Australia Pacific LNG

Ecology Assessment Report
Lot 17BWR98

Q-4500-15-RP-0004

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1. Introduction

This report has been completed by Boobook Ecological Consultants approved by the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) in writing on the 28th of June 2011.

The field surveys were conducted by a team of ecologists lead by Craig Eddie, approved by DSEWPaC in writing on the 31st of March 2011, Principal Ecologist for Boobook Ecological Consultants.

2. Site Context

The property comprises Lot 17 on Plan BWR98. The total area of the land parcel is approximately 1104 ha It is located approximately 12km southeast of Miles and 23km northeast of Condamine in southern inland Queensland. The bulk of the property is located in Province 31 (Eastern Darling Downs) of the Brigalow Belt Bioregion, while the extreme northern tip lies in Province 27 (Barakula) and the southeast corner lies in Province 26 (Southern Downs). The property is accessed via Roxborough Road at the northern end and Fairymeadow Road which borders its southern side. It lies within PL267.

Current land uses on the property are agricultural, primarily cropping and grazing of domestic livestock including a cattle feedlot. The majority of native vegetation has been cleared, however, small patches of remnant vegetation are present, mainly in the form of shade lines, isolated clumps and a larger patch associated with Columboola Creek at the extreme northern end. Little regrowth is present.

Soils on the property are predominantly grey or black cracking clays and the topography is generally flat or gently undulating clay plains with very shallow to moderately deep gilgai. Bleached loams or sands over brown, black or red mottled, yellowish brown clays occur at the northern end of the property in association with lateritised sandstone remnants. Some local creek alluvia is also present in this area.

The closest weather station to the site is Roma, with a climate consisting of yearly average temperatures ranging from a maximum of 34.1 in January to a minimum of 3.9 in July. The annual rainfall of Roma for 2010 was 582.5mm, with the highest rainfall occurring in February (90.3mm) and the lowest occurring in July (24.2mm).

3. Methodology

3.1 Desktop and Literature Review

Sources used to obtain information for the desktop and literature review are as follows:

- *Nature Conservation Act 1992* (NCA) Protected Species Lists
- *Environmental Protection Biodiversity and Conservation 1999* (EPBC) Protected Matters Search Tool
- Geosciences Australia Waterways mapping
- Department of Environment and Resource Management Regional Ecosystem version 6.0b digital GIS layer

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- Department of Environment and Resource Management Wildnet database
- Department of Environment and Resource Management Referrable Wetlands database
- Queensland Herbarium HERBRECS database
- Queensland Museum database
- Hando and Hando (1997).

Data searches were conducted using a 5.5km buffer around the approximate centre point of the property.

3.2 Field Survey

Scouting surveys were conducted in general accordance with the *BioCondition – A Condition Assessment Framework for Terrestrial Biodiversity in Queensland – Assessment Manual – Version 2.1* (Biocondition Manual)(Eyre et al, 2011) and the *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland* (Neldner et al 2005).

3.2.1 *Vegetation Community Surveys*

General baseline botanical surveys were undertaken to describe dominant flora and vegetation community structure throughout the property. Botanical surveys were consistent with the quaternary level of data collection as described in *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland* (Neldner et al, 2005).

Vegetation community polygons were confirmed, mapped and identified in accordance with Queensland Regional Ecosystem (Biodiversity Status) and EPBC Threatened Ecological Community criteria. Areas of remnant vegetation were clearly distinguished from areas of regrowth vegetation that does not satisfy remnant regional ecosystem or EPBC Threatened Ecological Community criteria.

3.2.2 *Habitat Survey*

Habitat surveys were conducted within each Vegetation Community Survey location within the aforementioned Vegetation Community Area. A range of habitat features, such as log abundance, hollow tree size class and abundance were noted.

3.2.3 *Threatened Flora and Fauna surveys*

'Threatened' species are those listed under the *Environment Protection Biodiversity Conservation Act* 1999 and the *Nature Conservation (Wildlife) Regulation* 2006.

Targeted flora and fauna searches were undertaken within the vicinity of a Vegetation Community Survey/Habitat Feature plot where field ecologists deem the given area to be of sufficient potential value to a threatened species to warrant such a search.

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

3.2.4 *Exotic Flora and Fauna Surveys*

Environmental and declared pest (as defined by the *Land Protection (Pest and Stock Route Management)* Act 2002) populations were noted and abundance recorded at the time of the survey.

3.2.5 *Disturbance Surveys*

Evidence of disturbance throughout the property was recorded for type, severity and estimated time of most recent occurrence.

4. Results and Discussion

In order to develop an understanding of the ecology of the site, a detailed desktop and literature review and field ecological scouts were performed by a certified ecologist. The results are detailed below.

4.1 Desktop and Literature Review

Data sources used for desktop searches for 17BWR98 are listed in section 1.1. A summary of results follows.

4.1.1 *Matters of National Environmental Significance*

A search for Matters of National Environmental Significance under the *Environment Protection and Biodiversity Conservation Act 1999* (hereafter EPBC) was most recently performed on Thursday, 14 July 2011. This search lists Threatened Ecological Communities, EPBC Listed Flora, EPBC Listed Fauna, Migratory Species, Pest Fauna, Weeds of National Significance (WONS) and Ramsar wetland sites. The results of these searches can be seen below. For raw data see Appendix A.

4.1.1.1 Threatened Ecological Communities

The results of the EPBC Protected Matters search for Threatened Ecological Communities and their likelihood of occurrence at 17BWR98 can be seen below in Table 1.

Table 1 EPBC Protected Matters search tool results for Threatened Ecological Communities predicted to occur at 17BWR98 and their Likelihood of Occurrence

Name	Status	Likelihood of Occurrence
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	Critically Endangered	Community may to occur within area

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Native Grassland		
Brigalow (*Acacia harpophylla* dominant and co-dominant)	Endangered	Community known to occur within area
Weeping Myall Woodlands	Endangered	Community likely to occur within area

4.1.1.2 Listed Flora

The results of the EPBC Protected Matters search for Listed Flora Species and their likelihood of occurrence at 17BWR98 can be seen below in Table 2.

Table 2 EPBC Protected Matters search tool results for Listed Flora predicted to occur at 17BWR98 and their Likelihood of Occurrence

Scientific Name	Common Name	Status	Likelihood of Occurrence
Homopholis belsonii	Belson's Panic	Vulnerable	Species or species habitat may occur within area
Westringia parvifolia	-	Vulnerable	Species or species habitat likely to occur within area

4.1.1.3 Listed Fauna

The results of the EPBC Protected Matters search for Listed Fauna Species and their likelihood of occurrence at 17BWR98 can be seen below in Table 3.

Table 3 EPBC Protected Matters search tool results for Listed Fauna predicted to occur at 17BWR98 and their Likelihood of Occurrence

Class	Scientific Name	Common Name	Status	Likelihood of Occurrence
Birds	*Erythrotriorchis radiatus*	Red Goshawk	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
	Neochmia ruficauda ruficauda	Star Finch	Endangered	Species or species habitat likely to occur within area
	Rostratula australis	Australian Painted Snipe	Vulnerable	Species or species habitat may occur within area
Fish	*Maccullochella peelii peelii*	Murray Cod, Cod, Goodoo	Vulnerable	Species or species habitat may occur within area

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Mammals	*Chalinolobus dwyeri*	Large-eared Pied Bat, Large Pied Bat	Vulnerable	Species or species habitat may occur within area
	Nyctophilus corbeni (as *timoriensis* south-eastern form)	South-eastern Long-eared Bat	Vulnerable	Species or species habitat may occur within area
Reptiles	*Anomalopus mackayi*	Five-clawed Worm-skink, Long-legged Worm-skink	Vulnerable	Species or species habitat may occur within area
	Delma torquata	Collared Delma	Vulnerable	Species or species habitat may occur within area
	Egernia rugosa	Yakka Skink	Vulnerable	Species or species habitat likely to occur within area
	Furina dunmalli	Dunmall's Snake	Vulnerable	Species or species habitat may occur within area
	Paradelma orientalis	Brigalow Scaly-foot	Vulnerable	Species or species habitat likely to occur within area

4.1.1.4 Migratory Species

The results of the EPBC Protected Matters search for Listed Migratory Species and their likelihood of occurrence at 17BWR98 can be seen below in Table 4.

Table 4 EPBC Protected Matters search tool results for Migratory Species predicted to occur at 17BWR98 and their Likelihood of Occurrence

Scientific Name	Common Name	Likelihood of Occurrence
Apus pacificus	Fork-tailed Swift	Species or species habitat may occur within area
Ardea modesta (as *A. alba*)	Eastern Great Egret (as Great Egret, White Egret)	Species or species habitat may occur within area
Ardea ibis	Cattle Egret	Species or species habitat may occur within area
Haliaeetus leucogaster	White-bellied Sea-Eagle	Species or species habitat likely to occur within area
Hirundapus caudacutus	White-throated Needletail	Species or species habitat may occur within area
Merops ornatus	Rainbow Bee-eater	Species or species habitat may occur

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		within area
Gallinago hardwickii	Latham's Snipe, Japanese Snipe	Species or species habitat may occur within area
Nettapus coromandelianus albipennis	Australian Cotton Pygmy-goose	Species or species habitat may occur within area
Rostratula australis (as *R. benghalensis s. lat.*)	Australian Painted Snipe	Species or species habitat may occur within area

4.1.1.5 Marine Species

Listed marine species that were identified during the desktop analysis and their likelihood of occurrence can be found below in Table 5. This data was sourced from the EPBC Protected Matters Search Tool.

Table 5 EPBC Protected Matters search tool results for Marine Species predicted to occur at 17BWR98 and their Likelihood of Occurrence

Class	Scientific Name	Common Name	Likelihood of Occurrence
Bird	*Apus pacificus*	Fork-tailed swift	Species or species habitat may occur within area
	Ardea modesta (as *A. alba*)	Eastern Great Egret (as Great Egret, White Egret)	Species or species habitat may occur within area
	Ardea Ibis	Cattle Egret	Species or species habitat may occur within area
	Gallinago hardwickii	Latham's Snipe, Japanese Snipe	Species or species habitat may occur within area
	Haliaeetus leucogaster	White-bellied Sea-Eagle	Species or species habitat likely to occur within area
	Hirundapus caudacutus	White-throated Needletail	Species or species habitat may occur within area
	Merops ornatus	Rainbow Bee-eater	Species or species habitat may occur within area
	Nettapus coromandelianus albipennis	Australian Cotton Pygmy-goose	Species or species habitat may occur within area
	Rostratula australis (as *R. benghalensis s. lat.*)	Australian Painted Snipe	Species or species habitat may occur within area

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4.1.1.6 Weeds

All Weeds of National Significance and other non-native plants that are considered to pose a particularly significant threat to biodiversity identified from the EPBC Protected Matters Search Tool on 17BWR98 are listed in Table 6 below.

Table 6 EPBC Protected Matters search tool results for weeds predicted to occur at 17BWR98 and their Likelihood of Occurrence

Scientific Name	Common Name	Likelihood of Occurrence
Acacia nilotica subsp. *indica*	Prickly Acacia	Species or species habitat may occur within area
Alternanthera philoxeroides	Alligator weed	Species or species habitat may occur within area
Lantana camara	Lantana	Species or species habitat may occur within area
Parthenium hysterophorus	Parthenium weed	Species or species habitat likely to occur within area

4.1.1.7 Pest Fauna

All pest fauna identified from the EPBC Protected Matters Search Tool are listed in Table 7 below.

Table 7 EPBC Protected Matters search tool results for Pest Fauna species predicted to occur at 17BWR98 and their Likelihood of Occurrence

Scientific Name	Common Name	Likelihood of Occurrence
Capra hircus	Goat	Species or species habitat may occur within area
Felis catus	Cat	Species or species habitat likely to occur within area
Oryctolagus cuniculus	Rabbit	Species or species habitat likely to occur within area
Sus scrofa	Pig	Species or species habitat may occur within area
Vulpes vulpes	Red Fox	Species or species habitat likely to occur within area

4.1.1.8 Wetland Ecosystems

Internationally significant wetlands that were identified through desktop analysis (EPBC Protected Matters Search) include a Ramsar listed wetland known as Narran Lake Nature Reserve. This wetland has been assessed as having a low risk of impact during operation as it is located 500km downstream (over 450km south west) of the proposed discharge location

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(see Volume 5, Attachment 17 of the APLNG EIS, Aquatic Ecology, Water Quality and Geomorphology Impact Assessment).

4.1.2 *Nature Conservation Act*

A desktop search for species protected under the *Nature Conservation Act 1992* that may be present on 17BWR98 was also performed. The results can be seen below. For raw data see Appendix B.

4.1.2.1 Listed Flora

No flora listed as endangered, vulnerable or near threatened was identified within the search area containing the site. Nine species of least concern native flora were identified within the search area (see Appendix B).

4.1.2.2 Listed Fauna

No species of fauna listed as endangered, vulnerable or near threatened were identified within the search area containing 17BWR98. There were 70 species of least concern native fauna and one species of non-native fauna identified (see Appendix B).

4.1.3 *Regional Ecosystem*

A search of the DERM RE Mapping was most recently performed on 15th July 2011. A schematic detailing the location of RE polygons associated with the site can be seen below in Figure 1.

Figure 1 Regional Ecosystems identified for the site utilising DERM RE mapping

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Pink: Endangered Remnant

Orange: Of Concern Remnant

4.1.3.1 Endangered Regional Ecosystems

All endangered regional ecosystems identified during the desktop analysis (using the DERM RE version 6.0b GIS layer) and their description can be found below in Table 8.

Table 8 Endangered Regional Ecosystems mapped as present on 17BWR98 through desktop analysis

RE code	General Description	Description
11.3.1	*Acacia harpophylla* and/or *Casuarina cristata* open forest on alluvial plains	Open-forest dominated by *Acacia harpophylla* and/or *Casuarina cristata* (particularly in southern parts), with or without scattered emergent *Eucalyptus* spp. such as *E. coolabah*, *E. largiflorens*, *E. populnea*, *E. orgadophila*, and *E. woollsiana*. A low tree layer dominated by *Geijera parviflora* and *Eremophila mitchellii* is usually present. The vegetation sometimes occurs as low open-forest or woodland. Tree height generally about 11-15m and the low tree (to tall shrub) understorey layer is between 2 and 8m high (where present). Ground cover is generally sparse. Associated with Cainozoic alluvial plains which may be occasionally flooded. Landforms range from level to very gently sloping plains, alluvial flats, drainage floors, back-swamps and abandoned channels. Associated soils are predominantly deep to very deep cracking clays, sometimes with gilgai or texture contrast soils with sandy surface (particularly where *Eucalyptus populnea* is present).
11.4.12	*Eucalyptus populnea* woodland on Cainozoic clay plains	*Eucalyptus populnea* predominates forming a distinct but discontinuous canopy (12-19m high). Scattered *Eucalyptus* spp. may be present at some sites, but most frequently *E. populnea* alone forms the canopy. Scattered trees such as *Callitris glaucophylla* and *Acacia excelsa* may also be present and occasionally form a distinct low tree layer (8-10m high) There is generally a low tree/tall shrub layer (4-8m high) dominated by *Eremophila mitchellii*, *Acacia pendula* and *Geijera parviflora*. A low shrub layer may occur, particularly on upper slopes. The ground layer is generally open but may be moderately dense in disturbed areas. The perennial grasses *Aristida* spp. and *Eragrostis* spp. are usually dominant, and forbs are conspicuous. Occurs on eroding edge of Tertiary clay plains.

4.1.3.2 Of Concern Regional Ecosystems

All Of Concern regional ecosystems identified during the desktop analysis (using the DERM RE version 6.0b GIS layer) and their description can be found below in Table 9.

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Table 9 Of Concern Regional Ecosystems mapped as present on 17BWR98 through desktop analysis

RE code	General Description	Description
11.3.2	*Eucalyptus populnea* woodland on alluvial plains	*Eucalyptus populnea* woodland to open-woodland. *E. melanophloia* may be present and locally dominant. There is sometimes a distinct low tree layer dominated by species such as *Geijera parviflora*, *Eremophila mitchellii*, *Acacia salicina*, *Acacia pendula*, *Lysiphyllum* spp., *Cassia brewsteri*, *Callitris glaucophylla* and *Acacia excelsa*. The ground layer is grassy dominated by a range of species depending on soil and management conditions. Species include *Bothriochloa decipiens*, *Enteropogon acicularis*, *Aristida ramosa* and *Tripogon loliiformis*. Occurs on Cainozoic alluvial plains with variable soil types including texture contrast, deep uniform clays, massive earths and sometimes cracking clays.
11.3.25	*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.
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.

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4.2 Field Survey

Field surveys were conducted on 30 March – 1 April 2011. These field surveys were conducted by a team of ecologists lead by Craig Eddie, the Principal Ecologist for Boobook Ecological Consulting. The results of these surveys are summarised below.

4.2.1 *Matters of National Environmental Significance*

Field survey results concerning MNES (protected under the EPBC Act) such as threatened ecological communities, listed flora, listed fauna, migratory species, weeds and pest fauna can be seen below.

4.2.1.1 Threatened Ecological Communities

Threatened Ecological Communities (TECs) identified during the field survey are listed in Table 10 below.

Table 10 Threatened Ecological Communities identified during field survey and their likelihood of occurrence

Name	Status	Likelihood of Occurrence
Brigalow (*Acacia harpophylla* dominant and co-dominant)	Endangered	Confirmed

Other TECs listed in Table 1 are absent from the property.

4.2.1.2 Listed Flora

No flora listed under the EPBC Act 1999 was detected during the field survey. Potentially suitable habitat is present for at least one species (Table 11) identified within the EPBC Protected Matters Search Tool. Targeted searches were undertaken for this species, however, none were detected.

Table 11 EPBC protected flora species potentially occurring at 17BWR98 based on field survey results

Scientific Name	Common Name	Status	Likelihood of Occurrence
Homopholis belsonii	Belson's Panic Grass	Vulnerable	Possible, potentially suitable habitat present (e.g. brigalow/belah patches)

4.2.1.3 Listed Fauna

No fauna listed as threatened under the EPBC Act 1999 were detected during the field survey. Potentially suitable habitat was confirmed during the field survey for six EPBC listed fauna species. These are listed below in Table 12.

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Table 12 EPBC protected fauna species potentially occurring at 17BWR98 based on field survey results

Scientific Name	Common Name	Status	Likelihood of Occurrence
Egernia rugosa	Yakka Skink	Vulnerable	Possible, some suitable habitat features identified (e.g. large hollow logs in remnant and non-remnant vegetation)
Erythrotriorchis radiatus	Red Goshawk	Vulnerable	Possible, some suitable habitat features identified (e.g. Columboola Creek)
Furina dunmalli	Dunmall's Snake	Vulnerable	Possible, some suitable habitat features identified (e.g. logs in remnant vegetation)
Nyctophilus corbeni	South-eastern Long-eared Bat	Vulnerable	Possible, some suitable habitat features identified (e.g. hollow trees within riparian vegetation)
Paradelma orientalis	Brigalow Scaly-foot	Vulnerable	Possible, some suitable habitat features identified (e.g. logs and fallen bark in remnant vegetation)
Rostratula australis	Australian Painted Snipe	Vulnerable	Possible, some suitable habitat features identified (e.g. dams with well vegetated margins and gilgais; refer to section 4.2.4)

No other species identified in the search tool (Table 3) are considered likely to occur on the basis that habitat is not suitable or out of distribution range.

4.2.1.4 Migratory Species

No fauna listed as migratory species under the EPBC Act 1999 was detected during the field survey at 17BWR98. Based on the presence of suitable habitat, and known distributions, potential exists for eight species of EPBC migratory fauna species to occur. These are listed below in Table 13.

Table 13 EPBC protected fauna species occurring or potentially occurring at 17BWR98 based on field survey results

Scientific Name	Common Name	Likelihood of Occurrence
Apus pacificus	Fork-tailed Swift	Possible, may overfly site between September-March

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Ardea ibis	Cattle Egret	Possible, in pasture but generally uncommon in Miles area
Ardea modesta	Eastern Great Egret	Possible, at dams and temporary puddles/pools in watercourses
Gallinago hardwickii	Latham's Snipe, Japanese Snipe	Possible, some suitable habitat features identified (e.g. well vegetated dams, gilgais and adjoining swampy areas)
Haliaeetus leucogaster	White-bellied Sea-eagle	Possible, some suitable habitat features identified (e.g.large dam at CNI346)
Hirundapus caudacutus	White-throated Needletail	Possible, may overfly site between September-March
Merops ornatus	Rainbow Bee-eater	Possible, may overfly site between September-March and potentially could breed in parts of the property with sandy substrates
Rostratula australis	Australian Painted Snipe	Possible, some suitable habitat features identified (e.g. well vegetated dams, gilgais and adjoining swampy areas – refer to section 4.2.4)

4.2.1.5 Weeds

No Weeds of National Significance were encountered during the field survey. All other non-native flora encountered during the field survey is listed in Table 14 below.

Table 14 Non-native flora recorded during the ecological field survey at 17BWR98

Scientific Name	Common Name	Likelihood of Occurrence
Aster subulatus	Wild Aster	Confirmed
Bryophyllum delagoense	Mother of Millions	Confirmed
Carthamus lanatus	Saffron Thistle	Confirmed
Chenopodiun album	Fat Hen	Confirmed
Chloris gayana	Common Rhodes Grass	Confirmed
Chloris virgata	Feathertop Rhodes Grass	Confirmed
Cirsium vulgare	Spear Thistle	Confirmed
Conyza bonariensis	Fleabane	Confirmed
Cynodon dactylon	Couch Grass	Confirmed
Diodia teres	Buttonweed	Confirmed

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Echinochloa colona	Awnless Barnyard Grass	Confirmed
Echinochloa crus-galli	Barnyard Grass	Confirmed
Eragrostis cilianensis	Stinking Lovegrass	Confirmed
Eragrostis curvula	African Lovegrass	Confirmed
Eragrostis trichophora	Hairy-flowered Lovegrass	Confirmed
Gomphocarpus physocarpus	Balloon Cotton Bush	Confirmed
Gomphrena celosioides	Soft Khaki Weed, Gomphrena Weed	Confirmed
Lepidium sp.	A Peppercress	Confirmed
Malvastrum americanum	Spiked Malvastrum	Confirmed
Megathyrsus maximus	Green Panic	Confirmed
Melinis repens	Red Natal Grass	Confirmed
Opuntia tomentosa	Velvety Tree Pear	Confirmed
Opuntia stricta	Prickly Pear, Common Pest Pear	Confirmed
Panicum coloratum	Bambatsi	Confirmed
Paspalum dilatatum	Paspalum	Confirmed
Pavonia hastata	Pink Pavonia	Confirmed
Pennisetum ciliare	Buffel Grass	Confirmed
Phyla canescens	Lippia, Condamine Couch	Confirmed
Portulaca pilosa	Hairy Pigweed	Confirmed
Portulaca oleracea	Pigweed	Confirmed
Richardia brasiliensis	Mexican Clover, White-eye	Confirmed
Salvia reflexa	Mint Weed	Confirmed
Sida rhombifolia	Paddy's Lucerne	Confirmed
Solanum nigrum	Blackberry Nightshade	Confirmed
Sonchus oleraceus	Common Sowthistle	Confirmed
Sorghum x *almum*	Silk Sorghum	Confirmed
Urochloa mosambicensis	Sabi Grass	Confirmed

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Urochloa panicoides	Liverseed Grass	Confirmed
Verbena aristigera	Mayne's Pest	Confirmed
Verbena bonariensis	Purple Top	Confirmed
Verbena litoralis	Common Verbena	Confirmed
Xanthium occidentale	Noogoora Burr	Confirmed
Xanthium spinosum	Bathurst Burr	Confirmed

Of the 43 species of non-native plant recorded during the field survey at 17BWR98, three species are listed as Class 2 pests under the *Land Protection (Pest and Stock Route) Act 2002*, these being *Bryophyllum delagoense, Opuntia tomentosa* and *O. stricta*. *O. tomentosa* and *O. stricta* occur throughout the property in low abundance. *Bryophyllum delagoense* is mainly confined to the banks of Columboola Creek and adjoining remnant vegetation.

Diodia teres was recorded at Boobook sites CNI308A and CNI314C and these represent new distribution records for the species in Queensland.

4.2.1.6 Pest Fauna

Pest fauna species identified during the field survey are listed in Table 15 below.

Table 15 Pest fauna species identified during the ecological field survey at 17BWR98

Scientific Name	Common Name	**Occurrence**
Acridotheres tristis	Common Mynah	Confirmed at Boobook sites CNI330 and CNI344
Sturnus vulgaris	Common Starling	Confirmed at Boobook site CNI388
Sus scrofa	Pig	Confirmed (7 individuals at Boobook site CNI328)

Cane Toad, Cat, Red Fox, Pig, Brown Hare, Rabbit, Black Rat and House Mouse are expected to occur on the property but they were not detected during the field survey. Rock Dove was recorded within the Wildnet search area surrounding the property.

4.2.2 *Nature Conservation Act*

Field survey results concerning Nature Conservation Act listed flora and fauna can be seen below.

4.2.2.1 Listed Flora

Approximately 141 species of native flora were recorded during the field survey at 17BWR98. No flora scheduled as vulnerable or near threatened under the *Nature Conservation Act 1992* was recorded. One species listed as endangered was recorded (Table 16).

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Table 16 Nature Conservation Act Listed flora identified during field survey

Class	Family	Scientific Name	Common Name	Conservation Status	Likelihood of Occurrence
Higher dicots	Asteraceae	*Rutidosis lanata*	Red-soil Woolly Wrinklewort	E	Confirmed

Rutidosis lanata was detected at two survey sites (Figure 2) at the northern end of 17BWR98. Both sites are located on a residual ridge slope adjoining a quarry. At Boobook site CNI309 approximately 50 individuals were found growing in isolated patches and another 30 plants were recorded in an adjoining smaller population at Boobook site CNI309A. Both sites are situated along an ecotone between *Eucalyptus populnea, Acacia harpophylla* woodland and *Eucalyptus crebra, Callitris glaucophylla* and *Allocasuarina luehmannii* woodland.

Figure 2 Locations of *Rutidosis lanata* confirmed from field scout of 17BWR98

Targeted searches were undertaken for other NCA scheduled threatened flora, including Blake's Spike-rush *Eleocharis blakeana, Zornia pallida,* Raspwort *Gonocarpus urceolatus* and Belson's Panic *Homopholis belsonii*, however, none were detected.

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4.2.2.2 Listed Fauna

No fauna scheduled as endangered, vulnerable, rare or near threatened under the *Nature Conservation Act 1992* were identified during the field survey at 17BWR98. However, potentially suitable habitat was recorded for 15 species that are listed in Table 17 below.

Table 17 Nature Conservation Act scheduled threatened fauna potentially occurring at 17BWR98 based on field survey results

Scientific Name	Common Name	Status	Likelihood of Occurrence
Accipiter novaehollandiae	Grey Goshawk	Near threatened	Possible, may overfly property
Calyptorhynchus lathami	Glossy Black-cockatoo	Vulnerable	Possible, potential habitat features identified (food plants e.g. *Casuarina cristata*)
Chalinolobus picatus	Little Pied Bat	Near threatened	Possible, some suitable habitat features identified (e.g. hollow trees)
Cyclorana verrucosa	Rough Frog	Near threatened	Possible, some suitable habitat features identified (e.g. gilgais, dams, ephemeral swamps)
Egernia rugosa	Yakka Skink	Vulnerable	Possible, some suitable habitat features identified (e.g. large hollow logs in remnant vegetation)
Ephippiorhynchus asiaticus	Black-necked Stork	Near threatened	Possible, some suitable habitat features identified (e.g. dams at Boobook sites CNI317 and CNI346)
Erythrotriorchis radiatus	Red Goshawk	Endangered	Possible, some suitable habitat features identified (e.g. Columboola Creek)
Grantiella picta	Painted Honeyeater	Vulnerable	Possible, potential habitat features identified (food plants e.g. *Amyema cambagei, A. congener)*
Furina dunmalli	Dunmall's Snake	Vulnerable	Possible, some suitable habitat features identified (e.g. logs in remnant vegetation)
Hemiaspis damelii	Grey Snake	Endangered	Possible, some suitable habitat features identified (e.g. gilgais)
Jalmenus eubulus	Pale Imperial Hairstreak	Vulnerable	Possible, some suitable habitat features identified (food plants e.g. mature

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			Acacia harpophylla)
Lophoictinia isura	Square-tailed Kite	Near threatened	Possible, may overfly site and potentially may nest along Columboola Creek
Melithreptus gularis	Black-chinned Honeyeater	Near threatened	Possible, some suitable habitat identified (e.g. remnant vegetation along Columboola Creek)
Paradelma orientalis	Brigalow Scaly-foot	Vulnerable	Possible, some suitable habitat features identified (e.g. logs in remnant vegetation)
Strophurus taenicauda	Golden-tailed Gecko	Near threatened	Possible, potential habitat features identified (e.g. loose bark on trees in remnant vegetation)

Chewed cones (orts) of Belah *Casuarina cristata* were noted on the ground at Boobook sites CNI306D, CNI311 and CNI344. These are likely to represent areas where Glossy Black-cockatoos have been feeding. Belah is the most abundant and favoured food source of this species in the region, and although many of the stands of Belah are small and isolated, they nonetheless provide foraging opportunities for this species throughout the property.

4.2.2.3 Other Significant Flora and Fauna

Fauna of regional conservation significance recorded during the field survey included Grey-crowned Babbler and Yellow-spotted Monitor, both at Boobook site CNI330. These species were identified as being of regional significance within the APLNG EIS (see Volume 2 Gas Fields, Chapter 8, Terrestrial Ecology).

A raptor nest was located at the top of a dead Belah *Casuarina cristata* in a shade line at Boobook site I326A. The nest was of a size consistent with that made by large raptors such as eagles. The nest was unoccupied at the time of survey and there were no indications (e.g. faecal matter, prey remains, fresh leaves in nest) that the nest had been recently used.

No significant invertebrates were recorded during the field survey; however, intensive targeted searches have not been undertaken. The Dulacca Woodland Snail *Adclarkia dulacca* has been recorded from vegetation similar to that which occurs on low ridges near Columboola Creek at 17BWR98. This species is pending listing as Endangered under the *EPBC Act 1999.* Further survey should be undertaken for this species. Although none were detected, it is possible that the Brigalow Woodland Snail *Adclarkia cameroni* could occur in the brigalow-belah woodlands throughout the property, including small clumps in association with Columboola Creek (e.g. Boobook sites CNI311, CNI340, CNI306D and CNI311C). This species is pending listing as Critically Endangered under the *EPBC Act 1999*.

Flora of significance recorded during the field survey included Yarran *Acacia omalophylla* which was listed as being of regional significance within APLNG EIS (see Volume 2 Gas

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Fields, Chapter 8, Terrestrial Ecology. Two individuals were seen on the property at Boobook site CNI341A.

Several flora were recorded that are represented by relatively few collections in the Darling Downs pastoral district. The record of *Lindernia* sp. (Bribie Island S.T. Blake 7089) at CNI323 is only the second collection for this pastoral district, and the record of Carpet Weed *Glinus oppositifolius* from site CNI350A is the third collection for the pastoral district (Herbrecs data). One other species which is represented by relatively few collection records for the Miles area was recorded from Boobook site CNI344, this being *Dipteracanthus australasicus* subsp. *corynothecus*. This species is frequently associated with intact or advanced regrowth endangered regional ecosystems, such as 11.4.3, 11.4.10 and 11.4.12, hence, considerable habitat for this species has been lost in the region.

One species of Type A Restricted Plant was recorded, this being Kurrajong *Brachychiton populneus* at Boobook field site CNI314.

4.2.3 *Regional Ecosystems*

All regional ecosystems identified during the field survey and their conservation status can be found below. A schematic of the field updated RE polygons can be seen below in Figure 3. .

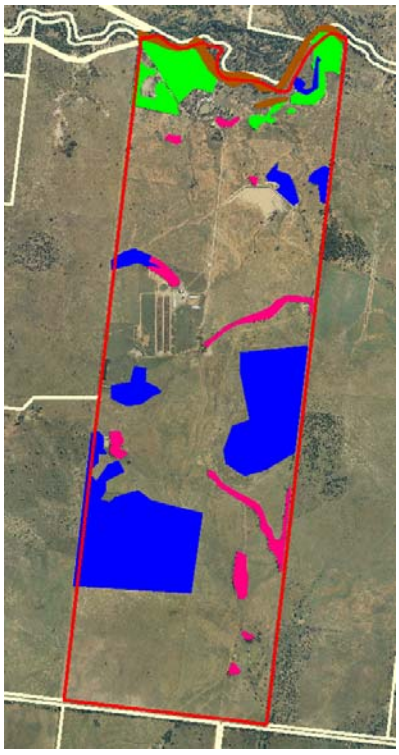

Figure 3 Field validated regional ecosystem communities present at 17BWR98

Pink: Endangered RE remnant

Brown: Of concern remnant

Green: not of concern remnant

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Blue: areas with gilgais and/or swamps

4.2.3.1 Endangered Regional Ecosystems

All endangered regional ecosystems identified during the field survey and a description of these sites can be found below in Table 18.

Table 18 Endangered Regional Ecosystems identified to be present on 17BWR98 through ecological field survey

RE code	General Description	Description
11.3.1	*Acacia harpophylla* and/or *Casuarina cristata* open forest on alluvial plains	Open-forest dominated by *Acacia harpophylla* and/or *Casuarina cristata* (particularly in southern parts), with or without scattered emergent *Eucalyptus* spp. such as *E. coolabah*, *E. largiflorens*, *E. populnea*, *E. orgadophila*, and *E. woollsiana*. A low tree layer dominated by *Geijera parviflora* and *Eremophila mitchellii* is usually present. The vegetation sometimes occurs as low open-forest or woodland. Tree height generally about 11-15m and the low tree (to tall shrub) understorey layer is between 2 and 8m high (where present). Ground cover is generally sparse. Associated with Cainozoic alluvial plains which may be occasionally flooded. Landforms range from level to very gently sloping plains, alluvial flats, drainage floors, back-swamps and abandoned channels. Associated soils are predominantly deep to very deep cracking clays, sometimes with gilgai or texture contrast soils with sandy surface (particularly where *Eucalyptus populnea* is present).
11.4.3	*Acacia harpophylla* and/or *Casuarina cristata* shrubby open-forest on Cainozoic 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 are 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.

The clumps of brigalow-belah at Boobook sites CNI311, CNI340, CNI306D and CNI311C are likely to represent examples of RE 11.3.1. These patches are too small to be mapped at the RE scale. All of the patches of brigalow-belah woodland mapped in Appendix F have been determined to represent RE 11.4.3 based on the field investigation.

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4.2.3.2 Of Concern Regional Ecosystems

All Of Concern regional ecosystems identified and mapped during the field survey and a description of these sites can be found below in Table 19.

Table 19 Of Concern Regional Ecosystems identified to be present on 17BWR98 through ecological field survey

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

No examples of RE 11.3.4 or 11.3.2 were observed.

4.2.3.3 Not Of Concern Regional Ecosystems

All not of concern regional ecosystems identified and mapped during the field survey and a description of these sites can be found below in Table 20.

Table 20 Not of Concern Regional Ecosystems identified to be present on 17BWR98 through ecological field survey

RE code	General Description	Description
11.3.18	*Eucalyptus populnea, Callitris glaucophylla, Allocasuarina luehmannii* shrubby woodland on alluvium	*Eucalyptus populnea* and/or *E. melanophloia* dominate the woodland canopy. Other canopy tree species that may be present include *Callitris glaucophylla*, *E. crebra* (can be locally dominant), *E. chloroclada* and *Angophora leiocarpa*. A low tree layer dominated by *Allocasuarina luehmannii*, *Callitris glaucophylla*, *Geijera parviflora* and/or *Eremophila mitchellii* and sometimes *Alstonia constricta* is often present. The ground cover is usually open to sparse and dominated by perennial grasses such as *Bothriochloa decipiens*, *Enteropogon acicularis*, *Triraphis mollis*, *Eragrostis lacunaria* and *Aristida* spp. Occurs on levees, higher alluvial plains and terraces associated with drainage lines. The soils are mainly deep, uniform red sands, or deep, texture contrast soils with a sandy, thick surface horizon overlying neutral,

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		blocky to massive subsoils. Small areas occur on red massive earths and alluvial soils
11.3.19	*Callitris glaucophylla, Corymbia* spp. and/or *Eucalyptus melanophloia* open-forest to woodland on Cainozoic alluvial plains	*Callitris glaucophylla* woodland usually with codominant eucalypts including *Corymbia tessellaris, C. clarksoniana* form a well-defined but discontinuous open-forest to woodland canopy (10-14m high). Other trees such as *Eucalyptus melanophloia, Angophora melanoxylon* or *E. populnea* may also occur in the canopy as an emergent tree layer (12-25m high). Scattered tall shrubs, such as *Acacia excelsa*, *Alstonia constricta* and *Callitris glaucophylla* are often present. The ground layer is sparse to dense, depending on the tree density, and is dominated by grasses. Dominant or common grasses include *Heteropogon contortus, Eriachne helmsii, Aristida holathera, Aristida calycina* var. *praealta* and *Perotis rara. Setaria surgens* may become locally prominent in badly disturbed areas. The forb diversity is relatively low but may become seasonally prominent. Occurs on rises associated with the levees and higher alluvial plains and terraces of major river systems. The soils are deep to very deep, earthy sands and associated sandy-surfaced texture contrast soils and siliceous sands.
11.5.1	*Eucalyptus crebra, Callitris glaucophylla, Angophora leiocarpa, Allocasuarina luehmannii* woodland on Cainozoic sandplains/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.
11.7.2	*Acacia* spp. woodland on lateritic duricrust. Scarp retreat zone	Monospecific stands of *Acacia* spp. forest/woodland on Cainozoic lateritic duricrusts. *Acacia shirleyi* and or *Acacia catenulata* usually predominate the woodland to low woodland to low open-forest tree canopy (7-12m high). Other *Acacia* spp. that commonly occur and occasionally dominate the tree layer include *A. rhodoxylon, A. burrowii, A. sparsiflora, A. crassa* and *A. blakei*. Emergent eucalypt species such as *Eucalyptus thozetiana, E. crebra, E. decorticans* and *E. exserta* may be present. A low shrub layer is sometimes present and dominated by species such as *Acalypha eremorum, Croton phebalioides* and *Carissa ovata.* The ground layer is extremely sparse and dominated by grasses such as *Aristida caput-medusae, Paspalidium rarum, Urochloa foliosa.* Forbs are usually rare although *Sida filiformis* may be conspicuous. Occurs on scarps and adjacent tops and slopes of dissected tablelands, mesas and buttes formed from chemically altered sediments and duricrusts. The soils are shallow to very shallow lithosols with surface stone and boulders. The vegetation is often growing in pockets of shallow lithosol soil between bare rock
11.7.5	Shrubland 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.

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4.2.3.4 Regrowth

The majority of regrowth on 17BWR98 has been cleared. Small areas of eucalypt and/or cypress pine regrowth were noted on the Columboola Creek floodplain at or adjoining Boobook sites CNI306A, CNI306B and CNI313 but the extent of these patches is generally too small to be mapped.

4.2.3.5 Sensitive Areas

As the majority of native vegetation on 17BWR98 has been cleared all remnants and patches of advanced regrowth are important for retaining native fauna and flora habitat on the property.

The bulk of native vegetation occurs at the extreme northern end of the property in association with Columboola Creek. This area has the most variable topography and substrate on the property and therefore contains the highest flora diversity, which has been demonstrated to include at least one threatened species. Vegetation in this area is connected to other riparian vegetation associated with Columboola Creek, giving it local and regional values as a corridor for the movement of wildlife and dispersal of flora. This area of the property is likely to provide significant habitat for some fauna groups e.g. woodland birds, frogs, arboreal mammals and reptiles.

Although the brigalow shade lines, clumps and strips retained on the property (e.g. Boobook sites CNI316, CNI317, CNI319, CNI326, CNI326A, CNI330, CNI337 and CNI344) are small and/or narrow, they nonetheless provide some habitat for fauna and flora typically associated with RE 11.4.3. Species diversity in these patches will always be limited due to their size and isolation, however, possible evidence of use of these patches by at least one threatened species (Glossy Black-cockatoo) was noted.

In summary, the field survey demonstrated that 17BWR98 contains locally significant vegetated and non-remnant areas having value to flora and fauna, which include but are not limited to, the following:

- areas of concentrated gilgais (e.g. Boobook sites CNI323, CNI323A, CNI324, CNI324A, CNI328, CNI332 and CNI336);
- the entire patch of vegetation fringing Columboola Creek and the associated vegetation on the adjoining floodplain, levees and low ridges;
- brigalow and/or belah shadelines, clumps and strips retained on the property (e.g. Boobook sites CNI316, CNI317, CNI319, CNI326, CNI326A, CNI330, CNI337 and CNI344;
- a small area of rock pavement (approximately 200m x 80m) located at the northwestern end of the property (between and including Boobook sites CNI312A, CNI312 and CNI312B;
- exposed rock shelves and underhangs along the banks of Columboola Creek at Boobook site CNI314A and CNI314D;
- ephemeral swamps present at CNI306A and CNI306B beside Columboola Creek and to the northeast of CNI346;

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- areas containing populations of the endangered Red-soil Woolly Wrinklewort *Rutidosis lanata*.

4.2.4 *Wetland Ecosystems*

Columboola Creek is the main watercourse and forms the northern boundary of the property. It is fringed by Queensland Blue Gum *Eucalyptus tereticornis* and/or River Red Gum *E. camaldulensis*, Rough-barked Apple *Angophora floribunda* woodland with a dense low tree layer dominated by canopy recruits and White Cypress Pine *Callitris glaucophylla.* No large waterholes were observed, however, ephemeral pools were noted at Boobook site CNI413. Several other minor watercourses drain into Columboola Creek at the northern end of the property.

Small ephemeral swamps were observed at Boobook sites CNI306A and CNI306B. Both are located on the floodplain or on levees associated with Columboola Creek.

One large dam is present at Boobook site CNI346. There are small, swampy areas associated with a drainage channel at the northeastern end of this dam. Smaller dams were observed at Boobook sites CNI330A, CNI317 and in association with the feedlot and property homestead. All of the dams on the property have margins which are partly or wholly vegetated and therefore have habitat values which are of value to a range of aquatic fauna and flora, potentially including threatened species such as Black-necked Stork, Australian Painted Snipe and Rough Frog. A shallow swampy area was also observed in association with a contour bank at Boobook site I327.

Gilgais are well developed and numerous in parts of the property. Site surveys were undertaken in particularly good examples at Boobook sites CNI323, CNI323A, CNI324, CNI324A, CNI328, CNI332 and CNI336. All of these sites, apart from CNI324, are situated in clearings. Several gilgais were also noted within the brigalow-belah patch beside the feedlot at Boobook site CNI330.

There are no DERM referrable wetlands on the property.

4.2.5 *Disturbance*

Existing disturbances on 17BWR98 include substantial areas of cleared land, parts of which are cultivated, irrigated and cropped. The entire property has been grazed. Numerous internal vehicle tracks and fence lines are present throughout. Other infrastructure associated with grazing and cropping are present including homesteads, sheds, stock yards and dams. A feedlot is present on the central part of 17BWR98. Most paddocks have been blade-ploughed, hence, regrowth in most paddocks has been treated.

5. Recommendations

- Where possible infrastructure should be sited in existing clearings and avoid clearing of remnant vegetation.
- Where there is no reasonable alternative to siting proposed infrastructure in remnant vegetation, clearing should proceed in accordance with relevant statutory conditions.

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- Clearing of vegetation along watercourses should be avoided where possible, and existing crossings should be utilised for positioning of linear infrastructure. Where unavoidable, clearing or other disturbances should be minimised and limited to that which is in accordance with applicable regulatory approvals.
- Should infrastructure be required to be placed with remnant vegetation along Columboola Creek or within the vegetated zone adjoining the creek at the northern end of 17BWR98, more detailed targeted surveys should be undertaken for threatened species at the micro-site level. Surveys should especially target the herb *Gonocarpus urceolatus*, Dulacca Woodland Snail *Adclarkia dulacca,* Brigalow Woodland Snail *A. cameroni* and threatened species of reptile (e.g. Yakka Skink, Brigalow Scaly-foot and Dunmall's Snake). Surveys for threatened reptiles should be in accordance with the "*Survey Guidelines for Australia's Threatened Reptiles*" (DSEWPAC 2011).
- Although clearing of brigalow-belah communities should be avoided, any potential disturbance to these remnants (including strips, shade lines and clumps) should take note of the presence of food trees (belah) that are likely to have been utilised by the vulnerable Glossy Black-cockatoo;
- Any disturbance should be avoided to the populations of Red-soil Woolly Wrinklewort *Rutidosis lanata* at Boobook sites CNI309 and CNI309A.
- The raptor nest at Boobook site CNI326A should be avoided. Any construction activities that are required within 100m of this nest should be undertaken when the nest is not occupied, where possible.
- A fauna spotter should be engaged prior to and during construction to identify potential habitat features of significance to fauna (e.g. large hollow logs and hollow trees) including within existing clearings.
- Clearing of Type A Restricted Plants should be avoided wherever possible, and any applicable regulatory requirements should be complied with.

6. References

Department of Sustainability, Environment, Water, Population and Communities (2011) *Survey Guidelines for Australia's Threatened Reptiles*". DSEWPAC, Canberra.

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Neldner, V.J., Wilson, B. A., Thompson, E.J. and Dillewaard, H.A. (2005) *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland. Version 3.1.* Queensland Herbarium, Environmental Protection Agency, Brisbane.

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7. Attachments

Appendix A - Results of EPBC Protected Matters Search Tool conducted on 06 July 2011

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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

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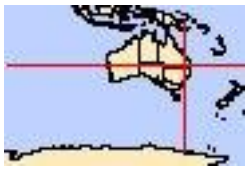


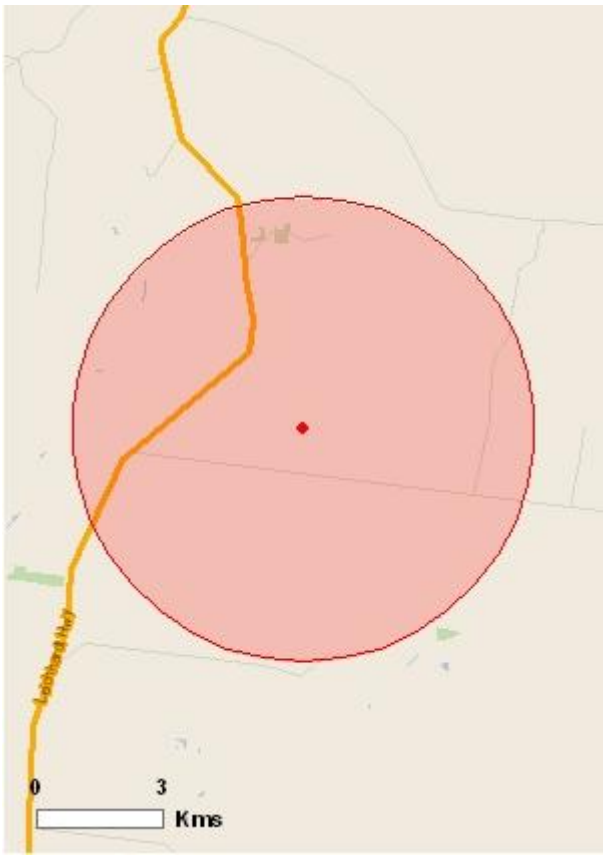
Summary

Details

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

Caveat

Acknowledgements



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

Coordinates
Buffer: 5.5Km

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:	4
Threatened Species:	14
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:	9
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:	9
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
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) [64440]	Vulnerable	Species or species habitat likely to 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		
Homopholis belsonii		
[2406]	Vulnerable	Species or species habitat may occur within area
Westringia parvifolia		
[4822]	Vulnerable	Species or species habitat likely to occur within area
REPTILES		
Anomalopus mackayi		
Five-clawed Worm-skink, Long-legged Worm-skink [25934]	Vulnerable	Species or species habitat may occur within area
Delma torquata		
Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area
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 may occur within area
Paradelma orientalis		
Brigalow Scaly-foot [59134]	Vulnerable	Species or species habitat likely to 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]	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		
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
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]		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

Mammals	
Capra hircus	
Goat [2]	Species or species habitat may occur within area
Felis catus	
Cat, House Cat, Domestic Cat [19]	Species or species habitat likely to occur within area
Oryctolagus cuniculus	
Rabbit, European Rabbit [128]	Species or species habitat likely to occur within area
Sus scrofa	
Pig [6]	Species or species habitat may 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
Alternanthera philoxeroides	
Alligator Weed [11620]	Species or species habitat may occur within area
Lantana camara	
Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]	Species or species habitat may occur within area
Parthenium hysterophorus	
Parthenium Weed, Bitter Weed, Carrot Grass, False Ragweed [19566]	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

-26.7637 150.213

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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Appendix B - **Results of Wildnet Search conducted on 06 July 2011**

Class	Family	Scientific Name	Common Name	Conservation status
birds	Acanthizidae	Acanthiza nana	yellow thornbill	C
birds	Acanthizidae	Gerygone fusca	western gerygone	C
birds	Acanthizidae	Acanthiza chrysorrhoa	yellow-rumped thornbill	C
birds	Acanthizidae	Smicrornis brevirostris	weebill	C
birds	Accipitridae	Accipiter fasciatus	brown goshawk	C
birds	Accipitridae	Haliastur sphenurus	whistling kite	C
birds	Anatidae	Anas superciliosa	Pacific black duck	C
birds	Anatidae	Ardea modesta	eastern great egret	C
birds	Anatidae	Ardea pacifica	white-necked heron	C
birds	Anatidae	Egretta novaehollandiae	white-faced heron	C
birds	Artamidae	Cracticus tibicen	Australian magpie	C
birds	Artamidae	Cracticus torquatus	grey butcherbird	C
birds	Artamidae	Strepera graculina	pied currawong	C
birds	Artamidae	Cracticus nigrogularis	pied butcherbird	C
birds	Artamidae	Artamus leucorynchus	white-breasted woodswallow	C
birds	Burhinidae	Burhinus grallarius	bush stone-curlew	C
birds	Cacatuidae	Cacatua galerita	sulphur-crested cockatoo	C
birds	Cacatuidae	Cacatua sanguinea	little corella	C
birds	Cacatuidae	Eolophus roseicapillus	galah	C
birds	Cacatuidae	Nymphicus hollandicus	cockatiel	C
birds	Campephagidae	Lalage sueurii	white-winged triller	C
birds	Campephagidae	Coracina novaehollandiae	black-faced cuckoo-shrike	C
birds	Columbidae	Columba livia	rock dove	
birds	Columbidae	Geopelia humeralis	bar-shouldered dove	C
birds	Columbidae	Ocyphaps lophotes	crested pigeon	C
birds	Columbidae	Geopelia striata	peaceful dove	C

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birds	Columbidae	Geopelia cuneata	diamond dove	C
birds	Coraciidae	Eurystomus orientalis	dollarbird	C
birds	Corcoracidae	Struthidea cinerea	apostlebird	C
birds	Corcoracidae	Corcorax melanorhamphos	white-winged chough	C
birds	Corvidae	Corvus coronoides	Australian raven	C
birds	Corvidae	Corvus orru	Torresian crow	C
birds	Cuculidae	Chalcites lucidus	shining bronze-cuckoo	C
birds	Cuculidae	Centropus phasianinus	pheasant coucal	C
birds	Estrildidae	Taeniopygia guttata	zebra finch	C
birds	Estrildidae	Taeniopygia bichenovii	double-barred finch	C
birds	Falconidae	Falco cenchroides	nankeen kestrel	C
birds	Halcyonidae	Dacelo novaeguineae	laughing kookaburra	C
birds	Halcyonidae	Todiramphus sanctus	sacred kingfisher	C
birds	Hirundinidae	Petrochelidon ariel	fairy martin	C
birds	Hirundinidae	Petrochelidon nigricans	tree martin	C
birds	Maluridae	Malurus cyaneus	superb fairy-wren	C
birds	Maluridae	Malurus lamberti	variegated fairy-wren	C
birds	Megaluridae	Cincloramphus mathewsi	rufous songlark	C
birds	Meliphagidae	Entomyzon cyanotis	blue-faced honeyeater	C
birds	Meliphagidae	Philemon citreogularis	little friarbird	C
birds	Meliphagidae	Plectorhyncha lanceolata	striped honeyeater	C
birds	Meliphagidae	Acanthagenys rufogularis	spiny-cheeked honeyeater	C
birds	Meliphagidae	Manorina melanocephala	noisy miner	C
birds	Meliphagidae	Manorina flavigula	yellow-throated miner	C
birds	Meliphagidae	Lichmera indistincta	brown honeyeater	C
birds	Meliphagidae	Lichenostomus chrysops	yellow-faced honeyeater	C
birds	Meliphagidae	Philemon corniculatus	noisy friarbird	C
birds	Monarchidae	Grallina cyanoleuca	magpie-lark	C

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birds	Nectariniidae	Dicaeum hirundinaceum	mistletoebird	C
birds	Oriolidae	Oriolus sagittatus	olive-backed oriole	C
birds	Pachycephalidae	Pachycephala rufiventris	rufous whistler	C
birds	Pardalotidae	Pardalotus striatus	striated pardalote	C
birds	Pelecanidae	Pelecanus conspicillatus	Australian pelican	C
birds	Petroicidae	Microeca fascinans	jacky winter	C
birds	Phalacrocoracidae	Phalacrocorax sulcirostris	little black cormorant	C
birds	Pomatostomidae	Pomatostomus temporalis	grey-crowned babbler	C
birds	Psittacidae	Platycercus adscitus	pale-headed rosella	C
birds	Psittacidae	Northiella haematogaster	blue bonnet	C
birds	Psittacidae	Aprosmictus erythropterus	red-winged parrot	C
birds	Rhipiduridae	Rhipidura albiscapa	grey fantail	C
birds	Rhipiduridae	Rhipidura leucophrys	willie wagtail	C
birds	Threskiornithidae	Threskiornis molucca	Australian white ibis	C
birds	Turnicidae	Turnix velox	little button-quail	C
bony fish	Percichthyidae	Macquaria ambigua	golden perch	
mammals	Macropodidae	Wallabia bicolor	swamp wallaby	C
higher dicots	Asteraceae	Rutidosis murchisonii		C
higher dicots	Asteraceae	Ozothamnus diotophyllus		C
higher dicots	Mimosaceae	Acacia hakeoides	hakea wattle	C
higher dicots	Mimosaceae	Acacia omalophylla		C
higher dicots	Polygonaceae	Muehlenbeckia florulenta	lignum	C
higher dicots	Santalaceae	Santalum lanceolatum		C
higher dicots	Sapindaceae	Dodonaea biloba		C
monocots	Hemerocallidaceae	Dianella longifolia var. stupata		C
monocots	Orchidaceae	Cymbidium suave		C

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Appendix C - **Results of DERM Referrable Wetland search conducted on 06 July 2011**

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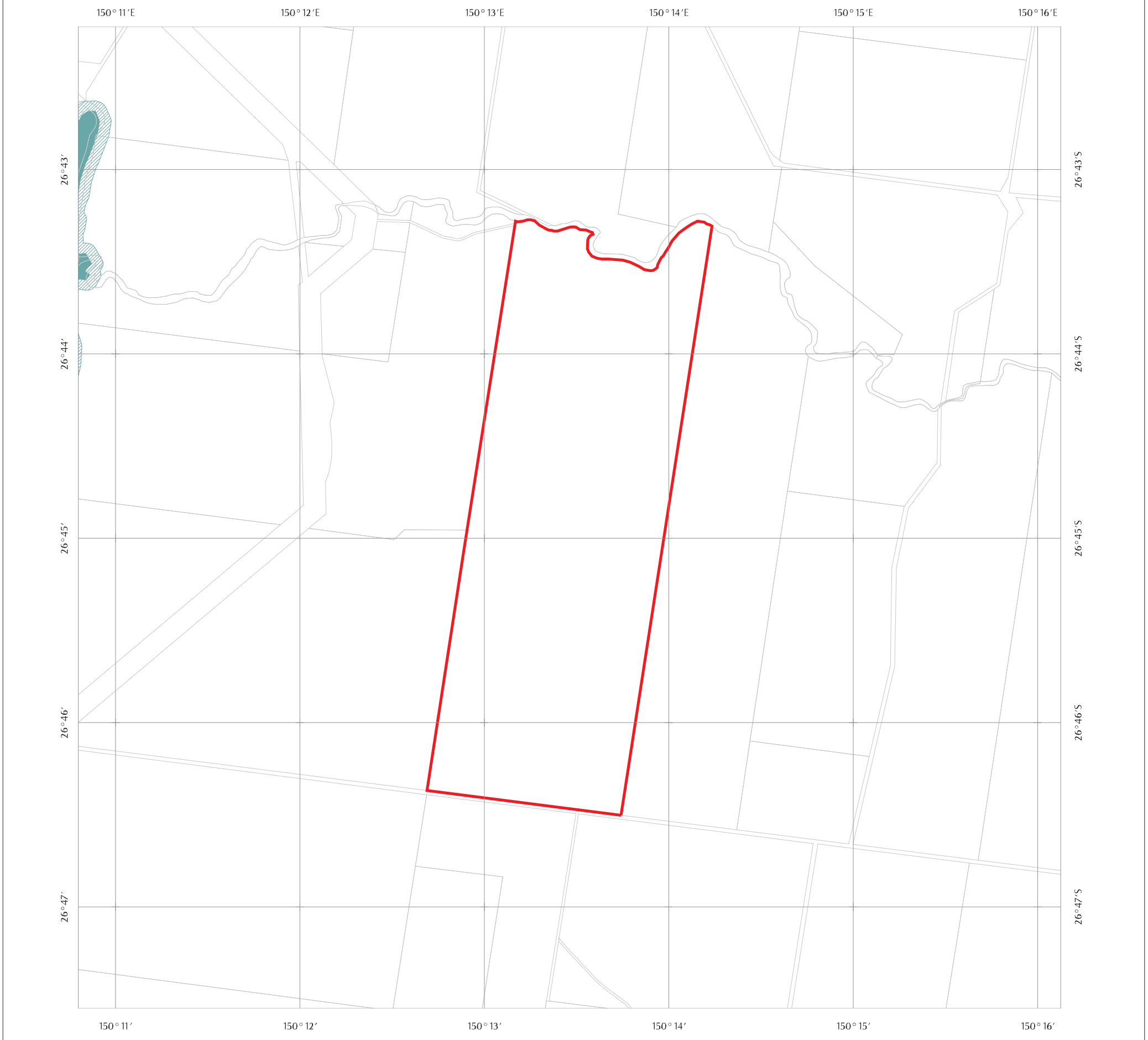


Map of Referable Wetlands

Requested By: CATALINA.NARANJO@ORIGINENERGY.COM.AU
Date: 14 Jul 11 Time: 09.50.11

Centered on Lot on Plan:
17 BWR98

Legend

- Selected Land Parcel
- Property Boundary

GBR Wetland Protection Area

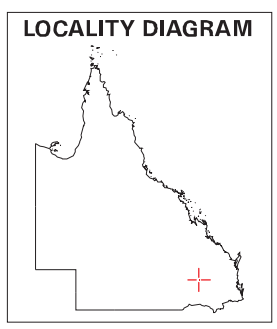
- Wetland
- Trigger Area

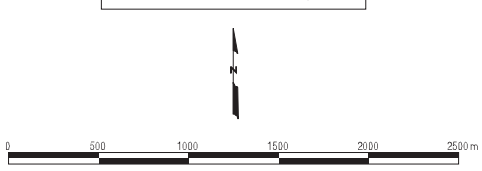
Wetland Management Area

- 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

This map should only be used to apply policies outlined in the Temporary State Planning Policy: Protecting Wetlands of High Ecological Significance in Great Barrier Reef Catchments (SPP for GBR Wetlands).

Information shown on the map includes multiple spatial datasets that define policies stated in the Temporary State Planning Policy: Protecting Wetlands of High Ecological Significance in Great Barrier Reef Catchments (SPP for GBR Wetlands). Datasets include wetlands, roads, rail lines and cadastral boundaries.

All datasets are current as at 30 April 2010.

The maps are produced at a scale relevant to the size of the lot on plan identified and should be printed as A4 size in portrait orientation. Consideration of the effects of mapped scale is necessary when interpreting data at a large scale i.e. property level. For property assessment, digital linework should be used as a guide only.

The Wetlands Regulatory Map is A4 portrait and should be printed at this size.

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

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Appendix D - **Fauna recorded during field survey at 17BWR98**

KEY: * = non-native species; LC = least concern

CLASS	FAMILY	SCIENTIFIC NAME	COMMON NAME	NC ACT STATUS	EPBC ACT STATUS
Amphibians	Hylidae	*Cyclorana alboguttata*	Greenstripe Frog	LC	
Amphibians	Hylidae	*Litoria rubella*	Red Tree Frog	LC	
Amphibians	Limnodynastidae	*Limnodynastes fletcheri*	Long-thumbed Frog	LC	
Birds	Acanthizidae	*Acanthiza chrysorrhoa*	Yellow-rumped Thornbill	LC	
Birds	Acanthizidae	*Smicrornis brevirostris*	Weebill	LC	
Birds	Accipitridae	*Circus approximans*	Swamp Harrier	LC	
Birds	Accipitridae	*Circus assimilis*	Spotted Harrier	LC	
Birds	Accipitridae	*Elanus axillaris*	Black-shouldered Kite	LC	
Birds	Alaudidae	*Mirafra javanica*	Horsfield's Bushlark, Singing Bushlark	LC	
Birds	Anatidae	*Chenonetta jubata*	Australian Wood Duck	LC	
Birds	Anatidae	*Dendrocygna eytoni*	Plumed Whistling Duck	LC	
Birds	Anatidae	*Anas gracilis*	Grey Teal	LC	
Birds	Ardeidae	*Ardea pacifica*	White-necked Heron	LC	
Birds	Ardeidae	*Egretta novaehollandiae*	White-faced Heron	LC	
Birds	Artamidae	*Cracticus nigrogularis*	Pied Butcherbird	LC	
Birds	Artamidae	*Cracticus tibicen*	Australian Magpie	LC	
Birds	Artamidae	*Cracticus torquatus*	Grey Butcherbird	LC	
Birds	Cacatuidae	*Cacatua galerita*	Sulphur-crested	LC	

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CLASS	FAMILY	SCIENTIFIC NAME	COMMON NAME	NC ACT STATUS	EPBC ACT STATUS
			Cockatoo		
Birds	Cacatuidae	*Eolophus roseicapillus*	Galah	LC	
Birds	Cacatuidae	*Nymphicus hollandicus*	Cockatiel	LC	
Birds	Campephagidae	*Coracina maxima*	Ground Cuckoo-shrike	LC	
Birds	Charadriidae	*Vanellus miles*	Masked Lapwing	LC	
Birds	Cisticolidae	*Cisticola exilis*	Golden-headed Cisticola	LC	
Birds	Columbidae	*Ocyphaps lophotes*	Crested Pigeon	LC	
Birds	Corcoracidae	*Struthidea cinerea*	Apostlebird	LC	
Birds	Corvidae	*Corvus orru*	Torresian Crow	LC	
Birds	Estrildidae	*Taeniopygia guttata*	Zebra Finch	LC	
Birds	Estrildidae	*Taeniopygia bichenovii*	Double-barred Finch	LC	
Birds	Falconidae	*Falco berigora*	Brown Falcon	LC	
Birds	Falconidae	*Falco cenchroides*	Nankeen Kestrel	LC	
Birds	Halcyonidae	*Dacelo novaeguineae*	Laughing Kookaburra	LC	
Birds	Meliphagidae	*Entomyzon cyanotis*	Blue-faced Honeyeater	LC	
Birds	Meliphagidae	*Lichmera indistincta*	Brown Honeyeater	LC	
Birds	Meliphagidae	*Philemon citreogularis*	Little Friarbird	LC	
Birds	Meliphagidae	*Philemon corniculatus*	Noisy Friarbird	LC	
Birds	Meliphagidae	*Plectorhyncha lanceolata*	Striped Honeyeater	LC	
Birds	Monarchidae	*Grallina cyanoleuca*	Magpie-lark	LC	
Birds	Motacillidae	*Anthus novaeseelandiae*	Australasian Pipit	LC	
Birds	Otididae	*Ardeotis australis*	Australian Bustard	LC	
Birds	Pardalotidae	*Pardalotus*	Striated	LC	

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CLASS	FAMILY	SCIENTIFIC NAME	COMMON NAME	NC ACT STATUS	EPBC ACT STATUS
		striatus	Pardalote		
Birds	Phasianidae	*Coturnix pectoralis*	Stubble Quail	LC	
Birds	Phasianidae	*Coturnix ypsilophora*	Brown Quail	LC	
Birds	Pomatostomidae	*Pomatostomus temporalis*	Grey-crowned Babbler	LC	
Birds	Psittacidae	*Aprosmictus erythropterus*	Red-winged Parrot	LC	
Birds	Psittacidae	*Northiella haematogaster*	Blue Bonnet	LC	
Birds	Psittacidae	*Platycercus adscitus*	Pale-headed Rosella	LC	
Birds	Psittacidae	*Psephotus haematonotus*	Red-rumped Parrot	LC	
Birds	Psittacidae	*Trichoglossus chlorolepidotus*	Scaly-breasted Lorikeet	LC	
Birds	Psittacidae	*Trichoglossus haematodus moluccanus*	Rainbow Lorikeet	LC	
Birds	Rallidae	*Gallirallus philippensis*	Buff-banded Rail	LC	
Birds	Rhipiduridae	*Rhipidura leucophrys*	Willie Wagtail	LC	
Birds	Sturnidae	*Acridotheres tristis*	Common Myna*		
Birds	Sturnidae	*Sturnus vulgaris*	Common Starling*		
Birds	Turnicidae	*Turnix pyrrhothorax*	Red-chested Button-quail	LC	
Insects	Nymphalidae	*Euploea core corinna*	Common Crow		
Insects	Nymphalidae	*Hypolimnas bolina*	Common Eggfly		
Insects	Papilionidae	*Papilio aegeus aegeus*	Orchard Swallowtail		
Insects	Papilionidae	*Papilio anactus*	Dainty Swallowtail		
Insects	Pieridae	*Belenois java teutonia*	Caper White		
Mammals	Suidae	*Sus scrofa*	Pig*		
Reptiles	Gekkonidae	*Heteronotia binoei*	Bynoe's Gecko	LC	
Reptiles	Scincidae	*Liopholis*	A Skink	LC	

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CLASS	FAMILY	SCIENTIFIC NAME	COMMON NAME	NC ACT STATUS	EPBC ACT STATUS
		modesta			
Reptiles	Varanidae	*Varanus panoptes*	Yellow-spotted Monitor	LC	
Reptiles	Varanidae	*Varanus varius*	Lace Monitor	LC	

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Appendix E - **Flora recorded during field survey at 17BWR98**

Key: LC = least concern; TAR = Type A Restricted plant; E= endangered

FAMILY	SCIENTIFIC NAME	COMMON NAME	NC ACT STATUS	EPBC ACT STATUS
Acanthaceae	*Brunoniella australis*	Blue Trumpet	LC	
Acanthaceae	*Dipteracanthus australasicus* subsp. *corynothecus*	Creeping Blue Trumpet, Desert Petunia	LC	
Adiantaceae	*Cheilanthes sieberi*	Mulga Fern	LC	
Aizoaceae	*Tetragonia tetragonioides*	New Zealand Spinach	LC	
Alismataceae	*Damasonium minus*	Starfruit	LC	
Amaranthaceae	*Alternanthera denticulata*	Lesser Joyweed	LC	
Amaranthaceae	*Nyssanthes* sp. (infertile)	A Barbed-Wire Weed	LC	
Apocynaceae	*Carissa ovata*	Currantbush	LC	
Asteraceae	*Brachyscome ciliaris*	A Daisy	LC	
Asteraceae	*Calotis cuneifolia*	Purple Burr Daisy	LC	
Asteraceae	*Calotis lappulacea*	Yellow Burr Daisy	LC	
Asteraceae	*Calotis* sp. (infertile)	A Burr Daisy	LC	
Asteraceae	*Centipeda minima*	Desert Sneezeweed	LC	
Asteraceae	*Chrysocephalum apiculatum*	Yellow Buttons	LC	
Asteraceae	*Eclipta platyglosssa*	Yellow Twin-heads	LC	
Asteraceae	*Epaltes australis*	Speading Nut-heads	LC	
Asteraceae	*Leiocarpa websteri*	A Daisy	LC	
Asteraceae	*Minuria* sp.	A Minuria	LC	

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FAMILY	SCIENTIFIC NAME	COMMON NAME	NC ACT STATUS	EPBC ACT STATUS
Asteraceae	*Podolepis longipedata*	Long Podolepis	LC	
Asteraceae	*Rutidosis lanata*	Red-soil Woolly Wrinklewort	E	
Asteraceae	*Rutidosis murchisonii*	A Daisy	LC	
Asteraceae	*Vittadinia* sp. (infertile)	A Fuzzweed	LC	
Boraginaceae	*Ehretia membranifolia*	Weeping Koda, Peach Bush	LC	
Caesalpiniaceae	*Senna artemisioides* subsp. *zygophylla*	Butter Bush, Desert Cassia	LC	
Campanulaceae	*Pratia concolor*	Poison Pratia	LC	
Campanulaceae	*Wahlenbergia* sp. (infertile)	A Bluebell	LC	
Capparaceae	*Apophyllum anomalum*	Warrior Bush, Broom Bush	LC	
Capparaceae	*Capparis lasiantha*	Wait-a-While, Nipan, Split Jack	LC	
Capparaceae	*Capparis mitchellii*	Wild Orange, Bumble Tree	LC	
Casuarinaceae	*Allocasuarina luehmannii*	Bulloak	LC	
Casuarinaceae	*Casuarina cristata*	Belah	LC	
Chenopodiaceae	*Atriplex muelleri*	Mueller's Saltbush	LC	
Chenopodiaceae	*Atriplex* spp.	A Saltbush	LC	
Chenopodiaceae	*Einadia nutans*	Climbing Saltbush	LC	
Chenopodiaceae	*Einadia* sp. (infertile)	A Saltbush	LC	
Chenopodiaceae	*Enchylaena tomentosa*	Ruby Saltbush	LC	
Chenopodiaceae	*Maireana microphylla*	Cotton Bush	LC	
Chenopodiaceae	*Maireana* sp. (infertile)	Cotton Bush	LC	
Chenopodiaceae	*Rhagodia spinescens*	Thorny Saltbush	LC	
Chenopodiaceae	*Salsola kali*	Roly-poly, Tumbleweed	LC	
Chenopodiaceae	*Sclerolaena bicornis*	Goathead Burr	LC	

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FAMILY	SCIENTIFIC NAME	COMMON NAME	NC ACT STATUS	EPBC ACT STATUS
Chenopodiaceae	*Sclerolaena birchii*	Galvanised Burr	LC	
Chenopodiaceae	*Sclerolaena muricata*	Black Roly-poly	LC	
Commelinaceae	*Commelina diffusa*	Native Wandering Jew	LC	
Commelinaceae	*Murdannia graminea*	Slug Herb	LC	
Convolvulaceae	*Dichondra repens*	Kidney Weed	LC	
Convolvulaceae	*Evolvulus alsinoides*	Tropical Speedwell	LC	
Cupressaceae	*Callitris glaucophylla*	White Cypress Pine	LC	
Cyperaceae	*Carex inversa*	Knob Sedge	LC	
Cyperaceae	*Cyperus bulbosus*	Australian Bush Onion	LC	
Cyperaceae	*Cyperus membranifolia*	Trim Sedge	LC	
Cyperaceae	*Cyperus difformis*	Dirty Dora, Rice Sedge	LC	
Cyperaceae	*Cyperus gracilis*	Whisker Grass	LC	
Cyperaceae	*Cyperus isabellinus*	A Sedge	LC	
Cyperaceae	*Cyperus rigidellus*	A Sedge	LC	
Cyperaceae	*Eleocharis cylindrostachys*	A Spike-rush	LC	
Cyperaceae	*Eleocharis plana*	Ribbed Spike rush	LC	
Cyperaceae	*Fimbristylis dichotoma*	Common Fringe-rush	LC	
Fabaceae	*Sesbania* sp. (infertile)	Sesbania Pea	LC	
Fabaceae	*Zornia dyctiocarpa*	A Zornia Pea	LC	
Fabaceae	*Zornia* sp. (infertile)	A Zornia Pea	LC	
Goodeniaceae	*Scaevola spinescens*	Prickly Fan Flower	LC	
Hydrocharitaceae	*Ottelia ovalifolia*	Swamp Lily, Water Poppy	LC	
Juncaceae	*Juncus* sp. (infertile)	A Rush	LC	
Juncaceae	*Juncus usitatus*	Common Rush	LC	
Laxmanniaceae	*Lomandra longifolia*	Long-leaved	LC	

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FAMILY	SCIENTIFIC NAME	COMMON NAME	NC ACT STATUS	EPBC ACT STATUS
		Matrush		
Loranthaceae	*Amyema cambagei*	Needle-leaf Mistletoe	LC	
Loranthaceae	*Amyema congener*	Variable Mistletoe	LC	
Lythraceae	*Ammania multiflora*	Jerry Jerry	LC	
Malvaceae	*Hibiscus brachysiphonius*	Low Hibiscus	LC	
Malvaceae	*Hibiscus sturtii*	Hill Hibiscus	LC	
Malvaceae	*Sida* sp. (infertile)	A Flannel Weed	LC	
Marsileaceae	*Marsilea drummondii*	Common Nardoo	LC	
Marsileaceae	*Marsilea* sp.	Nardoo	LC	
Meliaceae	*Owenia acidula*	Emu Apple	LC	
Mimosaceae	*Acacia aprepta*	Miles Mulga	LC	
Mimosaceae	*Acacia decora*	Pretty Wattle	LC	
Mimosaceae	*Acacia excelsa*	Ironwood	LC	
Mimosaceae	*Acacia harpophylla*	Brigalow	LC	
Mimosaceae	*Acacia salicina*	Doolan	LC	
Molluginaceae	*Glinus oppositifolius*	Carpet Weed	LC	
Myoporaceae	*Eremophila debilis*	Winter Apple	LC	
Myoporaceae	*Eremophila mitchellii*	False Sandalwood	LC	
Myrtaceae	*Angophora floribunda*	Rough-barked Apple	LC	
Myrtaceae	*Angophora leiocarpa*	Smooth-barked Apple, Rusty Gum	LC	
Myrtaceae	*Calytrix tetragona*	White Fringe-myrtle	LC	
Myrtaceae	*Corymbia clarksoniana*	Clarkson's Bloodwood	LC	
Myrtaceae	*Corymbia tessellaris*	Carbeen, Moreton Bay Ash	LC	
Myrtaceae	*Eucalyptus camaldulensis*	River Red Gum	LC	
Myrtaceae	*Eucalyptus crebra*	Narrow-leaved Ironbark	LC	
Myrtaceae	*Eucalyptus exserta*	Queensland Peppermint	LC	

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FAMILY	SCIENTIFIC NAME	COMMON NAME	NC ACT STATUS	EPBC ACT STATUS
Myrtaceae	*Eucalyptus populnea*	Poplar Box	LC	
Myrtaceae	*Eucalyptus tereticornis*	Queensland Blue Gum	LC	
Oleaceae	*Jasminum didymum*	Jasmine	LC	
Onagraceae	*Ludwigia peploides*	Water Primrose	LC	
Oxalidaceae	*Oxalis* sp.	A Wood Sorrel	LC	
Pittosporaceae	*Pittosporum angustifolium*	Weeping Pittosporum, Gumbi Gumbi	LC	
Pittosporaceae	*Pittosporum spinescens*	Wallaby Apple	LC	
Poaceae	*Ancistrachne uncinulata*	Hooky Grass	LC	
Poaceae	*Aristida caput-medusae*	Many-headed Wiregrass	LC	
Poaceae	*Aristida* sp. (infertile)	A Wiregrass	LC	
Poaceae	*Austrostipa verticillata*	Slender Bamboo Grass	LC	
Poaceae	*Bothriochloa bladhii*	Forest Blue Grass	LC	
Poaceae	*Capillipedium spicigerum*	Scented-top Grass	LC	
Poaceae	*Chloris* sp. (infertile)	A Grass	LC	
Poaceae	*Cymbopogon refractus*	Barbed-wire Grass	LC	
Poaceae	*Dichanthium sericeum*	Queensland Blue Grass	LC	
Poaceae	*Enteropogon acicularis*	Curly Windmill Grass	LC	
Poaceae	*Enteropogon ramosus*	Twirly Windmill Grass	LC	
Poaceae	*Enteropogon* sp. (infertile)	Windmill Grasses	LC	
Poaceae	*Eragrostis parviflora*	Weeping Lovegrass	LC	
Poaceae	*Eragrostis* sp.(infertile)	A Lovegrass	LC	
Poaceae	*Eriochloa crebra*	Cup Grass	LC	
Poaceae	*Heteropogon contortus*	Black Spear Grass	LC	

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FAMILY	SCIENTIFIC NAME	COMMON NAME	NC ACT STATUS	EPBC ACT STATUS
Poaceae	*Imperata cylindrica*	Blady Grass	LC	
Poaceae	*Iseilema* sp.	A Flinders Grass	LC	
Poaceae	*Leptochloa digitata*	Umbrella Canegrass	LC	
Poaceae	*Leptochloa fusca*	Brown Beetle Grass	LC	
Poaceae	*Panicum decompositum*	Native Millet	LC	
Poaceae	*Panicum queenslandicum*	Yabila Grass	LC	
Poaceae	*Panicum* sp. (infertile)	A Native Panic	LC	
Poaceae	*Paspalidium* sp. (infertile)	A Grass	LC	
Poaceae	*Paspalum distichum*	Water Couch	LC	
Poaceae	*Setaria* sp. (infertile)	A Grass	LC	
Poaceae	*Sporobolus caroli*	Fairy Grass	LC	
Poaceae	*Sporobolus creber*	Western Rat's Tail Grass	LC	
Poaceae	*Themeda triandra*	Kangaroo Grass	LC	
Pontederiaceae	*Monochoria cyanea*	Native Hyacinth	LC	
Portulacaceae	*Portulaca filifolia*	Slender Pigweed	LC	
Polygonaceae	*Persicaria attenuata*	Sojak, Velvet Knotweed	LC	
Polygonaceae	*Rumex* sp. (infertile)	A Docks	LC	
Proteaceae	*Grevillea striata*	Beefwood	LC	
Rubiaceae	*Psydrax oleifolia*	Myrtle Tree	LC	
Rutaceae	*Citrus glauca*	Limebush	LC	
Rutaceae	*Geijera parviflora*	Wilga	LC	
Sapindaceae	*Alectryon oleifolius*	Boonaree	LC	
Sapindaceae	*Alectryon diversifolius*	Scrub Boonaree	LC	
Sapindaceae	*Atalaya hemiglauca*	Whitewood	LC	
Scrophulariaceae	*Lindernia* sp. (Bribie Island S.T. Blake 7089)	A Lindernia	LC	

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FAMILY	SCIENTIFIC NAME	COMMON NAME	NC ACT STATUS	EPBC ACT STATUS
Solanaceae	*Solanum coracinum*	A Potato Bush	LC	
Solanaceae	*Solanum ellipticum*	Potato Bush	LC	
Solanaceae	*Solanum esuriale*	Quena, Potato Weed	LC	
Solanaceae	*Solanum parvifolium*	A Potato Bush	LC	
Sterculiaceae	*Brachychiton populneus*	Kurrajong	LC/TAR	

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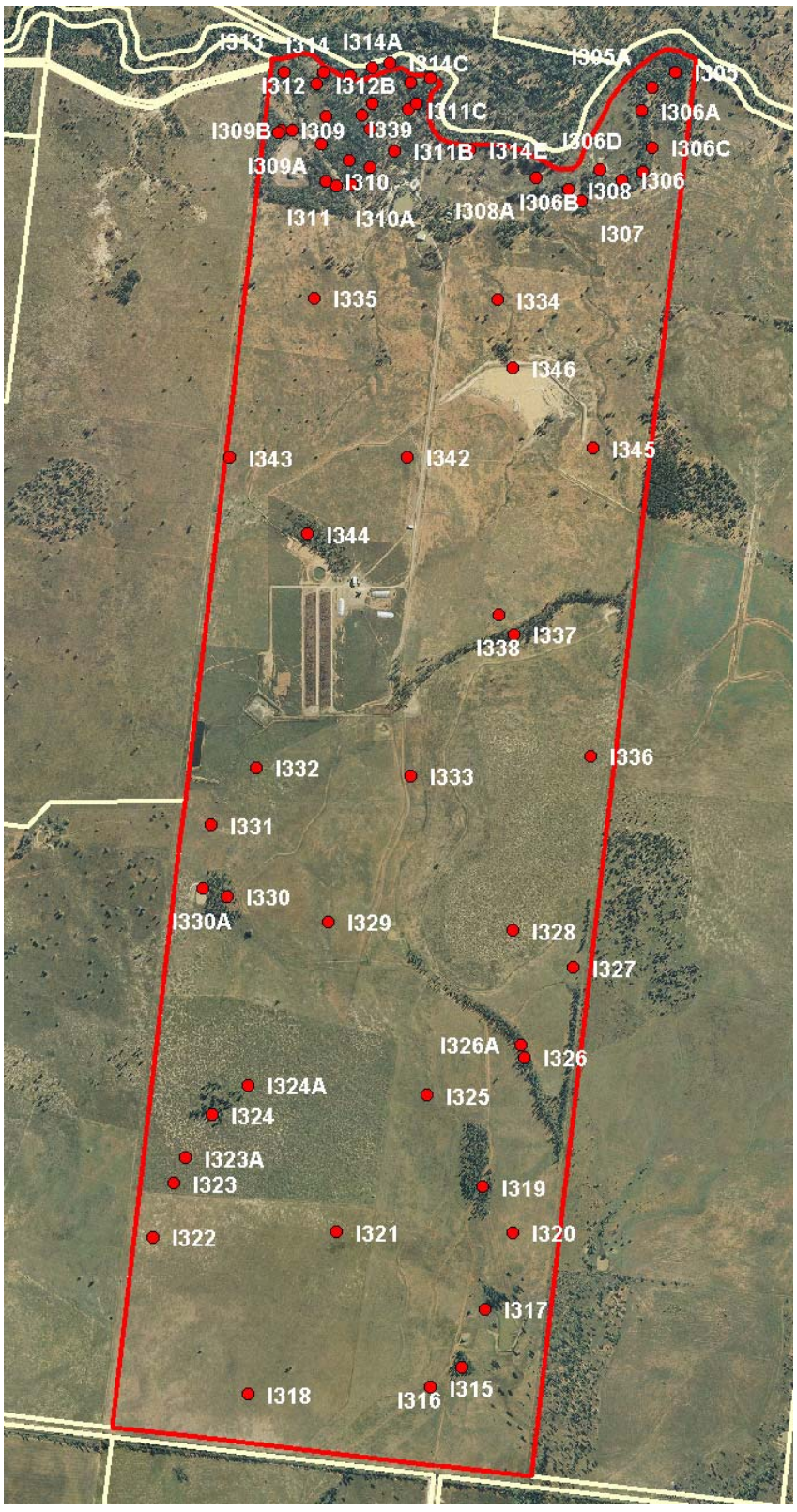
Appendix F - **Map of field survey sites for 17BWR98**



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