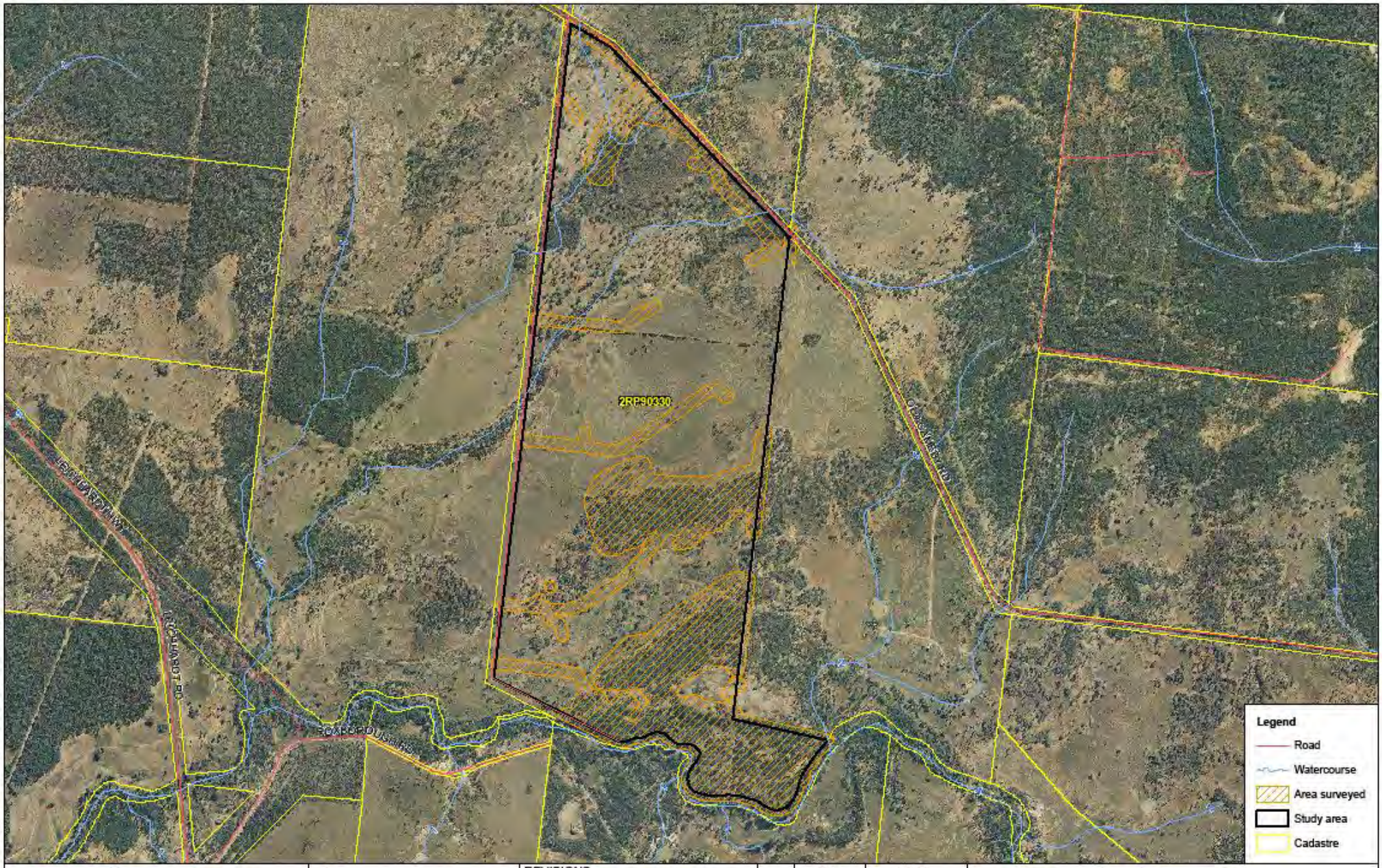
Three land zones occurred in the study area. Land zone 3 (alluvium soils) occurred on Columboola Creek and adjoining banks. Land zone 3 is described as quaternary alluvial systems, including floodplains, alluvial plains, alluvial fans, terraces, levees, swamps, channels, closed depressions and fine textured palaeo-estuarine deposits. Land zone 9 (fine-grained sedimentary rocks) occurred broadly across the centre of the study area. Land zone 9 is described as fine-grained sedimentary rocks, generally with little or no deformation, forming undulating landscapes with a broad range of fine textured soils of moderate to high fertility.

Land zone 5 (old loamy and sandy plains) occurred in the northern and southern portions of the study area. Land zone 5 is described as extensive, uniform near level or gently undulating Cainozoic plains with sandy or loamy soils. Land zone 5 included dissected remnants of these surfaces and plains with sandy or loamy soils of uncertain origin, and plateau remnants with deep soils usually overlying duricrust.

3.4. Current Land Use

The study area was likely to be used for grain farming many decades ago, evidenced by two grain harvesters left to decay on site. In recent decades the dominant land use has been cattle grazing, a use which continues to the current day.

Figure 1: Study area overview (Rev0)



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GIS Section - HSSE

Figure 1
Study area overview

Date: 27/06/2012

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Project:	Australia Pacific LNG
Permit:	xx
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Map ID:	xx
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4. Methodology

The methodology involved a desktop review of ecological databases, followed by field surveys of the study area. An explanation of these activities is outlined in the following sections.

4.1. Desktop and Literature Review

The following information sources were reviewed:

- EPBC Act protected matters search Tool (DSEWPaC 2011) ;
- DERM RE Mapping (Version 6.1) (DERM 2011a) and Essential Habitat Mapping (Version 3.1) (DERM 2011b);
- DERM HVR vegetation mapping (version 2.1) (DERM 2011c);
- DERM Referable Wetland Database (2012) (DERM 2012);
- DERM Wildlife Online Database (2011e) (DERM 2011e).
- Australian Soils Resource Information System (CSIRO 2012);
- Unidel Ecology Assessment Report Lot 35 BWR450, Lot 27 BWR416, and Lot 36 SP116140 (Unidel 2012a);
- Unidel Ecology Assessment Report Lot 18 BWR 98, Lot 20 BWR 267, Lot 21 BWR 98, Lot 30 BWR 98, and Lot 51 RP896380 (Unidel 2012b); and
- Unidel Ecology Assessment Report 12 BWR64 (Unidel 2012c).

The EPBC searches were undertaken using a central coordinate of -26.706, 150.224 and a 10km search radius. The NC Act searches were undertaken using the same central coordinate and a 5km search radius. In addition to database searches, ecological survey reports from adjacent properties were reviewed.

4.2. Field Survey

Preclearance surveys were conducted in general accordance with the Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (Neldner *et al*. 2005).

The field inspection of the study area was undertaken from the 8th to the 10th of March 2011 by ecologists Bruce McLennan and Jason Richard. The field inspection involved several steps as outlined in the following sections. Data was collected using Origin supplied Trimble Nomad units. The methodology for data collection pre-dated the Australia Pacific LNG Field Development Protocol (Q-LNG01-15-MP-0109) of August 2011. Unidel is an organisation approved to undertake pre-clearance surveys; approved by Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) in writing on 28 June 2011.

4.2.1. Reconnaissance Survey

A drive over of the property was initially undertaken on 17 November, 2011 to rapidly assess the presence of habitat features or vegetation not obvious from the aerial imagery and DERM RE and HVR mapping.

4.2.2. Vegetation Community Survey

The vegetation surveyed was undertaken in accordance with the quaternary site assessment methodology, as specified in Neldner *et al*. (2005). Information was collected and entered into a Trimble GPS. The data collected was used to assess the accuracy of RE mapping and the occurrence of any threatened ecological communities within the study area.

4.2.3. Threatened Flora Survey

Random meander surveys, using the technique as described by Cropper (1993), were undertaken throughout potential habitat of threatened and regionally significant flora species identified from database searches.

Where threatened flora species were found in large numbers within the study area, estimates of numbers of individuals were made based on densities observed over a smaller area.

4.2.4. Fauna and Habitat Survey

Opportunistic fauna observations were made during flora survey. Observed fauna species were noted during field traverses and some fauna habitat searches were undertaken (logs, rocks and other debris were turned). Where threatened and regionally significant fauna species were encountered, these were counted and recorded at the point from where they were observed. Habitat characteristics were assessed and recorded where significant, and included:

- Presence of tree hollows;
- Presence of senescent (old) or dead trees (stags);
- Rocky outcrops;
- Wetland, riverine and groundwater springs;
- Density of shrub and ground layers;
- Canopy cover;
- Soil type;
- Ridges and upper slopes;
- Fallen bark, timber or logs;
- Leaf litter;
- Decorticating bark;
- Presence of winter flowering species;
- Presence of Termite mounds; and
- Presence of pest or weed species.

An assessment of habitat quality based upon the abundance of fauna microhabitats and the provision of the above habitat characteristics was made. The greater the diversity and abundance of microhabitats and habitat characteristics, the greater the potential habitat value of the area.

4.2.5. Exotic Flora and Fauna Survey

Environmental and declared pest (as defined by the *Land Protection (Pest and Stock Route Management) Act (Qld) 2002* (LP Act) (Queensland Government 2002) populations were noted and their abundance recorded at the time of survey. Weeds of National Significance (WoNS) were also noted through desktop searches as potentially occurring in the study area. Field survey specifically targeted these species, attempting to identify these WoNS in the study area.

4.2.6. Disturbance Survey

Evidence of disturbance at each vegetation community/habitat feature was recorded for type, sensitivity and estimated time of most recent occurrence. The recording of disturbance was also conducted at an opportunistic level where appropriate.

5. Results and Discussion

This section presents the results of studies undertaken along with a discussion of key findings. The results are presented in two sections; a desktop and literature review and a field survey.

5.1. Desktop and Literature Review

Data sources used for desktop searches of the study area are listed in Section 4.1. A summary of results follows.

5.1.1. Commonwealth Matters

A review of the EPBC protected matters search tool as described in Section 4.1 was undertaken; the following sections present a summary of relevant results. A copy of the full report is presented in **Appendix A**.

5.1.2. Threatened Ecological Communities

The results of the EPBC protected matters search for threatened ecological communities in the search area are presented in **Table 3**.

Table 3: Threatened ecological communities potentially occurring in the search area

Name	Status	Type of Presence1
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland	Critically Endangered	Likely to occur
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	May occur
Brigalow (*Acacia harpophylla* dominant and co-dominant)	Endangered	Known to occur
Coolibah – Black Box Woodlands of the Darling Riverine Plains and Brigalow Belt South Bioregions	Endangered	May occur
Weeping Myall Woodlands	Endangered	Likely to occur

1: The protected matters search tool is a predictive tool used to identify potential presence based upon the known geographic distribution of the threatened ecological community or species identified or the presence of potential habitat.

5.1.3. Listed Flora

The results of the EPBC protected matters search for listed flora species in the search area are presented in Table 4.

Table 4: EPBC listed flora potentially occurring in the search area

Common Name	Scientific Name	Status	Type of Presence1
Ooline	*Cadellia pentastylis*	Vulnerable	Species or species habitat likely to occur within area
Belson's Panic	*Homopholis belsonii*	Vulnerable	Species or species habitat may occur within area
Cobar Greenhood Orchid	*Pterostylis cobarensis*	Vulnerable	Species or species habitat likely to occur within area
-	*Westringia parvifolia*	Vulnerable	Species or species habitat likely to occur within area

1: The protected matters search tool is a predictive tool used to identify potential presence based upon the known geographic distribution of the community or species identified or the presence of potential habitat.

5.1.4. Listed Fauna

The results of the EPBC protected matters search for listed fauna species in the search area are presented in **Table 5.**

Table 5: EPBC listed fauna potentially occurring in the search area

Class	Common Name	Scientific Name	Status	Type of Presence[1]
Fish	Murray cod	*Maccullochella peelii peelii*	Vulnerable	May occur
Reptiles	Five-clawed worm-skink	*Anomalopus mackayi*	Vulnerable	May occur
	Collared delma	*Delma torquata*	Vulnerable	May occur
	Yakka skink	*Egernia rugosa*	Vulnerable	Likely to occur
	Dunmall's snake	*Furina dunmalli*	Vulnerable	Known to occur
	Brigalow Scaly-foot	*Paradelma orientalis*	Vulnerable	May occur
Birds	Red goshawk	*Erythrotriorchis radiatus*	Vulnerable	Likely to occur
	Squatter pigeon	*Geophaps scripta scripta*	Vulnerable	Likely to occur
	Swift parrot	*Lathamus discolour*	Endangered	May occur
	Star finch	*Neochmia ruficauda ruficauda*	Endangered	Likely to occur
	Australian painted snipe	*Rostratula australis*	Vulnerable	May occur
Mammals	Large eared pied bat	*Chalinolobus dwyeri*	Vulnerable	May occur
	South-eastern long-eared bat	*Nyctophilus corbeni* (previously *timoriensis*)	Vulnerable	May occur

1: The protected matters search tool is a predictive tool used to identify potential presence based upon the known geographic distribution of the community or species identified or the presence of potential habitat.

5.1.5. Migratory Species

The results of the EPBC protected matters search for listed migratory species in the search area are presented in Table 6.

Table 6: EPBC listed migratory species potentially occurring in the search area

Class	Common Name	Scientific Name	Type of Presence[1]
Migratory marine, terrestrial and wetland species	Fork-tailed swift	*Apus pacificus*	May occur
	Great egret	*Ardea alba*	May occur
	Cattle egret	*Ardea ibis*	May occur
	Latham's snipe	*Gallinago hardwickii*	May occur
	White-bellied sea-eagle	*Haliaeetus leucogaster*	Likely to occur
	White-throated needletail	*Hirundapus caudacutus*	May occur
	Rainbow bee-eater	*Merops ornatus*	May occur

Class	Common Name	Scientific Name	Type of Presence[1]
	Australian cotton pygmy-goose	*Nettapus coromandelianus albipennis*	May Occur
	Painted snipe*	*Rostratula benghalensis s. lat.*	May occur

* Vulnerable; species is also listed under the EPBC Act as *Rostratula australis* (Australian painted snipe)

1: The protected matters search tool is a predictive tool used to identify potential presence based upon the known geographic distribution of the community or species identified or the presence of potential habitat.

5.1.6. Marine Species

The results of the EPBC protected matters search for listed marine species in the search area are presented in Table 7.

Table 7: EPBC listed marine species potentially occurring in the search area

Class	Common Name	Scientific Name	Type of Presence[1]
Birds	Magpie goose	*Anseranas semipalmata*	May occur
	Fork-tailed swift	*Apus pacificus*	May occur
	Great egret	*Ardea alba*	May occur
	Cattle egret	*Ardea ibis*	May occur
	Latham's snipe	*Gallinago hardwickii*	May occur
	White-bellied sea-eagle	*Haliaeetus leucogaster*	Likely to occur
	White-throated needletail	*Hirundapus caudacutus*	May occur
	Swift parrot	*Lathamus discolor*	May occur
	Rainbow bee-eater	*Merops ornatus*	May occur
	Australian cotton pygmy-goose	*Nettapus coromandelianus albipennis*	May occur
	Painted snipe*	*Rostratula benghalensis s. lat.*	May occur

* Vulnerable; species is also listed under the EPBC Act as *Rostratula australis* (Australian painted snipe).

1: The protected matters search tool is a predictive tool used to identify potential presence based upon the known geographic distribution of the community or species identified or the presence of potential habitat.

5.1.7. Weeds and Pest Fauna

Weeds

The EPBC protected matters search identified Weeds of National Significance (WoNS) and other non-native plants that may be present within the search area. These are listed in Table 8.

Table 8 Weeds of National Significance potentially occurring in the search area

Common Name	Scientific Name	Type of Presence[1]
Prickly acacia	*Acacia nilotica subsp. indica*	May occur
Hymenachne	*Hymenachne amplexicaulis*	Likely to occur
Parkinsonia	*Parkinsonia aculeata*	Likely to occur

Common Name	Scientific Name	Type of Presence[1]
Parthenium weed	*Parthenium hysterophorus*	Likely to occur
Salvinia	*Salvinia molesta*	Likely to occur

1: The protected matters search tool is a predictive tool used to identify potential presence based upon the known geographic distribution of the community or species identified or the presence of potential habitat.

Pest Fauna

All pest fauna identified from the EPBC protected matters search tool are listed in Table 9.

Table 9: Pest fauna species potentially occurring in the search area

Common Name	Scientific Name	Type of Presence[1]
Domestic cat	*Felis catus*	Likely to occur
Rabbit, European rabbit	*Oryctolagus cuniculus*	Likely to occur
Pig	*Sus scrofa*	Likely to occur
Cane toad	*Bufo marinus*	Likely to occur
Red fox, fox	*Vulpes vulpes*	Likely to occur

1: The protected matters search tool is a predictive tool used to identify potential presence based upon the known geographic distribution of the community or species identified or the presence of potential habitat.

5.1.8. Wetlands

Internationally significant wetlands that were identified by the EPBC protected matters search tool include a Ramsar listed wetland known as Narran Lake Nature Reserve, which is approximately 400km south-west, and downstream of the study area. The project is unlikely to impact upon this site.

5.1.9. State Matters

A summary of relevant desktop search results (Wildlife Online) for EVNT flora and fauna listed under the NC Act is presented in the following sections. Full results are presented in Appendix B.

5.1.10. Listed Flora

There is one EVNT flora species, listed in Table 10, identified under the NC Act recorded as occurring within the search area.

Table 10: EVNT flora species identified under the NC Act within the search area

Common Name	Scientific Name	NC Act Status
Rasp weed or Rasp plant	*Gonocarpus urceolatus*	Vulnerable

5.1.11. Listed Fauna

The results of the Wildlife Online search for NC Act EVNT listed fauna species and their likelihood of occurrence within the search area are provided in Table 11.

Table 11: Wildlife Online records of threatened fauna species within the search area

Class	Common Name	Scientific Name	NC Act Status
Birds	Glossy black cockatoo	*Calyptorhynchus lathami*	Vulnerable
	Black-chinned honeyeater	*Melithreptus gularis*	Near Threatened
Reptiles	Golden-tailed gecko	*Strophurus taenicauda*	Near Threatened

5.1.12. Environmentally Sensitive Areas

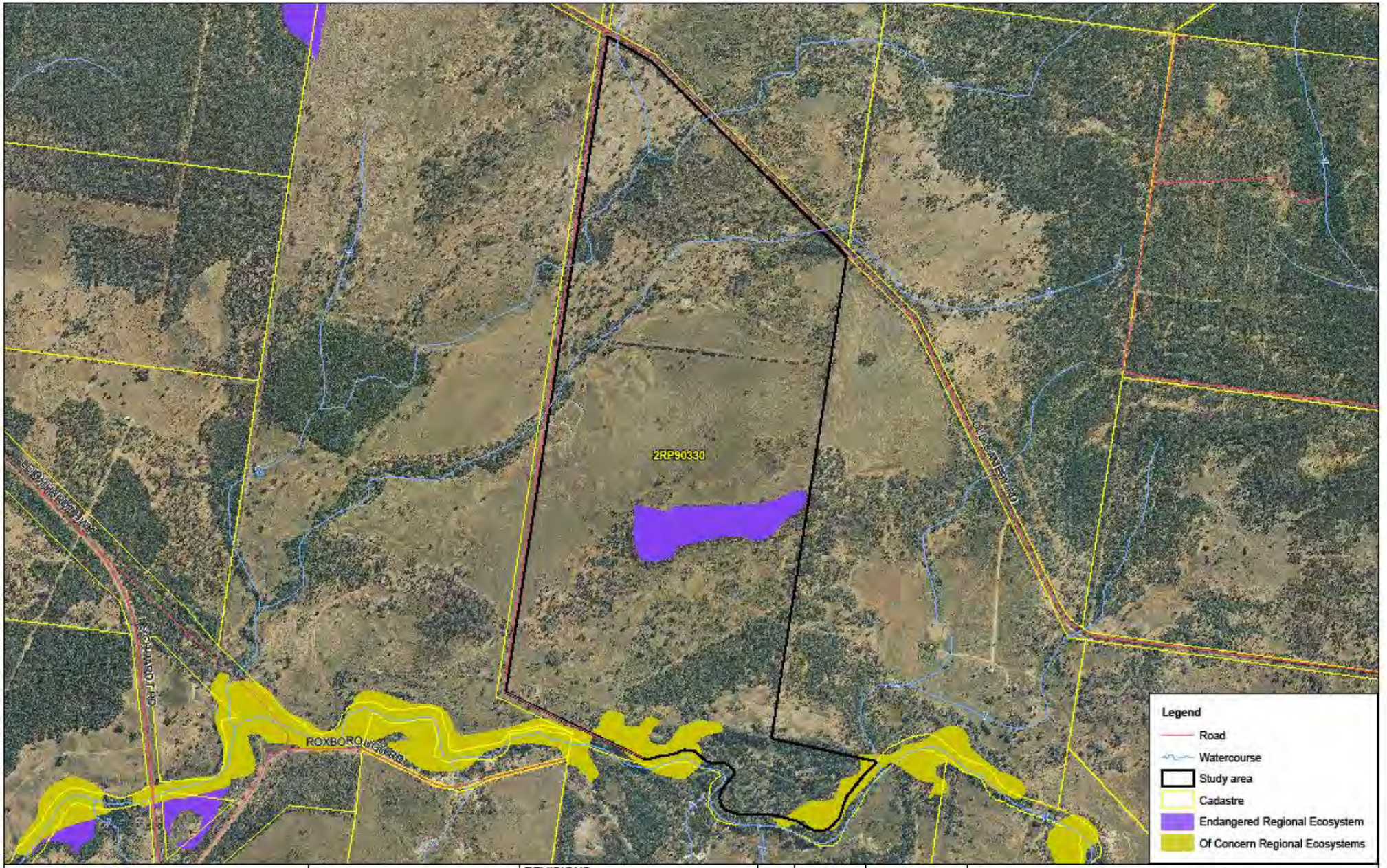
The DERM ESA mapping (DERM 2011d) for the study area is included as Figure 2.

The DERM ESA mapping indicated no Category A ESAs present in the study area. However, Category B (endangered REs) and Category C ESAs (of concern REs) are present.

The DERM referable wetland (also a Category C ESA) search results for the study area are included in Appendix C; no referable wetlands are within the study area.

DERM essential habitat (EH) (also a Category C ESA) mapping showed there was not EH on the study area.

Figure 2: ESAs mapped by DERM within the study area (Rev0)



GIS Section - HSSE

Figure 2
ESAs mapped by DERM within the study area

Date: 27/06/2012

State:	Queensland
Project:	Australia Pacific LNG
Permit:	xx
Map No:	xx
Map ID:	xx
Doc ID:	Q-4500-15-RP-0020

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5.1.13. Regional Ecosystems

The DERM RE mapping (Biodiversity Status version 6.1) for the study area is included as Figure 3.

One endangered RE was identified during the desktop analysis (using the DERM RE version 6.1 GIS layer) and the description can be found below in Table 12.

Table 12: Endangered regional ecosystems mapped by DERM within the study area

RE code	General Description	REDD (Queensland herbarium, 2011) Description
11.9.5	*Acacia harpophylla* and/or *Casuarina cristata* open forest on fine-grained sedimentary rocks	Open-forest dominated by *Acacia harpophylla* and/or *Casuarina cristata* (10-20m) or *Acacia harpophylla* with a semi-evergreen vine thicket understorey. Open-forest dominated by *C. cristata* is more common in southern parts of the bioregion. A prominent low tree or tall shrub layer dominated by species such as *Geijera parviflora* and *Eremophila mitchellii*, and often with semi-evergreen vine thicket species is often present. The latter include *Flindersia dissosperma, Brachychiton rupestris, Excoecaria dallachyana, Macropteranthes leichhardtii* and *Acalypha eremorum* in eastern areas, and species such as *Carissa ovata*, *Owenia acidula, Croton insularis, Denhamia oleaster* and *Notelaea microcarpa* in south-western areas. *Melaleuca bracteata* may be present along watercourses. Occurs on fine-grained sediments. The topography includes gently undulating plains, valley floors and undulating footslopes and rarely on low hills. The soils are generally deep texture-contrast and cracking clays. The cracking clays are usually black or grey to brown or reddish-brown in colour, often self mulching and sometimes with gilgai microrelief in flatter areas. Some texture contrast soils are shallow to only moderately deep.

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All of concern REs identified during the desktop analysis and their description can be found in Table 13.

Table 13: Of concern regional ecosystems mapped by DERM within the study area

RE code	General Description	REDD (Queensland herbarium, 2011) 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 (Burgess 2003).
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., Heteropogoncontortus, 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 variety of soils, including deep cracking clays, medium to fine textured soils, and deep texture-contrast soils.

All no concern at present REs identified during the desktop analysis (using the DERM RE version 6.1 GIS layer) and their description can be found in **Ta**ble 14. The RE mapped on site is intermixed 11.5.1/11.7.4/11.5.4 at a ratio of 60/20/20 composition.

Table 14: No concern at present regional ecosystems mapped by DERM within the study area

RE code	General Description	REDD (Queensland herbarium, 2011) Description
11.5.1	*Euclayptus crebra, Callitris glaucophylla, Angophora leiocarpa, Allocasuarina luehmannii* woodland on Cainozoic sand plains / remnant surfaces	*Eucalyptus crebra* and/or *E. populnea* +/- *Angophora leiocarpa* +/- *E. pilligaensis* (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 sand plains, especially outwash from weathered sandstones. Duplex soils with sandy surfaces.
11.7.4	Mixed *Eucalyptus spp.* woodland on *Cainozoic lateritic duricrusts*	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*, *Acacia spp*. or *E. exserta*. Occurs on low hills and ranges with shallow soils.
11.5.4	*Eucalyptus crebra, Callitris glaucophylla, C. endlicheri, E. chloroclada, Angophora leiocarpa* on Cainozoic sand plains / remnant surfaces.	*Eucalyptus crebra, Callitris glaucophylla, E. chloroclada, Angophora leiocarpa*, +/- A. floribunda woodland to open-forest with a low tree layer dominated by species such as *Allocasuarina luehmannii, A. inophloia* and *Callitris endlicheri*. Localised areas dominated by *E. rhombica*. Occurs on Cainozoic sand plains with deep sandy soils.

5.1.14. High Value Regrowth

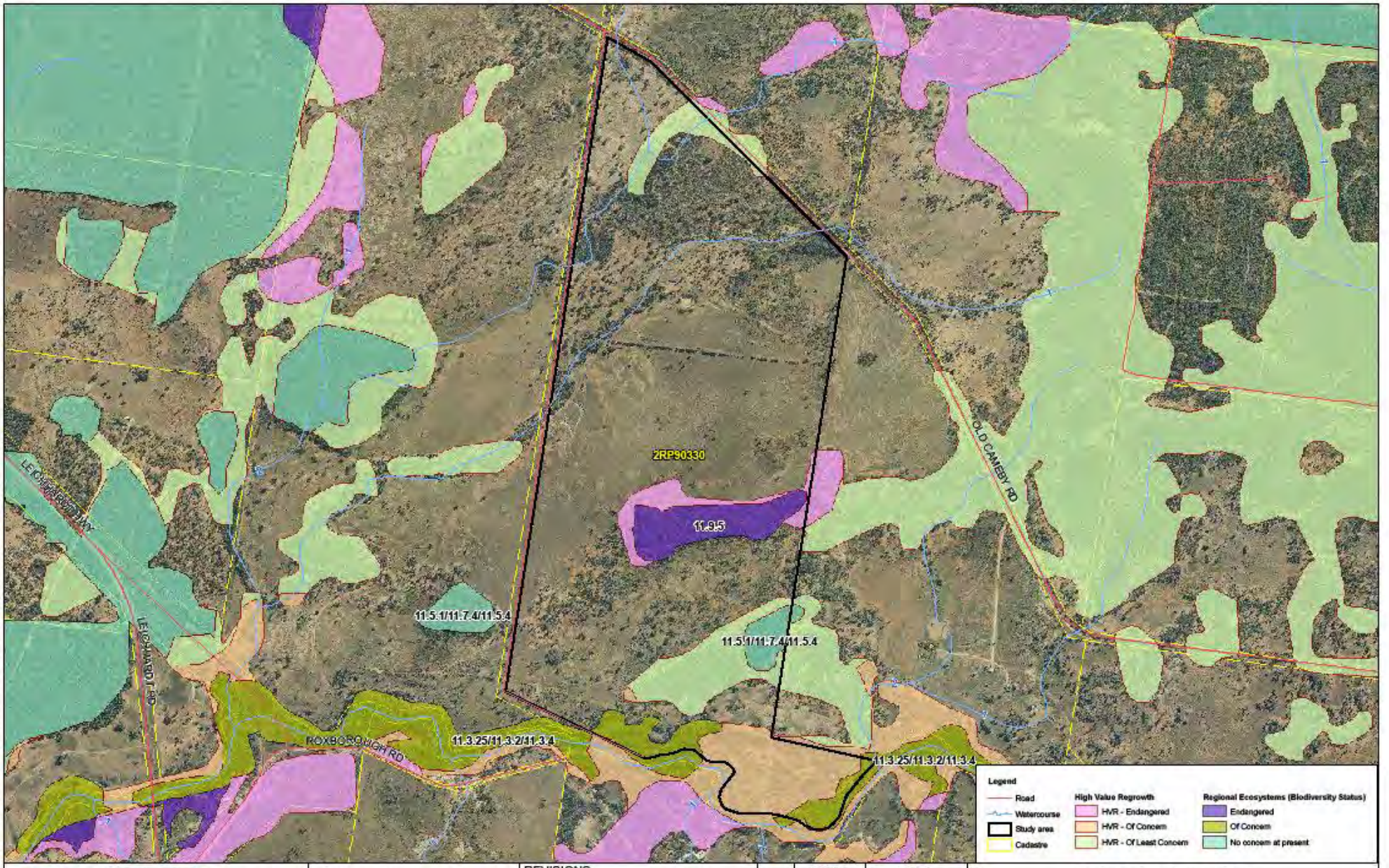
HVR mapped by DERM as present in the study area is outlined in Table 15 and Figure 3.

Table 15: HVR mapped as present in the study area

HVR status	Description
HVR containing least concern regional ecosystems	Woody regrowth >15 years old.
HVR containing of concern regional ecosystems	Woody regrowth >15 years old.
HVR containing endangered regional ecosystems	Woody regrowth >15 years old.

Note: HVR is woody regrowth greater than 15 years old. Status is derived from the RE type represented

Figure 3: Regional ecosystems mapped by DERM within the study area (Rev0)



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GIS Section - HSSE

Figure 3
REs mapped by DERM within the study area

Date: 27/06/2012

State:	Queensland
Project:	Australia Pacific LNG
Permit:	xx
Map No:	xx
Map ID:	xx
Doc ID:	Q-4500-15-RP-0020

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5.2. Field Survey

5.2.1. Commonwealth Matters

Field survey results concerning Matters of National Environmental Significance (MNES) (protected under the EPBC Act) such as threatened ecological communities, listed flora, listed fauna, migratory species, weeds and pest fauna are described in the following sections. Suitable habitat for several EPBC listed fauna was found to occur on site. Potential habitat availability for specific EPBC fauna species is discussed in Table 18.

5.2.2. Threatened Ecological Communities

Brigalow (*Acacia harpophylla* dominant and co-dominant)

To be considered a threatened ecological community under the EPBC Act, Brigalow (*Acacia harpophylla* dominant and co-dominant) communities must have the following characteristics:

- The Brigalow must be 15 years or older in age;
- The vegetation community must cover at least 0.5ha; and
- Be a Brigalow community where exotic species do not exceed 50% of perennial species in the ecosystem.

The listing of the Brigalow ecological community did not distinguish between remnant and regrowth Brigalow. Brigalow regrowth is part of the Brigalow ecological community listed under the EPBC Act only if it retains the species composition and structural elements typical of that found in undisturbed areas of the listed Brigalow ecological community.

In Queensland, the Brigalow ecological community that has been listed under the EPBC Act is defined by reference to 16 REs, all of which are listed as endangered under the Vegetation Management Act 1999. RE 11.9.5 was mapped by DERM as occurring in the study area and comprised the Brigalow threatened ecological community. Survey of this community however revealed that the mapping of RE 11.9.5 was incorrect and the community was instead more consistent with endangered RE 11.4.3, which is also an RE comprising the Brigalow threatened ecological community (TSSC 2001). See section 5.1.13 for detail.

The spatial extent of this community (RE 11.4.3) was also drastically reduced by the field survey, verified as occurring only in the northern portion of the DERM mapped RE 11.9.5. The remainder of the stand was verified as RE 11.5.1, being a no concern at present RE (and not part of the Brigalow community under the EPBC Act). The spatial extent of the Brigalow threatened ecological community is therefore reduced to the northern portion of this community.

The spatial extent of the threatened ecological communities identified in the study area is mapped in Figure 4 and listed in Table 16.

Table 16: Threatened ecological communities and likelihood of occurrence

Name	Status	Likelihood of Occurrence
Brigalow (*Acacia harpophylla* dominant and co-dominant)	Endangered	**Known to occur** within the study area. See discussion above.
Weeping myall (*Acacia pendula*) woodlands	Endangered	**Unlikely**. While RE 11.3.2 (within which this TEC can occur) was detected within the study area, no areas conformed to the requirements of the TEC for species presence or community composition. (TSSC 2008d)
Coolibah (*Eucalyptus coolabah*) - Black Box (*Eucalyptus largiflorens*) Woodland of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered	**Unlikely**. In Queensland this TEC aligns with RE 11.3.3, 11.3.15, 11.3.16, 1.3.28 and 11.3.37. None of these REs were verified in the study area. (TSSC 2011)

Name	Status	Likelihood of Occurrence
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland	Critically endangered	**Unlikely**. The field survey failed to detect any areas of natural grasslands. Therefore, the Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland is not present in the study area. This TEC if found in RE 11.3.21 and RE 11.3.24 in which were not present. (TSSC 2008b)
White box (*Eucalyptus albens*)-Yellow box (*Eucalyptus melliodora*)-Blakely's red gum (*Eucalyptus blakelyi*) Grassy Woodland and Derived Native Grassland	Critically endangered	**Unlikely**. The field survey failed to identify any White box (*Eucalyptus albens*), Yellow box (*Eucalyptus melliodora*) or Blakely's red gum (*Eucalyptus blakelyi*) or any derived (or natural) native grasslands within the study area. This TEC is only found within the Brigalow Belt Bioregion in REs 11.8.2a, 11.8.8 and 11.9.9a which were not present. (TSSC 2006)

5.2.3. Listed Flora

No flora species listed under the EPBC Act were identified during the field survey but their likelihood of occurrence is presented in Table 17. A list of all flora observed during the field survey is provided within Appendix D.

Table 17: EPBC listed flora and likelihood of occurrence

Common Name	Name	Status	Likelihood of Occurrence
Cadellia pentastylis	Ooline	Vulnerable	**Unlikely** due the landform and corresponding vegetation types not being suitable. Occurs as an emergent in Semi Evergreen Vine Thicket (SEVT) or in pure stands or mixed community on slopes of residual sandstone. (TSSC 2008)
Homopholis belsonii	Belson's Panic Grass	Vulnerable	**May occur**. It is a shade loving grass species found in Brigalow and woodland. (TSSC 2008a) Brigalow is present, though the spatial extent is extremely small and direct survey failed to identify the species.
Pterostylis cobarensis	Cobar Greenhood Orchid	Vulnerable	**May occur**. Known to overlap with Brigalow TEC and occurs in eucalypt woodland. (TSSC 2008c) Brigalow is present, though the spatial extent is extremely small and direct survey failed to identify the species.
Westringia parvifolia	-	Vulnerable	**Unlikely.** This species grows with *Eucalyptus bakeri* and *E. viridis* (neither of which is observed in the study area nor strongly associated with verified REs) and between clumps of Spinifex (*Triodia sp.*) on sandy and stony soils. (TSSC 2008e)

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Figure 4: Threatened ecological communities in the study area (Rev0)

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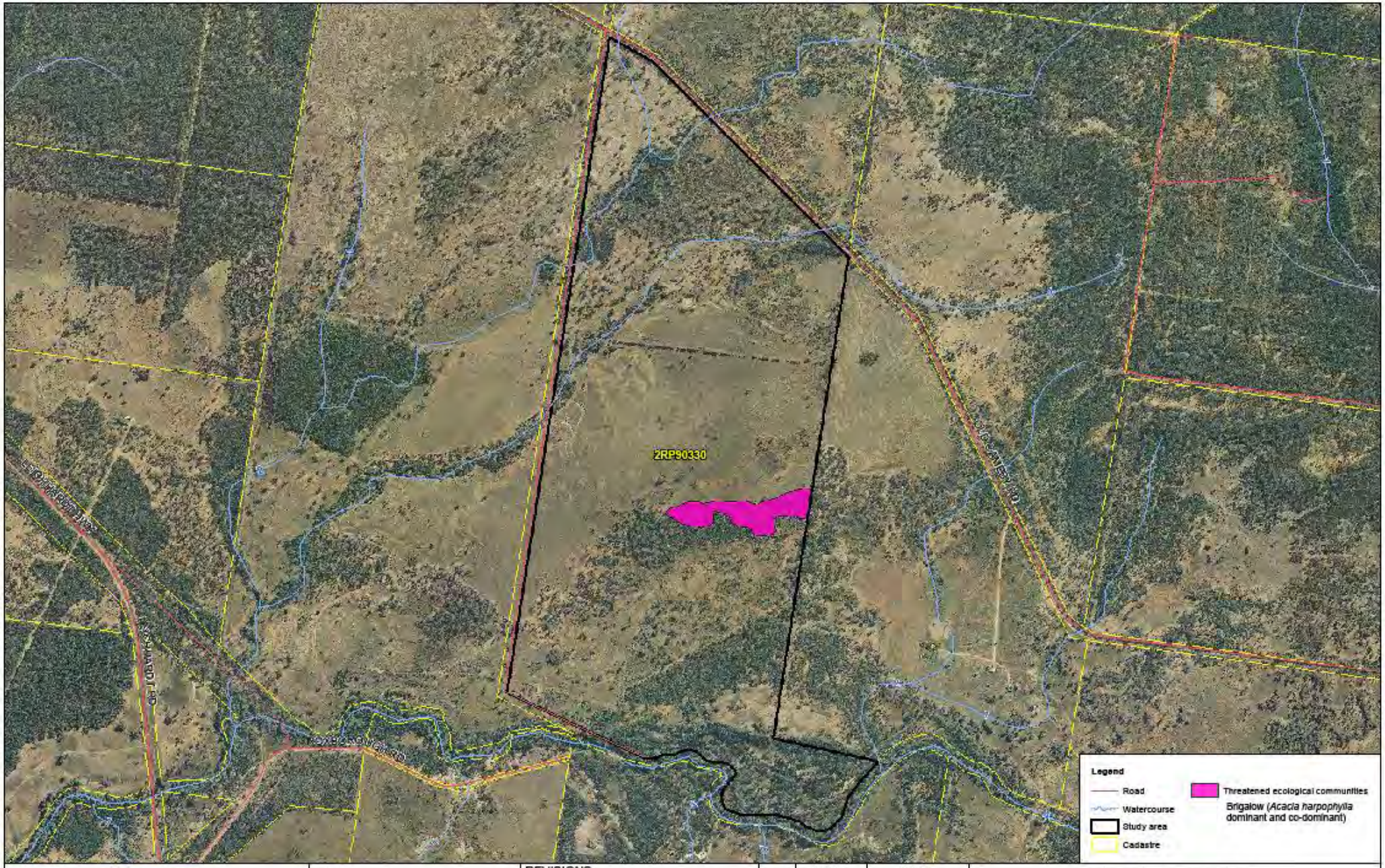

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GIS Section - HSSE

Figure 4
Threatened ecological communities within the study area

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Project:	Australia Pacific LNG
Permit:	xx
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Map ID:	xx
Doc ID:	Q-4500-15-RP-0020

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5.2.4. Listed Fauna

No threatened fauna species listed under the EPBC Act were identified through opportunistic observations. However the study area was noted as providing potential habitat for birds and mammals, with numerous potential habitat trees identified during the field survey. These trees occurred across most vegetated parts of the study area. Additionally, the presence of overflow watercourses, a dam and the Condamine River may provide habitat for aquatic fauna.

Existing habitat and the nature of the locality suggests that Yakka skink (*Egernia rugosa*) and Brigalow scaly-foot (*Paradelma orientalis*) potentially occur within the study area. See Table 18. The Brigalow community in the centre of the study area was relatively open forest with shallow gilgai relief and a good scatter of woody debris with patchy dense grass and leaf litters. This area would provide moderate habitat for the EPBC listed Dunmall's snake (*Furina dunmalli*) (DSEWPaC 2012f) and the Brigalow scaly-foot (*Paradelma orientalis*) (DSEWPaC 2012k).

Table 18 below identifies the EPBC Act listed fauna species that are potentially occurring within the study area following field validation.

Table 18: Assessment of potential of EPBC Act protected fauna species to occur in the study area

Class	Common Name	Scientific Name	Status	Type of Presence
Reptiles	*Delma torquata*	Collared delma	Vulnerable	**Unlikely**. Species prefers rocky terrain with many small loose rocks. (DSEWPaC 2012c). Such features are absent (nil observed).
	Furina dunmalli	Dunmall's snake	Vulnerable	**Possible** due to potential habitat within the study area, being Brigalow with shallow gilgai and ground covers (DSEWPaC 2012f) (nil observed).
	Anomalopus mackayi	Five clawed worm skink	Vulnerable	**Unlikely**. Species prefers grassland on basaltic soils, which are not present (DSEWPaC 2012a). (nil observed)
	Egernia rugosa	Yakka skink	Vulnerable	**Possible** due to potential habitat within the study area, particularly Brigalow with shallow gilgai and ground covers (DSEWPaC 2012d) (nil observed).
	Paradelma orientalis	Brigalow scaly foot	Vulnerable	**Likely** due to potential habitat within the study area, being Brigalow with shallow gilgai and ground covers (DSEWPaC 2012k) (nil observed).

Class	Common Name	Scientific Name	Status	Type of Presence
Birds	*Erythrotriorchis radiatus*	Red goshawk	Vulnerable	**Possible** due to potential habitat within the study area, being riparian areas and open woodlands where other bird species (prey) occur (DSEWPaC 2012e) (nil observed).
	Geophaps scripta scripta	Squatter pigeon	Vulnerable	**Likely** due to potential habitat within the study area, being grassy woodlands and open forests dominated by eucalypts (DSEWPaC 2012g) (nil observed).
	Lathamus discolour	Swift parrot	Endangered	**Possible** along Columboola Creek and remnant Brigalow. However, this species is a very uncommon visitor to the region. (DSEWPaC 2012h) (nil observed).
	Neochmia ruficauda ruficauda	Star finch	Endangered	**Unlikely**. Species prefers tall closed grassland around waterways and wetlands (DSEWPaC 2012i). These features are absent (nil observed).
	Rostratula australis	Australian painted snipe	Vulnerable	**Unlikely**. Preferred habitat of shallow terrestrial wetlands is absent (DSEWPaC 2012l) (nil observed).
Mammals	*Nyctophilus timoriensis*	South-eastern long eared bat	Vulnerable	**Possible** due to potential habitat within the study area (DSEWPaC 2012j) (nil observed).
	Chalinolobus dwyeri	Large eared pied bat	Vulnerable	**Possible** due to potential habitat within the study area (DSEWPaC 2012b) (nil observed).

5.2.5. Migratory Species

There were no migratory species identified as part of the field survey of the study area, however dams and the deeper gilgai may contain migratory wetland species at various times throughout the year. It is considered that all migratory species identified through the EPBC protected matters search for the area have the potential to occur in the study area.

5.2.6. Weeds and Pest Fauna

No WoNS identified in the EPBC protected matters search tool were found in the study area.

One pest fauna species, the cane toad (*Bufo marinus*), was observed during the field survey (Table 19). The location of fauna pest species is shown in Figure 6.

Table 19: Pest fauna species recorded on site

Common Name	Scientific Name	Type of Presence[1]
Cane toad	*Bufo marinus*	Identified on site

5.2.7. State Matters

A summary of relevant desktop search results for flora and fauna listed under the NC Act is presented in the following sections. Full results are presented in Appendix B.

5.2.8. Listed Flora

Surveys of the study area identified two species of EVNT flora: *Rutidosis lanata* and *Gonocarpus urceolatus*. Distribution of these species is shown in Figure 5. Table 20 below lists the NC Act listed flora species identified during the field survey

Table 20: NC Act listed flora species recorded within the study area

Common Name	Scientific Name	Status	Type of Presence
Rasp weed or rasp plant	*Gonocarpus urceolatus*	Vulnerable	Known to occur
Red soil woolly wrinkle wort	*Rutidosis lanata*	Vulnerable	Known to occur

Potential habitat for *Rutidosis lanata* was identified across much of the study area (based on soil and land zone changes) associated with ecotones between existing and cleared land zone 4 vegetation communities (RE 11.4.3) and existing and cleared land zone 5 communities (REs 11.5.1 and 11.5.4). A pre-clear community typically associated with this ecotone is RE11.4.10, identified on the neighbouring Lot 53 on BWR143 and often provides habitat for *Rutidosis lanata*.

This survey identified two areas of *Rutidosis lanata* as shown in Figure 5. A smaller patch within the mapped Brigalow community and a larger patch within an area of scattered *Eucalyptus woollsiana, Acacia harpophylla* and *Casuarina cristata* regrowth with a species composition consistent with RE 11.4.10.

On the 9th of July a subsequent survey on the Condabri Lateral identified a significant area of *Rutidosis lanata* and other scattered patches along the eastern boundary of the study area in cleared country and unmapped shade lines (Figure 5).

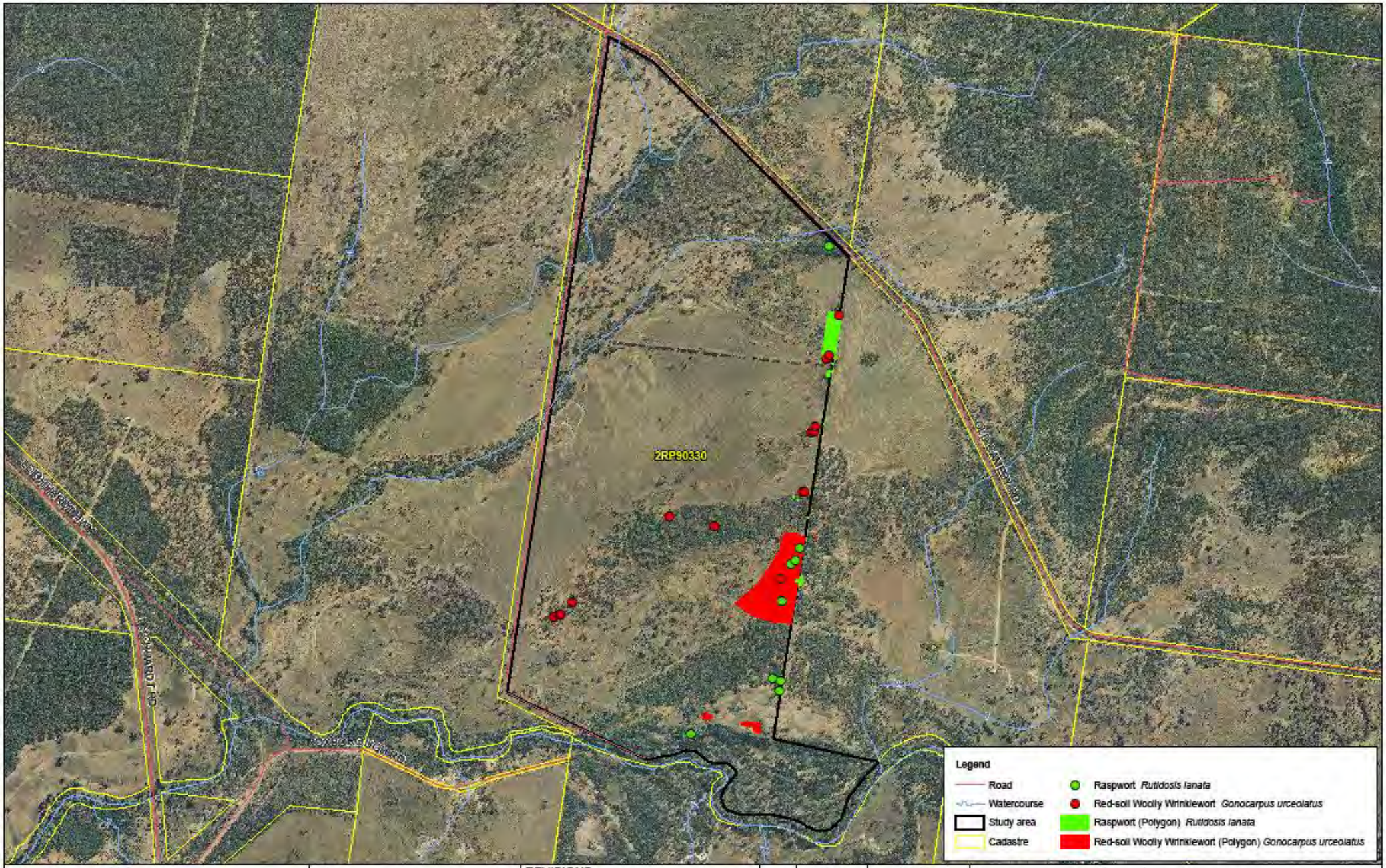
The distribution of *Gonocarpus urceolatus* was restricted to land zone 5 at the site. The survey identified small patchy areas (up to 500 plants). These areas were associated with *Eucalyptus exserta* and *Callitris glaucophylla* fringing rock pavements in the south eastern and southern portions of the study area and showed signs of poor health and die back due to dry conditions.

The July 9 2011 survey of the Condabri Lateral identified further areas of *Gonocarpus urceolatus* on the eastern boundary and the north eastern part of the study area. Both areas had sandy soils and dense grass cover and *Gonocarpus urceolatus* was healthy and in places mid dense (up to 200 plants/m^2). *Gonocarpus urceolatus* is identified in Figure 5.

Other Flora

No other conservation significant flora was observed.

Figure 5: Listed flora species identified in the study area (Rev0)



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GIS Section - HSSE

Figure 5
Flora identified within the study area

Date: 27/06/2012

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Project:	Australia Pacific LNG
Permit:	xx
Map No:	xx
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5.2.9. Listed Fauna

No EVNT fauna species listed under the NC Act were identified during the field survey, however the study area did provide potential habitat for several species. The EVNT fauna species potentially occurring in the study area, as informed by the Wildlife Online records of previously occurring threatened fauna species, are listed in Table 21.

Table 21: EVNT Fauna species or habitat for species potentially occurring in the study area

Class	Common Name	Scientific Name	NC Act Status	Likelihood of Occurrence
Amphibians	Rough frog	*Cyclorana verrucosa*	Near Threatened	**Likely to be present**. The species is known to be associated with small scale wetland environments in open grasslands and woodlands. Suitable wetland / waterway habitat and heavy clays exist.
Reptiles	Yakka skink	*Egernia rugosa*	Vulnerable	**Likely to be present**. Preferred habitat includes rocky outcrops, sand plains, dense ground vegetation, open dry sclerophyll (ironbark and Brigalow) forest and woodland, which have hollow logs, cavities in soil-bound root systems of fallen trees, rabbit warrens, and beneath rocks. These habitats are present.
	Grey snake	*Hemiaspis damelii*	Endangered	**Likely to be present**. This species may utilise cleared gilgai across the study area, particularly during wet seasons.
	Brigalow scaly foot	*Paradelma orientalis*	Vulnerable	**Likely to be present**. Habitat present within remnant vegetation and areas of suitable micro-habitats adjacent (cleared and HVR). Utilises a wide variety of open forest habitats on several (principally sandy) soil types, sheltering under fallen timber and bark, particularly areas adjacent to remnant vegetation). Such habitat is present in the study area.
	Golden-tailed gecko	*Strophurus taenicauda*	Near Threatened	**Likely to be present**. Previously recorded in the locality. Southern extent of species' range. Ecological communities containing Cypress *(Callitris* spp) and Ironbark (*Eucalyptus* spp) represent habitat. This habitat is present, particularly in remnant and regrowth RE11.3.2.
Birds	Squatter pigeon	*Geophaps scripta scripta*	Vulnerable	**Likely to be present**. Due to potential habitat (Grassy woodlands dominated by Eucalyptus, and disturbed areas close to waterways and wetlands) within the study area. Recorded from locality.

Class	Common Name	Scientific Name	NC Act Status	Likelihood of Occurrence
	Glossy black cockatoo	*Calyptorhynchus lathami*	Vulnerable	**Likely to be present** due to the presence of areas of *Allocasuarina luehmannii* and previous sightings in the locality.
	Black-chinned honeyeater	*Melithreptus gularis*	Near Threatened	**Potentially present**. Previously recorded in the locality. This species prefers riparian vegetation.
Mammals	Large eared pied bat.	*Chalinolobus dwyeri*	Vulnerable	**Likely to be present** due to potential tree hollow roost habitat provided by larger *Eucalyptus populnea* in remnant RE 11.5.1 within the study area.
	Greater long-eared bat	*Nyctophilus corbeni*	Vulnerable	**Likely to be present** due to potential tree hollow roost habitat being present within the study area. Nearby records in Condamine SF.

The study area did provide habitat (such as hollow logs, caves and rock areas, and habitat trees) for birds and mammals. Additionally, the presence of gilgai and watercourses may provide habitat for aquatic fauna.

The Grey snake (*Hemiaspis damelii*) may also utilise cleared gilgai across the study area, particularly during wet seasons when frogs are abundant.

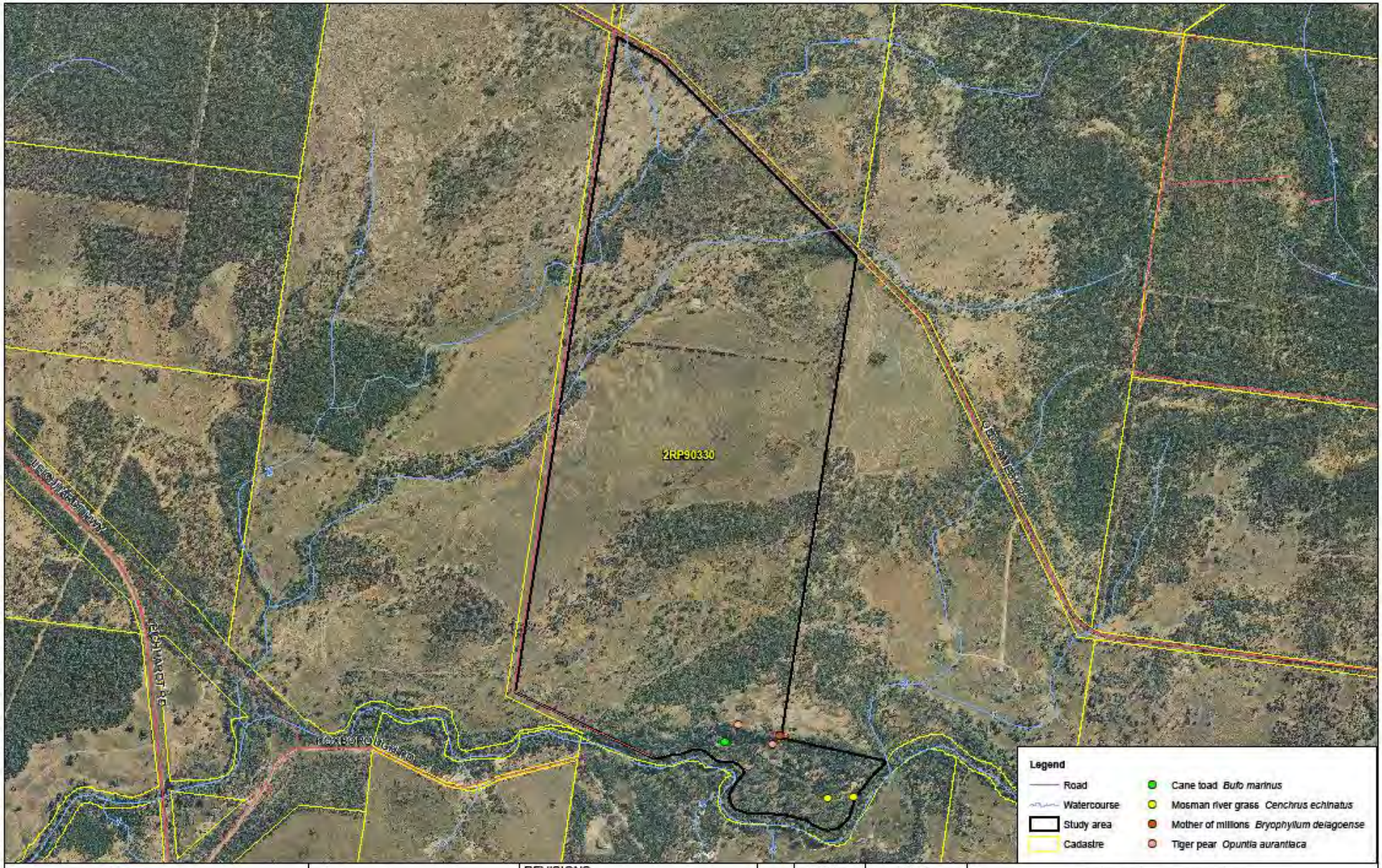
The area of Brigalow, while small and heavily impacted by grazing, had a scatter of shallow gilgais, a fair cover of woody debris, native grasses and locally deep leaf litter which provided potential habitat for Brigalow scaly foot (*Paradelma orientalis*) and Grey snake (*Hemiaspis damelii*).

Riparian vegetation along Columboola Creek supported remnant vegetation of mostly RE 11.3.25 and, to a lesser extent RE 11.3.4, which contained large, mature hollow-bearing trees which may support roosting sites for the Greater long eared bat (*Nyctophilus timoriensis*). Across the study area, larger *Eucalyptus populnea* in remnant RE 11.5.1 provided potential roosting sites for the Large eared pied bat (*Chalinolobus dwyeri*).

Areas of rock pavement and broken rocky cliffs north of and adjacent to Columboola Creek provided potentially high habitat value for Brigalow Belt reptiles, particularly the Yakka skink (*Egernia rugosa*).

The presence of areas of *Allocasuarina luehmannii* within RE 11.5.1 and along watercourses combined with previous sightings of Glossy black cockatoo (*Calyptorhynchus lathami*) within the site suggests suitable habitat for this vulnerable species. However, the significance of this species to the study area is unknown.

Figure 6: Weeds and pest fauna species identified in the study area (Rev0)



GIS Section - HSSE

Figure 6
Pests and weeds identified within the study area

Date: 27/06/2012

State:	Queensland
Project:	Australia Pacific LNG
Permit:	xx
Map No:	xx
Map ID:	xx
Doc ID:	Q-4500-15-RP-0020

REVISIONS

REV	DESCRIPTION	DATE
0	Issued for use	27/06/2012

	NAME	SIGN.
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Location indictive and subject to change

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5.2.10. Environmentally Significant Areas

Environmentally sensitive areas assessed and confirmed in this field ecology assessment report comprise endangered REs (Category B Environmentally Sensitive Areas), and of concern REs (Category C environmentally sensitive areas). No referable wetlands are within the study area and no EH was mapped.

5.2.11. Regional Ecosystems

The distribution of REs in the study area was ground-truthed and the boundaries of DERM mapped REs were updated to the correct community type and extent. Several RE polygons have been confirmed as different to those shown for the site by current DERM mapping.

Endangered Regional Ecosystems

The search of the RE description database and essential habitat RE mapping indicated that an area of endangered RE 11.9.5 existed, centrally located in the study area. When surveyed, this area was found to be inconsistent with RE 11.9.5 on the basis of land zone, and likely to be more consistent with endangered RE 11.4.3. In addition, the extent of RE 11.4.3 was found to be restricted to the northern edge of the mapped polygon and graded to no concern at present RE 11.5.1 to the south. The survey mapped the ecotone and boundary between the two REs identified within this area.

Ground truthed endangered RE identified within the study area is listed in Table 22 and shown on Figure 7**.**

Table 22: Endangered RE ground truthed within the study area

RE	General Description	Description
11.4.3	*Acacia harpophylla* and/or *Casuarina cristata* shrubby open forest on Cainozonic clay plains.	Open-forest dominated by *Acacia harpophylla* and/or *Casuarina cristata. Acacia harpophylla* (10-16m high) predominates forming a fairly continuous canopy with varying densities of *Casuarina cristata* (14-18m high), forming part of the canopy or emerging above it. *Casuarina cristata* may be dominant or form pure stands particularly in the south of the bioregion (subregions 33, 36). *Eucalyptus spp*. such as *E. orgadophila, E. populnea, E. microcarpa, Eucalyptus woollsiana, E. Cambageana* and *E. thozetiana* (on shallower soils and upper slopes) may be scattered through the canopy or occur as emergents up to 22m high. *Brachychiton rupestris* may also be present in places. An open to dense, tall shrub layer is present, and is dominated by *Eremophila mitchellii* and/or *Geijera parviflora*. Low shrubs are often present, occasionally forming a distinct layer dominated by species such as *Carissa ovata* and *Alectryon diversifolius*. Tree/shrub height may range from 3-8 m. *Melaleuca bracteata* may be present in low-lying areas. The ground layer is sparse to open, and composed of grasses and forbs. Occurs on Cainozoic clay plains with cracking clay soils which are often with a weak gilgai microrelief. The plains may be flat to gently undulating. Soils are often cracking clay which is usually deep to very deep, often self mulching, and sometimes with surface stone. Texture contrast soils and other clays may also be present in places.

*Note that RE 11.4.3 is also consistent with an endangered threatened ecological community under the EPBC Act.

Of concern REs

The current DERM remnant RE mapping shows two small areas of RE 11.3.25/11.3.2/11.3.4 (60/30/10). Both areas are consistent with the mapping and were mostly in good condition. All ground-truthed of concern REs identified within the study area are listed in Table 23 and shown on Figure 7**.**

Table 23: Of Concern regional ecosystems ground-truthed in the study area

RE Code	General Description	REDD (Queensland Herbarium 2011) Description
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 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 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.

No concern at present REs

Current DERM RE mapping showed an area of 11.5.1/11.7.4/11.5.4 (60/20/20) on the eastern boundary of the study area. Field surveys indicated the mapping was accurate and the vegetation was consistent with REs 11.5.1 (predominates) and 11.7.4 (fringing rock pavement areas to the south).

An area to the south, of the no concern at present remnant, was identified in the field survey as unmapped RE 11.7.5 consisting of extensive rock pavements containing sparse vegetation consistent with this RE.

All ground-truthed no concern at present REs identified within the study area are listed in Table 24 and shown on Figure 7.

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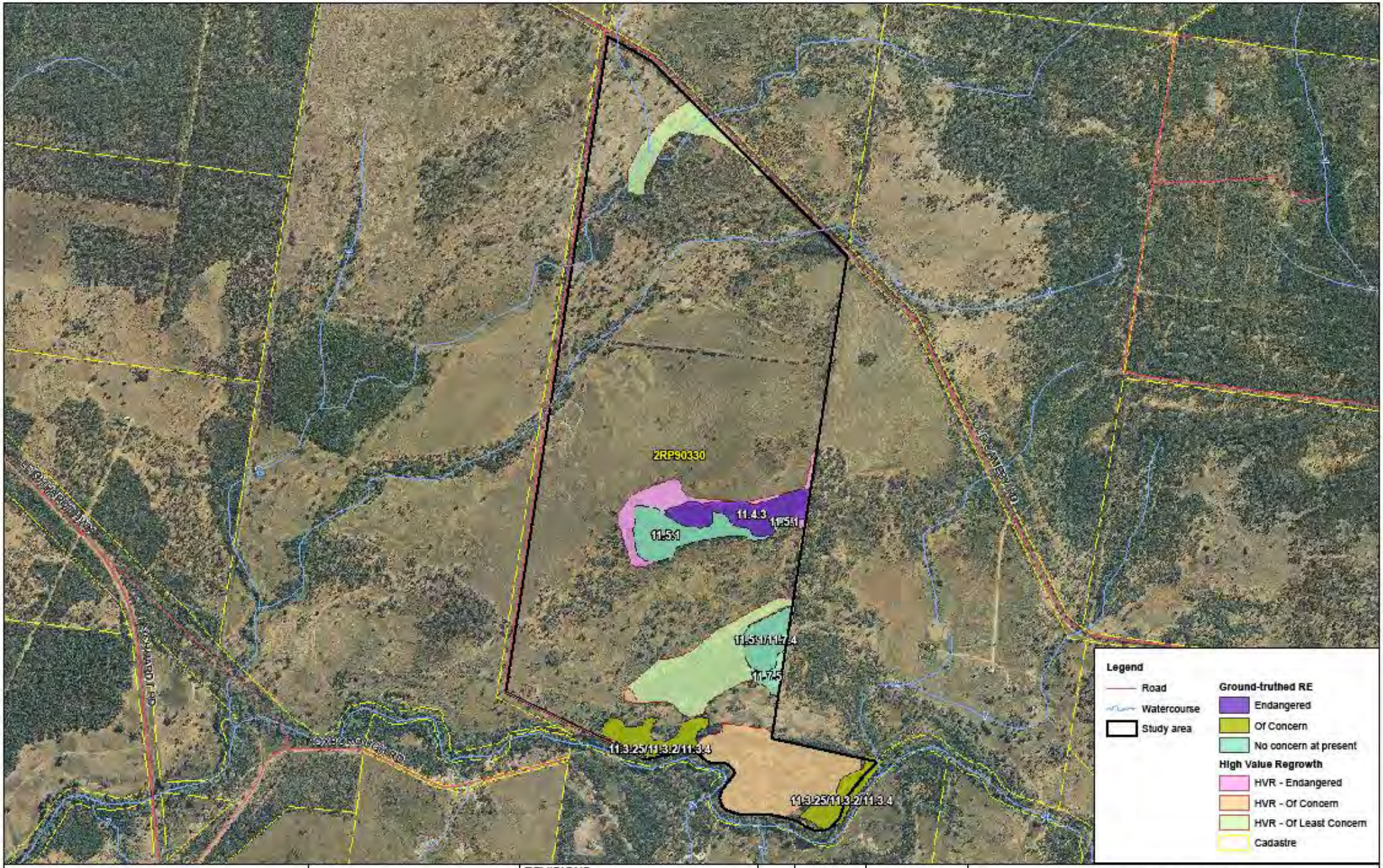
Table 24: No concern at present regional ecosystems ground-truthed in the study area

RE code	General description	REDD Description
11.5.1	*Euclayptus 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.
11.7.4	Mixed *Eucalyptus spp*. woodland on Cainozoic lateritic duricrusts	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.
11.7.5	Shrublands on natural scalds on deeply weathered coarse-grained sedimentary rocks	Shrubland +/- emergent eucalypts. Characteristic genera include *Calytrix spp.*, *Hakea spp.*, *Kunzea spp.*, *Micromyrtus spp.*, *Acacia spp., Melaleuca* spp. and (in the ground layer) *Triodia spp*. Often scattered or fringing emergent tree species are present, including *Eucalyptus exserta, E. panda, E. curtisii, Corymbia trachyphloia* and *Acacia blakei*. Occurs on shallow soils often associated with natural scalds on Cainozoic lateritic duricrusts and sometimes lithosols derived from quartzose sandstone.

Figure 7: Ground-truthed regional ecosystems within the study area (Rev0)



GIS Section - HSSE

Figure 7
Ground-truthed REs within the study area

Date: 27/06/2012

State:	Queensland
Project:	Australia Pacific LNG
Permit:	xx
Map No:	xx
Map ID:	xx
Doc ID:	Q-4500-15-RP-0020

REVISIONS		
0	Issued for use	27/06/2012
REV	DESCRIPTION	DATE

	NAME	SIGN.
DRAWN	KS	
CHECK	MJ	
QA	RC	
APP		

N

Location indictive and subject to change

0 125 250 500 750 1,000

A3 GCS GDA 1994 Metres 1:18,000

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5.2.12. High Value Regrowth

DERM HVR mapping showed an area of vegetation on the western side of no concern at present RE mentioned above. Field surveys confirmed it was advanced regrowth of 11.5.1. This regrowth has reached sufficient height and canopy cover to be considered remnant vegetation. In the south east of the site, between two areas of RE 11.3.25/11.3.2/11.3.4, was an of concern HVR area which is an extension of the RE either side. Endangered HVR was also present on the northern edge of the field and was verified Brigalow threatened ecological community. This was an emerging extension of that community, though it did not currently satisfy the case conditions to be classified as a TEC.

5.2.13. Wetland Ecosystems

Desktop searches and field surveys identified several watercourses as occurring within the study area, including the Columboola Creek on the southern boundary. RE 11.3.25/11.3.2/11.3.4 (60/30/10) occurred in association with Columboola Creek, refer to Figure 7.

5.2.14. Weeds and Pests

Weeds

The survey of the site recorded four different weed species. Two of these species were Tiger Pear (*Opuntia aurantiaca*) and Mother of Millions (*Bryophyllum delagoense*), which are listed as class 2 declared weeds under the *Land Protection (Pest and Stock Route Management) Regulation 2003*. The other species were Noogoora Burr (*Xanthium occidentale*) and Sand burr (*Cenchrus incertus*) which are not declared pest species under Queensland legislation. These species were encountered within the pasture and remnant vegetation and their positions surveyed. Species recorded are identified on Figure 6.

Table 25: Introduced flora (excluding pasture species) recorded during the field survey of the study area

Common Name	Scientific Name	Status
Tiger Pear	*Opuntia aurantiaca*	Class 2
Mother of Millions	*Bryophyllum delagoense*	Class 2
Noogoora Burr	*Xanthium occidentale*	Agricultural weed
Sandburr	*Cenchrus incertus*	Agricultural weed

Pest Fauna

No pest fauna species listed under state legislation were identified through opportunistic observation during the flora survey of the study area.

5.2.15. Disturbance

The site was heavily disturbed with signs of fragmentation, regrowth among the recorded species, species thinning, and clearing of fragile, duplex type soils has increased the potential for further erosion.

6. Conclusion & Recommendations

Following the survey of the study area it was confirmed that DERM mapped REs were reasonably accurate in their descriptions, apart from the observed land zone error associated with the Brigalow community and the reduced extent of that community.

After comparing various environmental data sources regarding environmental matters, the following is recommended:

- Development should be located outside remnant vegetation areas;
- The small area of verified EBPC threatened ecological community Brigalow (*Acacia harpophylla* dominant and co-dominant) in Figure 4 should be avoided;
- The endangered HVR fringing the north of the Brigalow community should be avoided if possible;
- Areas containing *Gonocarpus urceolatus* and *Rutidosis lanata* should be avoided;
- Preclearance surveys should be undertaken in areas of habitat that cannot be avoided to determine the presence/absence of nest sites of diurnal raptors and other threatened avian, reptilian and mammalian species so that appropriate management measures can be implemented in accordance with the gas fields threatened fauna management plan;
- Specific survey effort should be devoted to the Brigalow Belt reptiles that may occur in these noted potential habitat areas, being the Yakka Skink (*Egernia rugosa*), Brigalow Scaly-foot (*Paradelma orientalis*) and Dunmall's Snake (*Furina dunmalli*);
- Identified hollows trees should be avoided;
- Where avoidance is not possible hollow bearing trees should be flagged prior to the commencement of clearing. These trees should be left for a period of two to three days following the clearing of the surrounding vegetation to encourage fauna to move into adjacent areas. When these trees are cleared they should be nudged with machinery several times to flush any fauna still present prior to being felled;
- All fauna captured during the pre-clearing survey and spotter/catcher activities should be re-located to an area of habitat which is outside of planned infrastructure for the project, i.e. an area of habitat which will not be subject to future disturbance. The relocation site should be agreed with DERM prior to commencing works;
- Other noted habitat areas (i.e. riparian vegetation along Columboola Creek, rock pavement edges) should be avoided;
- A 100m buffer should be adopted around Columboola Creek for all development; and
- Weed species should be treated in order to minimise the risk of spreading them. These species should be controlled before construction. Aim to reduce spread or perform vehicle wash-down on all vehicles leaving the property.

It is recommended that the findings in this report are considered during detailed development planning workshops such that disturbance to the ecological values of the site and locality may be avoided wherever practicable. Where disturbance is unavoidable, impact mitigation measures are to be implemented in accordance with the approved site environmental management plan and regulatory approval conditions.

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TSSC, (2006) White Box - Yellow Box - Blakely's Red Gum Grassy Woodlands and Derived Native Grasslands. Advice to the Minister for the Environment, Water, Heritage and the Arts, from the Threatened Species Scientific Committee on Amendments to the List of Ecological Communities under the *Environment Protection and Biodiversity Conservation Act 1999.* *http://www.environment.gov.au/biodiversity/threatened/communities/pubs/box-gum.pdf*

Unidel (2012a) Australia Pacific LNG Ecology Assessment Report, Lot 35 BWR450, Lot 27 BWR416, and Lot 36 SP116140 (Q-4500-15-RP-0016).

Unidel (2012b) Australia Pacific LNG Ecology Assessment Report, Lot 18 BWR 98, Lot 20 BWR 267, Lot 21 BWR 98, Lot 30 BWR 98, and Lot 51 RP896380 (Q-4500-15-RP-0011).

Unidel (2012c) Australia Pacific LNG Ecology Assessment Report, 12 BWR64 (Q-4500-15-RP-0013).

8. Appendix A: Results of EPBC protected matters search

Australian Government
Department of Sustainability, Environment, Water, Population and Communities

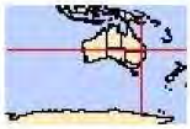
EPBC Act Protected Matters Report: Coordinates

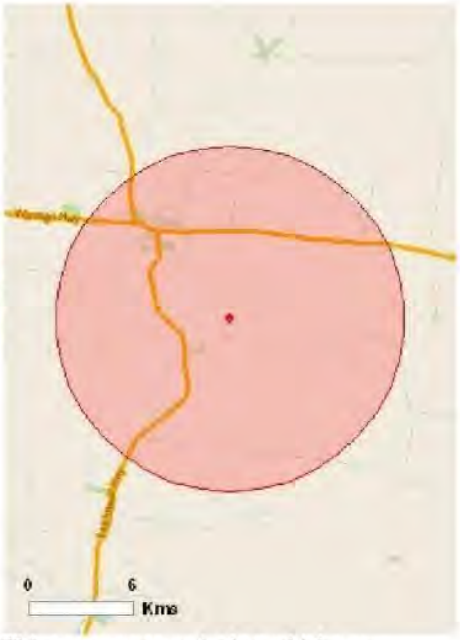
This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

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: 04/08/11 11:25:22





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

Summary

Details

Matters of NES
Other matters protected by the EPBC Act
Extra Information

Caveat

Acknowledgements

Coordinates
Buffer: 10.0Km

Summary

Matters of National Environmental 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 Significance (Ramsar Wetlands):	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Areas:	None
Threatened Ecological Communitites:	5
Threatened Species:	17
Migratory Species:	11

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

Please note that the current dataset on Commonwealth land is not complete. Further information on Commonwealth land would need to be obtained from relevant sources including Commonwealth agencies, local agencies, and land tenure maps.

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.au/epbc/permits/index.html.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	11
Whales and Other Cetaceans:	None

Critical Habitats:	None
Commonwealth Reserves:	None

Report Summary for Extra Information

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

Place on the RNE:	None
State and Territory Reserves:	None
Regional Forest Agreements:	None
Invasive Species:	10
Nationally Important Wetlands:	None

Details

Matters of National Environmental Significance

Wetlands of International Significance (RAMSAR Sites) [Resource Information]

Name	Proximity
Narran lake nature reserve	Upstream from Ramsar site

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
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland	Critically 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
Brigalow (Acacia harpophylla dominant and co-dominant)	Endangered	Community known to occur within area
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered	Community may occur within area
Weeping Myall Woodlands	Endangered	Community likely to 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)	Vulnerable	Species or species habitat likely to occur within area

[64440]

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 peelii		
Murray Cod, Cod, Goodoo [68443]	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 timoriensis (South-eastern form)		
Greater Long-eared Bat, South-eastern Long-eared Bat [66888]	Vulnerable	Species or species habitat may 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
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
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 may occur within area

Migratory Species

[Resource Information]

Name	Status	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 habitat may occur within area
Nettapus coromandelianus albipennis		
Australian Cotton Pygmy-goose [25979]		Species or species habitat may occur within area
Rostratula benghalensis s. lat.		
Painted Snipe [889]	Vulnerable*	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species [Resource Information]

Name	Status	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
Nettapus coromandelianus albipennis		
Australian Cotton Pygmy-goose [25979]		Species or species habitat may occur within area
Rostratula benghalensis s. lat.		
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, 2001.

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		
Acacia nilotica subsp. indica		
Prickly Acacia [6196]		Species or species habitat may occur within area
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		Species or species habitat likely to occur within area

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 resolutions.

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 information sources.

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.

Coordinates

-26.706 150.224

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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Last updated: Thursday, 16-Sep-2010 09:13:25 EST

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| Australian Government |

9. Appendix B: Results of Wildlife Online Database

Queensland Government

Wildlife Online Extract

Search Criteria: Species List for a Specified Point
Species: All
Type: All
Status: All
Records: All
Date: All
Latitude: 26.706
Longitude: 150.224
Distance: 5
Email: rfloyd@unidel.com.au
Date submitted: Friday 02 Sep 2011 11:08:01
Date extracted: Friday 02 Sep 2011 11:16:46

The number of records retrieved = 148

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			1
animals	amphibians	Limnodynastidae	*Limnodynastes tasmaniensis*	spotted grassfrog		C		1
animals	birds	Acanthizidae	*Gerygone fusca*	western gerygone		C		1
animals	birds	Acanthizidae	*Acanthiza apicalis*	inland thornbill		C		1
animals	birds	Acanthizidae	*Acanthiza reguloides*	buff-rumped thornbill		C		1
animals	birds	Acanthizidae	*Gerygone albogularis*	white-throated gerygone		C		1
animals	birds	Acanthizidae	*Smicrornis brevirostris*	weebill		C		4
animals	birds	Acanthizidae	*Acanthiza uropygialis*	chestnut-rumped thornbill		C		1
animals	birds	Acanthizidae	*Acanthiza chrysorrhoa*	yellow-rumped thornbill		C		1
animals	birds	Accipitridae	*Aquila audax*	wedge-tailed eagle		C		1
animals	birds	Accipitridae	*Haliastur sphenurus*	whistling kite		C		2
animals	birds	Accipitridae	*Aviceda subcristata*	Pacific baza		C		1
animals	birds	Acrocephalidae	*Acrocephalus australis*	Australian reed-warbler		C		1
animals	birds	Anatidae	*Anas superciliosa*	Pacific black duck		C		1
animals	birds	Anatidae	*Chenonetta jubata*	Australian wood duck		C		1
animals	birds	Anhingidae	*Anhinga novaehollandiae*	Australasian darter		C		2
animals	birds	Ardeidae	*Ardea modesta*	eastern great egret		C		2
animals	birds	Ardeidae	*Ardea pacifica*	white-necked heron		C		1
animals	birds	Ardeidae	*Egretta novaehollandiae*	white-faced heron		C		3
animals	birds	Artamidae	*Cracticus tibicen*	Australian magpie		C		4
animals	birds	Artamidae	*Artamus personatus*	masked woodswallow		C		1
animals	birds	Artamidae	*Strepera graculina*	pied currawong		C		1
animals	birds	Artamidae	*Cracticus torquatus*	grey butcherbird		C		3
animals	birds	Artamidae	*Cracticus nigrogularis*	pied butcherbird		C		3
animals	birds	Artamidae	*Artamus leucorynchus*	white-breasted woodswallow		C		3
animals	birds	Burhinidae	*Burhinus grallarius*	bush stone-curlew		C		1
animals	birds	Cacatuidae	*Cacatua galerita*	sulphur-crested cockatoo		C		4
animals	birds	Cacatuidae	*Cacatua sanguinea*	little corella		C		1
animals	birds	Cacatuidae	*Nymphicus hollandicus*	cockatiel		C		4
animals	birds	Cacatuidae	*Eolophus roseicapillus*	galah		C		5
animals	birds	Campephagidae	*Lalage sueurii*	white-winged triller		C		2
animals	birds	Campephagidae	*Coracina novaehollandiae*	black-faced cuckoo-shrike		C		3
animals	birds	Charadriidae	*Elseyornis melanops*	black-fronted dotterel		C		1
animals	birds	Columbidae	*Columba livia*	rock dove	Y			2
animals	birds	Columbidae	*Geopelia striata*	peaceful dove		C		3
animals	birds	Columbidae	*Ocyphaps lophotes*	crested pigeon		C		2
animals	birds	Columbidae	*Geopelia cuneata*	diamond dove		C		1
animals	birds	Coraciidae	*Eurystomus orientalis*	dollarbird		C		1
animals	birds	Corcoracidae	*Struthidea cinerea*	apostlebird		C		3
animals	birds	Corcoracidae	*Corcorax melanorhamphos*	white-winged chough		C		1
animals	birds	Corvidae	*Corvus orru*	Torresian crow		C		5
animals	birds	Corvidae	*Corvus coronoides*	Australian raven		C		1
animals	birds	Cuculidae	*Chalcites lucidus*	shining bronze-cuckoo		C		1
animals	birds	Estrildidae	*Neochmia modesta*	plum-headed finch		C		1
animals	birds	Estrildidae	*Taeniopygia bichenovii*	double-barred finch		C		1
animals	birds	Falconidae	*Falco berigora*	brown falcon		C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Falconidae	*Falco cenchroides*	nankeen kestrel		C		1
animals	birds	Halcyonidae	*Dacelo novaeguineae*	laughing kookaburra		C		3
animals	birds	Halcyonidae	*Todiramphus sanctus*	sacred kingfisher		C		3
animals	birds	Hirundinidae	*Hirundo neoxena*	welcome swallow		C		2
animals	birds	Hirundinidae	*Petrochelidon nigricans*	tree martin		C		2
animals	birds	Hirundinidae	*Petrochelidon ariel*	fairy martin		C		1
animals	birds	Maluridae	*Malurus cyaneus*	superb fairy-wren		C		5
animals	birds	Maluridae	*Malurus lamberti*	variegated fairy-wren		C		1
animals	birds	Megaluridae	*Cincloramphus mathewsi*	rufous songlark		C		1
animals	birds	Meliphagidae	*Sugomel niger*	black honeyeater		C		1
animals	birds	Meliphagidae	*Entomyzon cyanotis*	blue-faced honeyeater		C		1
animals	birds	Meliphagidae	*Lichmera indistincta*	brown honeyeater		C		4
animals	birds	Meliphagidae	*Lichenostomus chrysops*	yellow-faced honeyeater		C		2
animals	birds	Meliphagidae	*Philemon corniculatus*	noisy friarbird		C		3
animals	birds	Meliphagidae	*Melithreptus gularis*	black-chinned honeyeater		NT		1
animals	birds	Meliphagidae	*Manorina flavigula*	yellow-throated miner		C		2
animals	birds	Meliphagidae	*Lichenostomus leucotis*	white-eared honeyeater		C		1
animals	birds	Meliphagidae	*Lichenostomus penicillatus*	white-plumed honeyeater		C		2
animals	birds	Meliphagidae	*Melithreptus brevirostris*	brown-headed honeyeater		C		1
animals	birds	Meliphagidae	*Plectorhyncha lanceolata*	striped honeyeater		C		4
animals	birds	Meliphagidae	*Acanthagenys rufogularis*	spiny-cheeked honeyeater		C		1
animals	birds	Meliphagidae	*Philemon citreogularis*	little friarbird		C		5
animals	birds	Meliphagidae	*Myzomela sanguinolenta*	scarlet honeyeater		C		1
animals	birds	Meliphagidae	*Manorina melanocephala*	noisy miner		C		4
animals	birds	Meropidae	*Merops ornatus*	rainbow bee-eater		C		1
animals	birds	Monarchidae	*Myiagra rubecula*	leaden flycatcher		C		1
animals	birds	Monarchidae	*Grallina cyanoleuca*	magpie-lark		C		6
animals	birds	Nectariniidae	*Dicaeum hirundinaceum*	mistletoebird		C		2
animals	birds	Neosittidae	*Daphoenositta chrysoptera*	varied sittella		C		1
animals	birds	Oriolidae	*Oriolus sagittatus*	olive-backed oriole		C		2
animals	birds	Pachycephalidae	*Colluricincla harmonica*	grey shrike-thrush		C		1
animals	birds	Pachycephalidae	*Pachycephala pectoralis*	golden whistler		C		1
animals	birds	Pachycephalidae	*Pachycephala rufiventris*	rufous whistler		C		3
animals	birds	Pardalotidae	*Pardalotus striatus*	striated pardalote		C		5
animals	birds	Pardalotidae	*Pardalotus punctatus*	spotted pardalote		C		1
animals	birds	Petroicidae	*Petroica goodenovii*	red-capped robin		C		1
animals	birds	Phalacrocoracidae	*Phalacrocorax sulcirostris*	little black cormorant		C		3
animals	birds	Pomatostomidae	*Pomatostomus temporalis*	grey-crowned babbler		C		3
animals	birds	Psittacidae	*Platycercus adscitus*	pale-headed rosella		C		2
animals	birds	Psittacidae	*Aprosmictus erythropterus*	red-winged parrot		C		1
animals	birds	Psittacidae	*Trichoglossus chlorolepidotus*	scaly-breasted lorikeet		C		1
animals	birds	Rallidae	*Gallinula tenebrosa*	dusky moorhen		C		2
animals	birds	Rhipiduridae	*Rhipidura albiscapa*	grey fantail		C		2
animals	birds	Rhipiduridae	*Rhipidura leucophrys*	willie wagtail		C		6
animals	birds	Threskiornithidae	*Threskiornis molucca*	Australian white ibis		C		3
animals	mammals	Macropodidae	*Wallabia bicolor*	swamp wallaby		C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	mammals	Macropodidae	*Macropus rufogriseus*	red-necked wallaby		C		1
animals	mammals	Macropodidae	*Macropus giganteus*	eastern grey kangaroo		C		1
animals	mammals	Phalangeridae	*Trichosurus vulpecula*	common brushtail possum		C		1
animals	mammals	Potoroidae	*Aepyprymnus rufescens*	rufous bettong		C		1/1
animals	reptiles	Gekkonidae	*Gehyra dubia*			C		1
animals	reptiles	Gekkonidae	*Strophurus taenicauda*	golden-tailed gecko		NT		1/1
animals	reptiles	Scincidae	*Cryptoblepharus pulcher pulcher*	elegant snake-eyed skink		C		1
plants	ferns	Ophioglossaceae	*Ophioglossum reticulatum*			C		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	*Leptorhynchos baileyi*			C		1/1
plants	higher dicots	Asteraceae	*Solenogyne bellioides*			C		1/1
plants	higher dicots	Asteraceae	*Brachyscome multifida var. dilatata*			C		1/1
plants	higher dicots	Asteraceae	*Ozothamnus diotophyllus*			C		2/2
plants	higher dicots	Asteraceae	*Rutidosis murchisonii*			C		2/2
plants	higher dicots	Asteraceae	*Sigesbeckia fugax*			C		1/1
plants	higher dicots	Byttneriaceae	*Commersonia pedleyi*			C		3/3
plants	higher dicots	Ericaceae	*Leucopogon biflorus*			C		1/1
plants	higher dicots	Ericaceae	*Leucopogon mitchellii*			C		1/1
plants	higher dicots	Euphorbiaceae	*Monotaxis macrophylla*			C		2/2
plants	higher dicots	Fabaceae	*Cullen patens*	bullamon lucerne		C		1/1
plants	higher dicots	Fabaceae	*Dillwynia retorta*			C		1/1
plants	higher dicots	Fabaceae	*Mirbelia aotoides*			C		1/1
plants	higher dicots	Fabaceae	*Crotalaria mitchellii subsp. mitchellii*			C		1/1
plants	higher dicots	Goodeniaceae	*Goodenia delicata*			C		1/1
plants	higher dicots	Lamiaceae	*Westringia cheelii*			C		1/1
plants	higher dicots	Lamiaceae	*Prostanthera ringens*			C		1/1
plants	higher dicots	Lamiaceae	*Spartothamnella puberula*			C		1/1
plants	higher dicots	Meliaceae	*Owenia acidula*	emu apple		C		1/1
plants	higher dicots	Mimosaceae	*Acacia aprepta*	Miles mulga		C		4/4
plants	higher dicots	Mimosaceae	*Acacia spectabilis*	pilliga wattle		C		1/1
plants	higher dicots	Mimosaceae	*Acacia leiocalyx subsp. leiocalyx*			C		1/1
plants	higher dicots	Mimosaceae	*Acacia burrowii*			C		1/1
plants	higher dicots	Myrtaceae	*Eucalyptus panda*			C		2/2
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 sessilis*			C		2/2
plants	higher dicots	Myrtaceae	*Kardomia jucunda*			C		2/2
plants	higher dicots	Onagraceae	*Oenothera lindheimeri*		Y			1/1
plants	higher dicots	Proteaceae	*Hakea purpurea*			C		1/1
plants	higher dicots	Rhamnaceae	*Cryptandra armata*			C		2/2
plants	higher dicots	Rutaceae	*Phebalium nottii*	pink phebalium		C		2/2
plants	higher dicots	Rutaceae	*Zieria aspalathoides subsp. aspalathoides*			C		1/1
plants	higher dicots	Rutaceae	*Boronia occidentalis*			C		1/1
plants	higher dicots	Rutaceae	*Philotheca difformis subsp. difformis*			C		2/2

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	higher dicots	Santalaceae	*Santalum lanceolatum*			C		1/1
plants	higher dicots	Sapindaceae	*Dodonaea biloba*			C		3/3
plants	higher dicots	Sapindaceae	*Dodonaea vestita*			C		1/1
plants	higher dicots	Solanaceae	*Solanum nemophilum*			C		1/1
plants	monocots	Poaceae	*Aristida echinata*			C		1/1
plants	monocots	Poaceae	*Cenchrus spinifex*		Y			1/1
plants	monocots	Poaceae	*Paspalum urvillei*	vasey grass	Y			1/1
plants	monocots	Poaceae	*Sporobolus creber*			C		1/1
plants	monocots	Poaceae	*Cynodon nlemfuensis var. robustus*		Y			1/1
plants	monocots	Potamogetonaceae	*Potamogeton tricarinatus*	floating pondweed		C		1/1

CODES

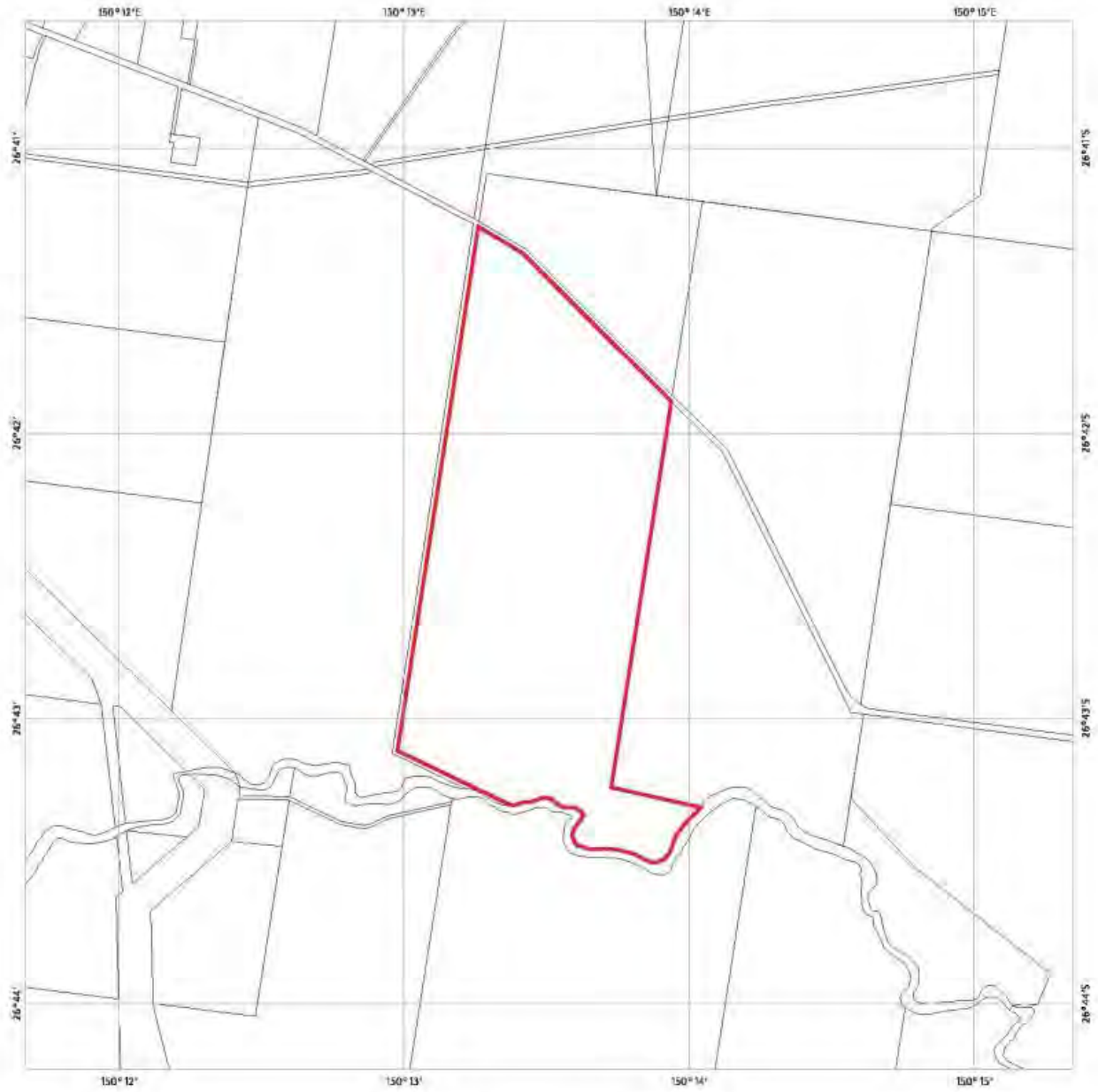
I - Y indicates that the taxon is introduced to Queensland and has naturalised.

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: Results of DERM Referable Wetland search



Map of Referable Wetlands
Wetland Protection Areas

Requested By: MJONES@UNIDEL.COM.AU
Date: 28 Feb 12 Time: 15.19.54

Centered on Lot on Plan:
2 RP90330

Legend

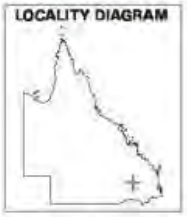
Selected Land Parcel
Property Boundary

Wetland Protection Areas

HES Wetland
Trigger Area

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

Note:
This map shows the location of wetland protection areas which are defined under the Environmental Protection Regulation 2008.

Within wetland protection areas, certain types of development involving high impact earthworks are made assessable under Schedule 3 of the Sustainable Planning Regulation 2009.

The Department of Environment and Resource Management has been made a concurrence agency under Schedule 7 of the Sustainable Planning Regulation 2009 for assessable development involving high impact earthworks within wetland protection areas.

The policy outcome and assessment criteria for assessing these applications are described in the State Planning Policy 4/11: Protecting Wetlands of High Ecological Significance in Great Barrier Reef Catchments.

This map is produced at a scale relevant to the size of the lot on plan identified and should be printed at A4 size in portrait orientation. Consideration of the effects of mapped scale is necessary when interpreting data at a large scale.

For further information or assistance with interpretation of this product, please contact the Department of Environment and Resource Management at <www.derm.qld.gov.au> or email <planning.support@derm.qld.gov.au>.

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11. Appendix D: Flora recorded at the study area during field survey

Family	Scientific Name	Common Name	NC Act Status
Asteraceae	*Carthamus lanatus**	saffron thistle	Introduced
Asteraceae	*Centaurea melitensis**	Maltese cockspur	Introduced
Asteraceae	*Xanthium occidentale**	Noogoora burr	Introduced
Asteraceae	*Xanthium spinosum**	Bathurst burr	Introduced
Cactaceae	*Opuntia stricta* (Class 2)*	prickly pear	Class 2 declared weed (LP Act)
Cactaceae	*Opuntia tomentosa* (Class 2)*	velvety tree pear	Class 2 declared weed (LP Act)
Capparaceae	*Capparis mitchellii*	wild orange	C
Casuarinaceae	*Casuarina cristata*	belah	C
Casuarinaceae	*Casuarina cunninghamiana*	river oak	C
Chenopodiaceae	*Einadia nutans*	nodding salt bush	C
Chenopodiaceae	*Sclerolaena birchii*	galvanised burr	C
Chenopodiaceae	*Sclerolaena muricata*	prickly roly-poly	C
Chenopodiaceae	*Tetragonia tetragonioides*	Warrigul greens	C
Cuppressaceae	*Callitris glaucophylla*	white cypress pine	C
Euphorphiaceae	*Ricinus communis**	castor oil plant	Introduced
Marseleaceae	*Marsilea drummondii*	nardoo	C
Meliaceae	*Owenia acidula*	emu apple	C
Mimosaceae	*Acacia excelsa*	ironwood	C
Mimosaceae	*Acacia farnesiana**	mimosa bush	C
Mimosaceae	*Acacia pendula*	weeping myall	C
Mimosaceae	*Acacia salicina*	willow wattle	C
Mimosaceae	*Acacia stenophylla*	river coobah	C
Myroporaceae	*Eremophila longifolia*	long leaf eremophila	C
Myroporaceae	*Eremophila mitchellii*	false sandalwood	C
Myrtaceae	*Angophora floribunda*	rough barked apple	C
Myrtaceae	*Corymbia clarksoniana*	Clarkson's bloodwood	C
Myrtaceae	*Corymbia tessellaris*	Morton Bay ash	C
Myrtaceae	*Eucalyptus chloroclada*	Baradine red gum	C
Myrtaceae	*Eucalyptus coolabah*	coolabah	C
Myrtaceae	*Eucalyptus populnea*	poplar box	C
Myrtaceae	*Eucalyptus tereticornis*	Queensland blue gum	C

Family	Scientific Name	Common Name	NC Act Status
Orchidaceae	*Cymbidium canicalatum* (Type A)	black orchid	Type A
Papaveraceae	*Argemone ochroleuca**	Mexican poppy	Introduced
Poaceae	*Aristida jerichoensis*	Jericho wire grass	C
Poaceae	*Cenchrus ciliare**	buffel grass	Introduced
Poaceae	*Chloris truncata*	windmill grass	C
Poaceae	*Cirsium vulgare**	spear thistle	Introduced
Poaceae	*Conyza bonariensis**	tall fleabane	Introduced
Poaceae	*Dichanthium sericeum*	Queensland blue grass	C
Poaceae	*Heteropogon contortus*	black spear grass	C
Poaceae	*Megathyrsus maximus**	green panic	Introduced
Poaceae	*Melinis repens**	red Natal grass	Introduced
Polygonaceae	*Muehlenbeckia florulenta*	lignum	C
Proteaceae	*Grevillea striata*	beefwood	C
Rubiaceae	*Psydrax oleifolia*	brush myrtle	C
Rutaceae	*Geijera parvifolia*	wilga	C
Sapindaceae	*Alectryon oleifolius*	bullock bush	C
Sapindaceae	*Atalaya hemiglauca*	whitewood	C
Solanaceae	*Solanum* spp.		C
Sterculiaceae	*Brachychiton populneus* (Type A)	kurrajong	C
Verbenaceae	*Lippia canescens**	lippia	Introduced
Verbenaceae	*Verbena aristigera**	Mayne's pest	Introduced

C : Least concern

Introduced: Introduced (International) - naturalised from overseas

Uncontrolled when printed unless issued and stamped Controlled Copy.

12. Appendix E: Fauna recorded at the study area during field survey

Class	Family	Scientific Name	Common Name	NC Act Status
Birds	Accipitridae	*Aquila audax*	wedge-tailed eagle	C
Birds	Anatidae	*Chenonetta jubata*	wood duck	C
Birds	Ardeidae	*Egretta intermedia*	intermediate egret	C
Birds	Artamidae	*Cracticus torquatus*	pied butcherbird	C
Birds	Artamidae	*Gymnorhina tibicen*	Australian magpie	C
Birds	Cacatuidae	*Cactatua galerita*	sulphur-crested cockatoo	C
Birds	Cacatuidae	*Eolophus roseicapillus*	galah	C
Birds	Campephagidae	*Coracina novaehollandiae*	black faced cuckoo-shrike	C
Birds	Columbidae	*Ocyphaps lophotes*	crested pigeon	C
Birds	Corcoracidae	*Corcorax melanorhamphos*	white-winged chough	C
Birds	Corcoracidae	*Struthidea cinerea*	apostlebird	C
Birds	Corvidae	*Corvus orru*	Torresian crow	C
Birds	Cuculidae	*Centropus phasianinus*	pheasant coucal	C
Birds	Dicruridae	*Grallina cyanoleuca*	magpie-lark	C
Birds	Falconidae	*Falco cenchroides*	nankeen kestrel	C
Birds	Halcyonidae	*Todiramphus macleayii*	forest kingfisher	C
Birds	Meliphagidae	*Manorina melanocephala*	noisy miner	C
Birds	Pomatostomidae	*Pomatostomus temporalis temporalis*	grey crowned babbler	C
Birds	Psittacidae	*Platycercus adscitus*	pale-headed rosella	C
Birds	Psittacidae	*Psephotus haematonotus*	red-rumped parrot	C
Birds	Psittacidae	*Trichoglossus haematodus*	rainbow lorikeet	C
Birds	Threskiornithidae	*Threskiornis spinicollis*	straw-necked ibis	C
Mammals	Canidae	*Vulpes vulpes*	Red Fox	(Introduced)
Mammals	Leporidae	*Lepus europaeus*	European hare	(Introduced)
Mammals	Macropodidae	*Macropus giganteus*	eastern grey kangaroo	C
Mammals	Macropodidae	*Macropus rufogriseus*	red-necked wallaby	C
Mammals	Suidae	*Sus scrofa*	Feral Pig	(Introduced)
Reptiles	Elapidae	*Pseudonaja textilis*	eastern brown snake	C

LC : Least concern

Introduced: Introduced (International) - naturalised from overseas