Maranoa Regional Council

Roma Flood Mitigation Study - Stage 2

Ecological Assessment Report

February 2016

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Abbreviations and acronyms

Abbreviation/ acronym	Definition
DEHP	(Queensland) Department of Environment and Heritage Protection
DNRM	(Queensland) Department of Natural Resources and Mines
DotE	(Commonwealth) Department of the Environment
DSDIP	(Queensland) Department of State Development, Infrastructure and Planning
DSITI	(Queensland) Department of Science, Information Technology and Innovation
EO Act	(Queensland) *Environmental Offsets Act 2015*
EP Act	(Queensland) *Environment Protection Act 1994*
EPBC Act	(Commonwealth) *Environment Protection and Biodiversity Conservation Act 1999*
EPP (Water)	(Queensland) *Environmental Protection (Water) Policy 2009*
Fisheries Act	(Queensland) *Fisheries Act 1994*
km	kilometre
LP Act	(Queensland) *Land Protection (Pest and Stock Route Management) Act 2003*
MNES	Matter of National Environmental Significance
MRC	Maranoa Regional Council
MSES	Matter of State Environmental Significance
NC Act	(Queensland) *Nature Conservation Act 1992*
NC Wildlife Regulation	(Queensland) *Nature Conservation (Wildlife) Regulation 2006*
RE	Regional Ecosystem
SP Act	(Queensland) *Sustainable Planning Act 2009*
SP Regulation	(Queensland) *Sustainable Planning Regulation 2009*
TEC	Threatened Ecological Community
VM Act	(Queensland) *Vegetation Management Act 1999*
Water Act	(Queensland) *Water Act 2000*

1. Introduction

1.1 Overview

Following the flood events of 2010, 2011 and 2012, Maranoa Regional Council (MRC) has been assessing and implementing flood mitigation measures for the township of Roma. The mitigation project has been divided into two main stages. Stage 1 has been completed and involved construction of a 5.2 kilometre (km) long levee embankment west of Bungil Creek. Stage 2 is proposed to include a levee adjacent to the western bank of Bungil Creek (termed the 'Western levee') together with a diversion drain to the east of Bungil Creek (termed the 'Eastern diversion').

As part of concept planning for Stage 2, GHD was previously engaged by MRC in 2013 to undertake an initial ecological assessment that included a desktop review and field survey at several targeted locations of potential impact. Subsequently, to provide more specific data to inform detailed design of Stage 2, GHD has been commissioned to undertake a second ecological assessment to ground-truth ecological values within the proposed footprints of the Western Levee and the Eastern Diversion. This report has been prepared to provide the findings of the second ecological assessment.

1.2 Purpose of this report

GHD was engaged by MRC to undertake an ecological assessment of the proposed Stage 2 flood mitigation works for Roma. The area of investigation for this assessment comprised the proposed footprints of the Western levee and the Eastern diversion, referred to as the 'Project footprint.' The specific objectives of the assessment are identified as follows:

- Undertake a desktop review and field survey to identify and describe ecological values within the Project footprint.
- Identify any ecological constraints to the proposed works and provide recommendations for solutions.

Given the time interval between the 2013 assessment and the 2015 assessment, preparation of the current report also provides opportunity to identify implications of changes in environmental legislation that have occurred since preparation of the previous report.

1.3 Limitations

Access to four properties was not granted (Lot 2 on SP110498; Lot 1 on SP110498; Lot 21 on R8614; and Lot 96 on M5398), such that the ecological values on these properties could not be assessed during the field survey.

1.4 Structure of this report

This report provides the following information:

- In Section 1, an overview of the project and key objectives of the assessment
- In Section 2, an overview of the legislation relevant to ecological values
- In Section 3, a description of the methods employed during the assessment
- In Section 4, a description of the existing environment
- In Section 5, identification of ecological constraints and recommendations regarding environmental approvals required for the Project

2. Relevant legislation

2.1 Commonwealth legislation

2.1.1 Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the principal environmental legislation administered by the Commonwealth Government. Part 3 of the EPBC Act determines that an action that is likely to have a significant impact on Matters of National Environmental Significance (MNES) cannot be undertaken without prior approval from the Minister who administers the EPBC Act. An action that the Minister decides is likely to have a significant impact on MNES is deemed a 'controlled action' and requires assessment under the provisions of the EPBC Act.

MNES protected by the EPBC Act include:

- World heritage properties (section 12 and 15A)
- National heritage places (sections 15B and 15C)
- Wetlands of international importance (under the Ramsar convention)
- Threatened species and ecological communities (sections 18 and 18A)
- Migratory species (sections 20 and 20A)
- Commonwealth marine areas (sections 23 and 24A)
- The Great Barrier Reef Marine Park (section 24B and 24C)
- Nuclear actions
- A water resource, in relation to coal seam gas development and large coal mining developments

The *Matters of National Environmental Significance Significant Impact Guidelines 1.1* (DotE, 2013) identifies criteria to assist in deciding whether or not a proposed action may require a referral under the EPBC Act.

2.2 Queensland legislation

2.2.1 Sustainable Planning Act 2009

The purpose of the *Sustainable Planning Act 2009* (SP Act) is to achieve ecological sustainability by:

- Managing the process by which development takes place, including ensuring that the process is accountable, effective and efficient and delivers sustainable outcomes;
- Managing the effects of development on the environment; and
- Providing for the coordination and integration of planning at the local, regional and state levels.

2.2.2 Vegetation Management Act 1999

The *Vegetation Management Act 1999* (VM Act) provides a framework for the regulation of woody, terrestrial native vegetation located outside of protected areas. The stated purpose of the VM Act is to regulate the clearing of native vegetation in a way that:

- Conserves remnant vegetation that is an endangered, of concern or least concern RE

- Conserves vegetation in declared areas
- Ensures clearing does not cause land degradation
- Prevents biodiversity loss
- Maintains ecological processes
- Manages the environmental effects of the clearing to ensure the above purposes are obtained
- Reduce greenhouse gas emissions

The VM Act provides for the establishment and mapping of Regional Ecosystems (REs) that encompass vegetation community descriptions within a geological and bioregional context, and for the creation and use of clearing codes (among other things). In addition, it provides a process for applying to change RE mapping and for the investigation and prosecution of clearing offences. Details on what clearing activities require assessment against the various regional clearing codes authorised under the VM Act are provided by the *Sustainable Planning Regulation 2009* (SP Regulation).

2.2.3 Nature Conservation Act 1992

The *Nature Conservation Act 1992* (NC Act) provides for the conservation of nature through protection of all native plants and animals in Queensland. Protection is provided under the NC Act through conservation of land as protected areas and wildlife protection outside of protected areas. Actions impacting on protected native flora and fauna are regulated under the NC Act. Permits for disturbance to native flora and fauna can be administered under the NC Act.

The Queensland *Nature Conservation (Wildlife) Regulation 2006* (NC Regulation) is subordinate to the NC Act and lists flora and fauna species considered to be extinct in the wild, endangered, vulnerable, near threatened or special least concern in Queensland.

2.2.4 Land Protection (Pest and Stock Route Management) Act 2002

The *Land Protection (Pest and Stock Route Management) Act 2002* (LP Act) identifies declared pest plant and animal species, and provides for their control. The LP Act imposes a legal responsibility on all landowners to control declared species on their land (subject to certain conditions). Specific management actions are required by landholders depending on the classification of declared pests under the Act, with three separate categories of declared pest prescribed including Class 1, Class 2 and Class 3. Landowners are required to remove Class 1 and Class 2 pests from their property and prevent them spreading to other areas. Class 3 pests cannot be sold or traded but are required to be controlled only if growing adjacent to an environmentally sensitive area (as declared by local councils).

2.2.5 Environmental Protection Act 1994

The *Environmental Protection Act 1994* (EP Act) provides a regulatory framework for the protection and management of the Queensland environment. The objective of the EP Act is to protect Queensland's environment while allowing for development that is ecologically sustainable.

The environmental values of Queensland's waterways are protected under the EP Act and the *Environmental Protection (Water) Policy 2009* (EPP (Water)).

2.2.6 Environmental Protection (Water) Policy 2009

The EPP (Water) is subordinate legislation that supports the EP Act. The EPP (Water) provides environmental values and water quality objectives for all Queensland waters. Environmental

values are defined by the EPP (Water) as the qualities of waterways that need to be protected to ensure that the ecological, social and economic values and uses of the waterway are maintained.

2.2.7 Water Act 2000

The *Water Act 2000* (Water Act) is the primary statutory document that establishes a system for water planning, allocation and use, and includes allocation of water resources for environmental purposes. The purpose of the Water Act is to advance sustainable management and efficient use of water and other resources. The Water Act provides for a number of activities including the measurement and management of water, construction, control and management of works for conservation and protection, irrigation and water supply, drainage, flood control and prevention, improvement of the flow in, or changes to watercourses, protection and improvement of the physical integrity of watercourses, lakes and springs.

2.2.8 Fisheries Act 1994

The *Fisheries Act 1994* (Fisheries Act) provides for the management, use, development and protection of fisheries resources and fish habitats and the management of aquaculture activities. The Act's objective is to provide for the use, conservation and enhancement of the community's fisheries resources and fish habitats through the application of the principles of ecologically sustainable development.

The Fisheries Act provides legislative guidance with regard to the maintenance of fish movement through waterways, including identification of when there is a requirement to obtain approval prior to construction of a waterway barrier.

2.2.9 Environmental Offset Policy 2014

The Environmental Offset Framework was introduced by the Queensland Government in July 2014 and is aimed at streamlining the State environmental offsets assessment process, in addition to aligning the offsets requirements across the levels of Commonwealth, State and Local government. In accordance with the *Environmental Offsets Act 2015* (EO Act), where a project is likely to have significant residual impacts to Matter of State Environmental Significance (MSES), the proponent can be required to supply compensation for those values. These offsets can comprise a financial contribution, establishment of a land based offset, or a combination of both.

Pursuant to Schedule 2 of the *Environmental Offset Regulation 2014* (the Offset Regulation), a MSES that can require offsets can include:

- Regulated vegetation
- Connectivity areas
- Wetlands and watercourses
- Protected wildlife habitat
- Protected areas
- State marine parks
- Fish habitat areas
- Waterway providing fish habitat
- Marine plants
- Legally secured offset areas

The *Queensland Environmental Offsets Policy: Significant Residual Impact Guideline* (MSES Guideline) (DEHP, 2014) identifies criteria to assist in deciding whether or not a proposed action may require a referral under the EO Act.

3. Methods

3.1 Desktop assessment

An initial desktop assessment was undertaken to identify ecological characteristics that are known to occur within the Project footprint. The desktop assessment involved a review of the following databases and mapping layers:

- **Protected Matters Search Tool:** The Commonwealth Department of the Environment (DotE) Protected Matters Search tool was used to identify MNES including listed species and communities that are predicted to occur in or adjacent to the Project footprint, based on bioclimatic modelling, knowledge of species' distributions and habitat preferences. The search area was a 2 km buffer around a point that approximated the centre of the Project footprint (-26.5687, 148.8025).
- **Wildlife Online:** The Department of Science, Information Technology and Innovation (DSITI) Wildlife Online database was searched to retrieve historical records of flora and fauna species previously recorded within the vicinity of the Project footprint. The search area was a 2 km buffer around a point that approximated the centre of the Project footprint (-26.5687, 148.8025).
- **Protected Plants Flora Survey Trigger Map:** The Department of Environment and Heritage Protection (DEHP) Flora Survey Trigger Map was viewed to determine the extent of the High Risk Area within the site.
- **Regulated Vegetation Map**: The Queensland Department of Natural Resources and Mines (DNRM) Regulated Vegetation Management Map was viewed to determine the extent of remnant vegetation within and adjacent to the Project footprint, and the Vegetation Management Supporting Map was viewed to determine the types of mapped REs.
- **Essential Habitat Map**: The DEHP Essential Habitat mapping was viewed to determine if vegetation within the Project footprint has been identified as Essential Habitat for a species of wildlife listed as endangered, vulnerable or special least concern under provisions of the NC Act.
- **State Planning Policy Interactive Mapping System**: The Department of State Development, Infrastructure and Planning (DSDIP) State Planning Policy Interactive Mapping System was viewed to determine matters of state interest under the *Sustainable Planning Act 2009* that are of relevance to the Project footprint.
- **Atlas of Living Australia**: The Atlas of Living Australia is a collaborative project of the Federal Government's National Research Infrastructure for Australia, collating native flora and fauna data from the academic, scientific and environmental community. This was reviewed to obtain additional information for significant species records.

3.2 Field assessment

A field assessment was undertaken by a Senior Ecologist on 3 December 2015 to verify the findings of the desktop assessment and collect additional site-specific information. The field survey involved comprehensively traversing the Project footprint on foot whilst assessing the following ecological attributes.

3.2.1 Vegetation communities

The floristic structure and composition of terrestrial vegetation communities within the Project footprint was described in accordance with the Queensland Herbarium's *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland* (Neldner *et al.,* 2012). Quaternary level assessments were undertaken and involved recording the following attributes:

- Land zone (geology)
- Land form, slope, aspect and soils
- Dominant flora species composition
- Height and cover of each strata comprising the existing vegetation community
- Presence and abundance of weed species
- Evidence and extent of disturbance

Particular attention was afforded to determining the presence of any threatened ecological communities (TECs) under the EPBC Act, and verification of the status and extent of remnant REs under the VM Act. Where discrepancies were noted between the DNRM mapping and the on-ground extent of remnant vegetation, spatial data for the actual boundary was recorded with a hand-held global positioning system (GPS). Where discrepancies were noted between the DNRM mapping and the on-ground vegetation structure, percent canopy cover was measured along 100 m transects to determine remnant status of vegetation.

3.2.2 Flora species

An inventory of flora species within the Project footprint was recorded during the field survey. Search effort was focussed on detecting the actual or likely presence of flora species that are of conservation significance under the EPBC Act and the NC Act.

3.2.3 Terrestrial fauna habitat

This component involved an assessment of the terrestrial fauna habitat values of vegetation within the Project footprint in terms of describing the structural complexity of habitat together with the type and condition of habitat resources. This included a habitat suitability assessment for species of conservation significance under the EPBC Act and the NC Act.

3.2.4 Aquatic values

An aquatic assessment was undertaken to describe the aquatic ecology values of Bungil Creek. The following information was recorded:

- Substrate type and composition
- Condition of the bed and bank
- Surface water depth
- Type and availability of habitat structure and attributes
- Riparian zone characteristics

- Visual water quality observations
- Existing disturbances

3.3 Likelihood of occurrence assessment

For conservation significant flora and fauna species that were identified by the desktop assessment as potentially occurring in proximity to the Project footprint, a likelihood of occurrence assessment was undertaken to inform the impact identification process. This is a precautionary approach to supplement the opportunistic searches undertaken during the field survey. For each species, this assessment considered information relating to habitat preferences, distribution, and previous records.

The likelihood of occurrence ranking attributed to each species was based on the following framework:

- **Unlikely to occur:** Species has not been recorded in the region (i.e. no records from desktop searches) AND/OR current known distribution does not encompass the Project footprint AND/OR suitable habitat is generally lacking from the Project footprint.
- **May occur:** Species has not been recorded in the region (desktop searches) although species' distribution incorporates Project footprint AND potentially suitable habitat occurs within the Project footprint.
- **Likely to occur:** Species has been recorded in the region (i.e. records detected by desktop searches) AND suitable habitat is present within the Project footprint.
- **Confirmed present:** Species recorded during field surveys within the Project footprint.

4. Existing environment

4.1 Flora species

Results of the desktop assessment are summarised as follows:

- The Protected Matters Search Tool identified that no nationally threatened flora species are predicted to occur within the 2 km search radius (refer Appendix A).
- The Wildlife Online search revealed that no threatened flora species have previously been recorded within the 2 km search radius (refer Appendix B).
- The Protected Plants Flora Survey Trigger Map identified that the Project footprint is not located within a High Risk Area (refer Appendix C). This confirms that no flora species of conservation significance have been recorded in the vicinity.
- No Essential Habitat for any flora species of conservation significance is mapped within, or in proximity to, the Project footprint (refer Appendix D).

The field survey recorded a moderate diversity of flora species within the Project footprint. The highest diversity of flora species was recorded in riparian habitats, with a low diversity recorded where the Project footprint traverses agricultural land. All flora species that were recorded during the field survey have a status of least concern or introduced under the NC Act. No flora species of conservation significance under the EPBC Act or the NC Act were recorded during the field survey or are considered likely to occur.

4.2 Vegetation communities

4.2.1 Threatened ecological communities

The desktop assessment identified that two Threatened Ecological Communities (TECs) listed under the EPBC Act have the potential to occur in proximity to the Project footprint, namely:

- Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions
- Weeping Myall Woodlands

The field survey did not identify the presence of any TECs within the Project footprint. The field survey noted the presence of a community dominated by *Acacia pendula* (weeping myall) within an adjacent property, located approximately 320 m north of the Eastern diversion. Access to this property would be necessary to confirm whether or not this vegetation community meets the criteria necessary to constitute the TEC.

4.2.2 Remnant Regional Ecosystems

The desktop assessment identified that while a large proportion of the Project footprint supports non-remnant vegetation, areas of remnant REs are mapped at three locations along the Western levee and at either end of the Eastern diversion. These areas of remnant REs are also mapped as MSES Regulated Vegetation. A map identifying the spatial extent and identity of REs as mapped by DNRM is provided as Figure 1.

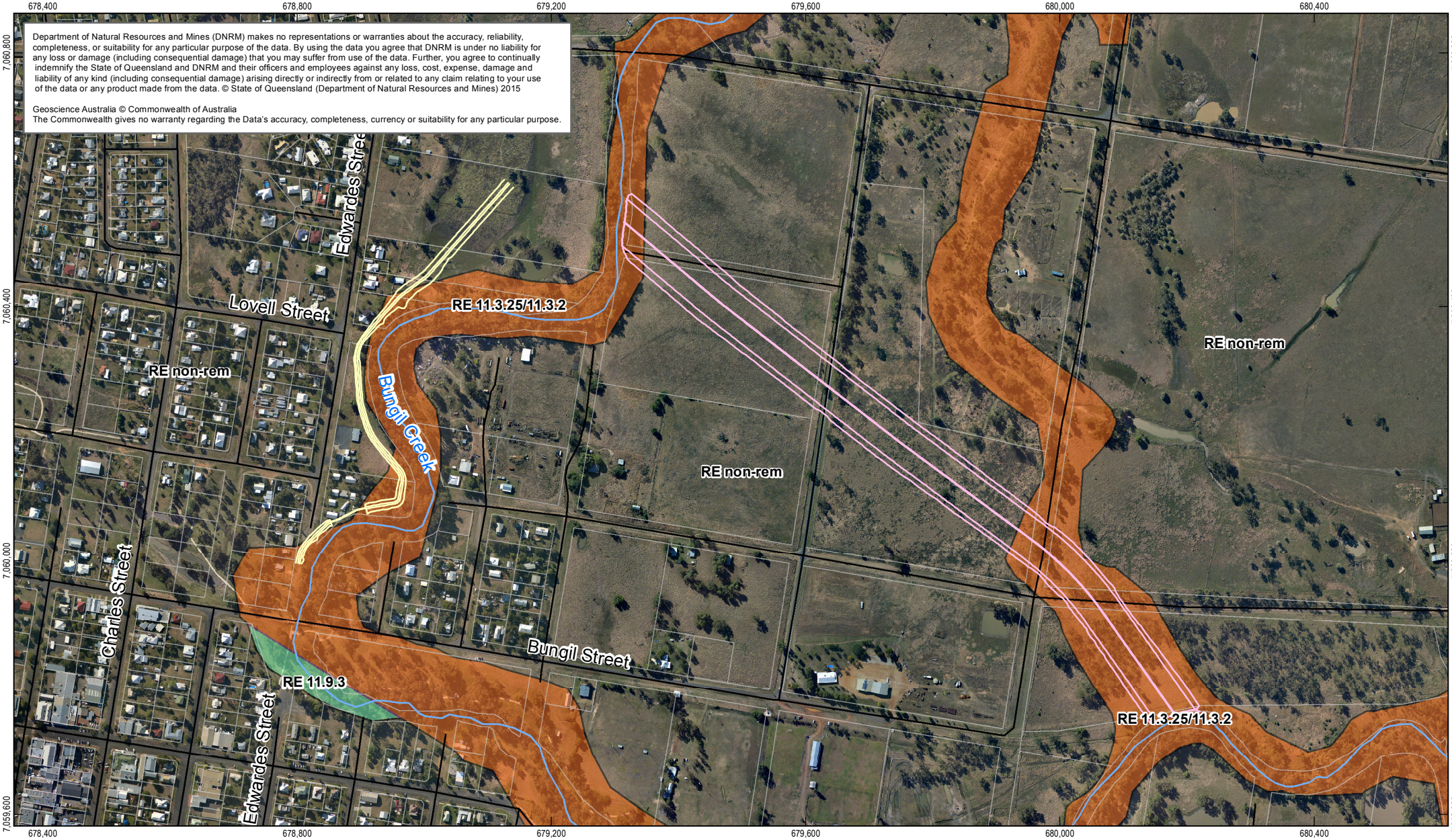
The field survey recorded two RE types within the Project footprint. These are identified in Table 1. The field survey noted that a number of refinements to DNRM's RE map can be made based on the on-ground vegetation characteristics. A map of ground-truthed REs within the Project footprint is provided as Figure 2, and the discrepancies between the DNRM mapping and the ground-truthed mapping are summarised as follows:

- Western levee
  - Riparian vegetation along Bungil Creek is mapped by DNRM as a mixed polygon of remnant RE 11.3.25 and RE 11.3.2. The status of the mixed polygon under the VM Act is of concern sub-dominant. The field survey noted that only RE 11.3.25 is present within the Project footprint, which has a status of least concern under the VM Act.
  - The boundary of DNRM's remnant RE polygon (described above) is more extensive than the on-ground remnant vegetation at several locations. Specifically, areas of parkland vegetation that has been previously cleared are currently mapped as remnant vegetation, but the vegetation community is highly modified and does not support the floristic structure and composition analogous with remnant RE.
- Eastern diversion
  - A mixed polygon of RE 11.3.25 and RE 11.3.2 is mapped by DNRM along the Eastern diversion. Part of this polygon was observed to be non-remnant vegetation as land has been previously cleared for agricultural purposes. Ground-truthing noted that the remainder of the polygon can be split up into two polygons within the Project footprint, specifically, the riparian vegetation was only RE 11.3.25, and a polygon of only RE 11.3.2 was observed on the adjacent floodplain. While historic disturbance of the RE 11.3.2 vegetation was evident, the height of the canopy trees and the percent canopy cover met the requirements to constitute remnant vegetation under the VM Act.

Table 1 Regional Ecosystems within the Project footprint

RE identity	VM Act status	Description*	Location	Representative photograph
11.3.25	Least concern	*Eucalyptus tereticornis* or *E. camaldulensis* woodland fringing drainage lines	Western levee; Eastern diversion	
11.3.2	Of concern	*Eucalyptus populnea* woodland on alluvial plains	Eastern diversion	

*Source: Regional Ecosystem Description Database (Queensland Herbarium, 2015)



Paper Size A4

0 100 200

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

LEGEND

- Highway
- Road
- Watercourse
- Stage 2 Western Levee
- Stage 2 Eastern Diversion
- Cadastre

Regional Ecosystems - DNRM V8

- Category A or B area containing of concern regional ecosystems
- Category A or B area that is a least concern regional ecosystems
- Non Remnant

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DNRM Regional Ecosystem Map Figure 1

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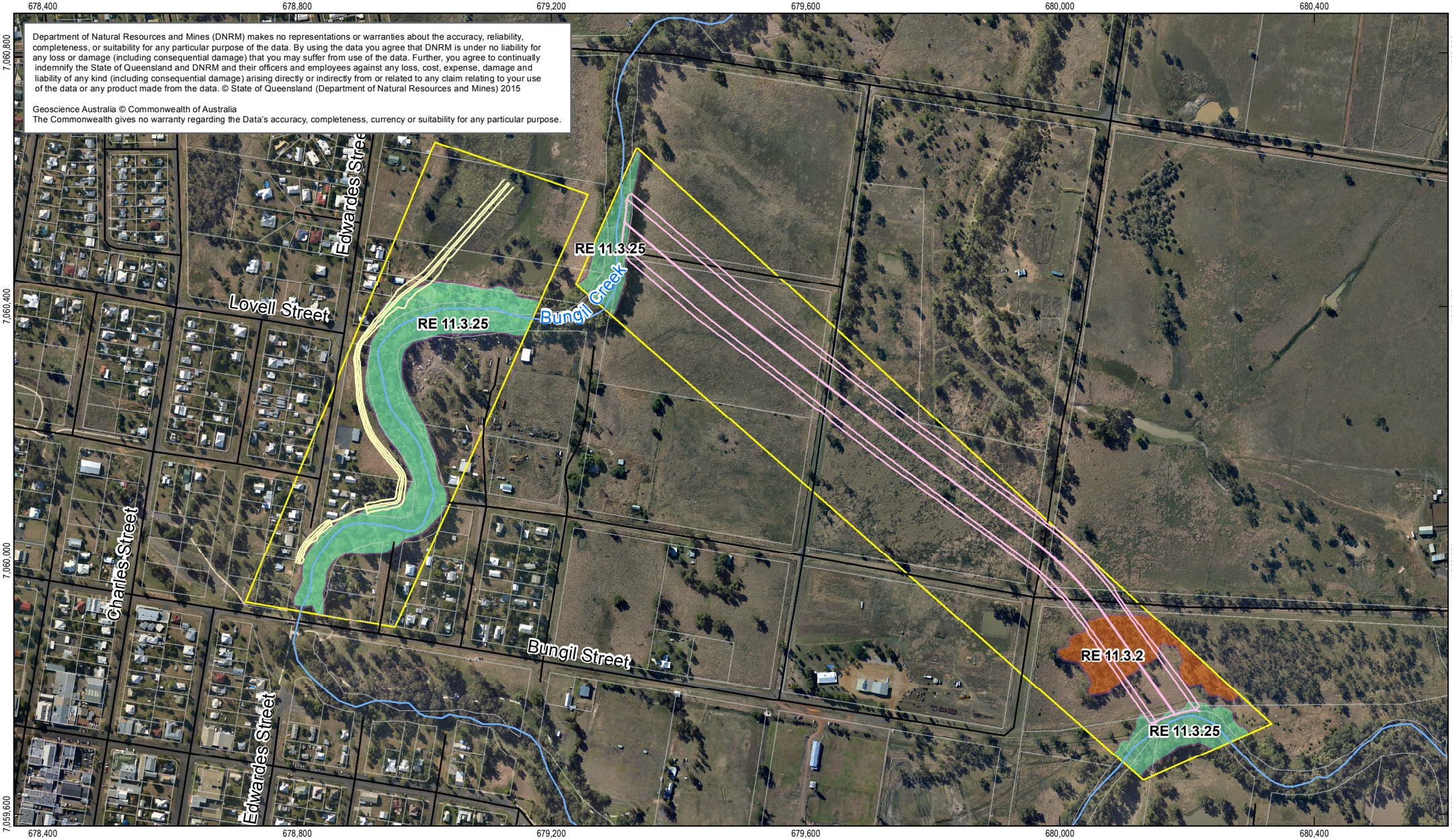
145 Ann Street Brisbane QLD 4000 Australia **T** 61 7 3316 3000 **F** 61 7 3316 3333 **E** bnemail@ghd.com **W** www.ghd.com

Data Source: © Commonwealth of Australia (Geoscience Australia): Watercourses/2007; DNRM: Locality, Roads/2010, Cadastre, River/2012,Regional Ecosystems/2015; DTMR: Aerial/2011;



Paper Size A4

0 100 200

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

LEGEND

- Highway
- Road
- Watercourse
- Stage 2 Western Levee
- Stage 2 Eastern Diversion
- Property Boundary
- Area subject to ground truthing

Regional Ecosystems - Ground Truthed

- Category A or B area containing of concern regional ecosystems
- Category A or B area that is a least concern regional ecosystems

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Ground-truthed Regional Ecosystem Map

Figure 2

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145 Ann Street Brisbane QLD 4000 Australia T 61 7 3316 3000 F 61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

Data Source: © Commonwealth of Australia (Geoscience Australia): Watercourses/2007; DNRM: Locality, Roads/2010, Cadastre, River/2012; GHD: Regional Ecosystems/2015; DTMR: Aerial/2011;

4.3 Terrestrial fauna

Results of the desktop assessment are summarised as follows:

- The Protected Matters Search Tool identified that 11 nationally threatened terrestrial fauna species are predicted to occur within the 2 km search radius (refer Appendix A).
- The Wildlife Online search revealed that three terrestrial fauna species of conservation significance have previously been recorded within the 2 km search radius (refer Appendix B), namely:
  - Koala (*Phascolarctos cinereus*) that is vulnerable under the EPBC Act and NC Act
  - Yakka skink (*Egernia rugosa*) that is vulnerable under the EPBC Act and NC Act
  - Grey snake (*Hemiaspis damelii*) that is endangered under the NC Act
- The MSES mapping identifies remnant riparian vegetation within the Project footprint is MSES Protected Wildlife Habitat.
- Essential Habitat for yakka skink is mapped along Bungil Creek 280 m upstream from the Project footprint, with the yakka skink record located 1.4 km from the upstream extent of the Project footprint (refer Appendix D).

The field survey noted that terrestrial fauna habitat values are generally restricted to areas of remnant vegetation within the Project footprint. In particular, the riparian vegetation provides a structurally complex habitat, with a diversity of feeding, nesting, sheltering and breeding resources at the canopy, shrub and ground levels. Notable observations included the following:

- The riparian vegetation is composed of mature eucalypt trees that provide potentially suitable habitat for koala. Bark exfoliations potentially consistent with koala use were observed during the field survey. It is likely that the riparian vegetation would function as a habitat corridor that koalas would occasionally transition through, rather than frequent or permanent habitat use.
- Large woody debris and hollow-tree stumps were observed within the riparian vegetation. These features provide potentially suitable habitat for the reptile species of conservation significance that are known to occur in the vicinity (i.e. yakka skink, grey snake).

The likelihood of occurrence assessment for conservation significant fauna that were predicted by the desktop assessment to potentially occur within the Project footprint is provided in Table 2. No additional threatened species are considered likely to occur within the Project footprint. Three migratory species are considered likely to occur based on the availability of potentially suitable habitat together with records of the species:

- Great egret (*Ardea alba*) that is migratory under the EPBC Act and special least concern under the NC Act
- Cattle egret (*Ardea ibis*) that is migratory under the EPBC Act and special least concern under the NC Act
- Rainbow bee-eater (*Merops ornatus*) that is migratory under the EPBC Act and special least concern under the NC Act

Table 2 Likelihood of occurrence for terrestrial threatened and migratory species

Scientific name	Common name	EPBC Act status	NC Act status	Distribution and preferred habitat*	Likelihood of occurrence
Birds					
Erythrotriorchis radiatus	Red goshawk	Vulnerable	Endangered	This species has a very sparse and discontinuous distribution over a wide area, from the Kimberleys, Western Australia, across northern Australia, and down the east coast of Queensland to northern New South Wales. It occupy a range of habitats, often at ecotones, including coastal and sub-coastal tall open forest, tropical savannahs crossed by wooded or forested watercourses, woodlands, the edges of rainforest and gallery forests along watercourses, and wetlands that include melaleuca and casuarina species.	*May occur.* Potentially suitable habitat is present but no previous records exist within the desktop search extent.
Geophaps scripta scripta	Squatter pigeon (southern)	Vulnerable	Vulnerable	The squatter pigeon (southern) occurs on the inland slopes of the Great Dividing Range; with a distribution that extends from the Burdekin-Lynd divide in central Queensland, west to Charleville and Longreach, east to the coast from Proserpine to Port Curtis, and south to scattered sites in south-eastern Queensland. It inhabits open grassy woodland on sandy soils interspersed with low gravely ridges, in proximity to water.	*May occur.* Potentially suitable habitat is present but no previous records exist within the desktop search extent.
Grantiella picta	Painted honeyeater	Vulnerable	Vulnerable	The species is sparsely distributed from south-eastern Australia to north-western Queensland and eastern Northern Territory. The painted honeyeater inhabits mistletoes in habitats that eucalypt forests/woodlands and riparian woodlands of black box and river red gum.	*May occur.* Potentially suitable habitat is present but no previous records exist within the desktop search extent.
Rostratula australis	Australian Painted Snipe	Endangered; migratory	Vulnerable	The Australian painted snipe has been recorded at scattered wetland locations throughout much of Queensland. It has been recorded from habitats including shallow inland wetlands, including temporary and permanent lakes, swamps and claypans.	*May occur.* Potentially suitable habitat is present but no previous records exist within the desktop search extent.
Mammals					
Chalinolobus dwyeri	Large-eared pied bat	Vulnerable	Vulnerable	The species' distribution is poorly known. Records exist from Shoalwater Bay in Queensland, through to Ulladulla in New South Wales. It roosts in caves, crevices in cliffs and mines, generally in dry sclerophyll forests and woodlands as well as higher altitude moist rainforest and eucalypt forest.	*Unlikely to occur.* No suitable habitat is present and no previous records exist within the desktop search extent.

Scientific name	Common name	EPBC Act status	NC Act status	Distribution and preferred habitat*	Likelihood of occurrence
Dasyurus hallucatus	Northern quoll	Endangered	Endangered	In Queensland, the species is known to occur from south of Rockhampton, to Weipa in the north, and extends west to the vicinity of Carnarvon Range National Park. The northern quoll does not have highly specific habitat requirements, however, rocky areas associated with open woodland and open forest are considered optimal habitat for the northern quoll.	*Unlikely to occur.* No suitable habitat is present and no previous records exist within the desktop search extent.
Nyctophilus corbeni	South-eastern long-eared bat	Vulnerable	Vulnerable	The greater long-eared bat is typically known from south-east Australia, especially the Murray-Darling Basin. It generally inhabits woodland vegetation, including box and ironbark woodlands in arid and semi-arid inland areas.	*May occur.* Potentially suitable habitat is present but no previous records exist within the desktop search extent.
Phascolarctos cinereus	Koala	Vulnerable	Vulnerable	In Queensland, the species contains scattered populations throughout eucalypt woodlands along watercourses within semi-arid areas further west. The greatest density of koalas occurs in south-east Queensland, with lower densities occurring through central and eastern areas including the Brigalow Belt.	***Likely to occur.*** Potentially suitable habitat is present and previous records exist within the desktop search extent.
Reptiles					
Delma torquate	Collared delma	Vulnerable	Vulnerable	The collared delma is known to occur in central and south-east Queensland. It normally inhabits eucalypt-dominated woodlands and open-forests, with rocks, logs, bark and other coarse woody debris, and mats of leaf litter.	*May occur.* Potentially suitable habitat is present but no previous records exist within the desktop search extent.
Egernia rugosa	Yakka skink	Vulnerable	Vulnerable	The known distribution of the Yakka skink extends from the coast to the hinterland of sub-humid to semi-arid eastern Queensland. The yakka skink is endemic to dry open forests, woodlands and rocky areas of central and eastern Queensland. Yakka skinks live in communal burrow complexes, and often take refuge among low vegetation or under heaped dead timber, logs, rocks and in deep rock crevices.	***Likely to occur.*** Potentially suitable habitat is present and previous records exist within the desktop search extent.
Furina dunmalli	Dunmall's snake	Vulnerable	Vulnerable	Dunmall's snake occurs primarily in the Brigalow Belt region in the south-eastern interior of Queensland. This species is typically found in areas of Brigalow, riverside woodland and open forest on natural levees. Habitats featuring cracking clay and sandy substrates are known to be utilised by the species.	*May occur.* Potentially suitable habitat is present but no previous records exist within the desktop search extent.
Migratory species					
Apus pacificus	Fork-tailed swift	Migratory	Special least concern	Habitat preferences include open country from semi-deserts to coasts. Common and widespread across Australia (Pizzey and Knight, 2007).	*May occur.* Potentially suitable habitat is present but no previous records exist within the desktop search extent.

Scientific name	Common name	EPBC Act status	NC Act status	Distribution and preferred habitat*	Likelihood of occurrence
Ardea alba	Great egret	Migratory	Special least concern	Inhabits shallows of rivers, estuaries, tidal mudflats, freshwater wetlands, sewage ponds, irrigation areas and larger dams. This species is widespread throughout Australia (Pizzey and Knight, 2007).	***Likely to occur.*** Potentially suitable habitat is present and previous records exist within the desktop search extent.
Ardea ibis	Cattle egret	Migratory	Special least concern	Occurs in stock paddocks, croplands, wetlands, tidal mudflats and drains. Widespread distribution in northern and eastern Australia, summer-Autumn migrant to Queensland (Pizzey and Knight, 2007).	***Likely to occur.*** Potentially suitable habitat is present and previous records exist within the desktop search extent.
Cuculus optatus	Oriental cuckoo	Migratory	Special least concern	This species occurs in northern and eastern Australia. It primarily inhabits mixed forests.	*May occur.* Potentially suitable habitat is present but no previous records exist within the desktop search extent.
Gallinago hardwickii	Latham's snipe	Migratory	Special least concern	Lathams's snipe occurs in wetlands in either permanent or ephemeral fresh or saline waters. The types of habitats range from wetlands with low, dense vegetation, grasslands or heaths, bogs, and artificial habitats close to human activity.	*May occur.* Potentially suitable habitat is present but no previous records exist within the desktop search extent.
Merops ornatus	Rainbow bee-eater	Migratory	Special least concern	The rainbow bee-eater is found in riparian areas containing eucalyptus forests and woodlands, mangroves and coastal forests, dry woodlands and open forests near wetlands and watercourses.	***Likely to occur.*** Potentially suitable habitat is present and previous records exist within the desktop search extent.
Motacilla flava	Yellow wagtail	Migratory	Special least concern	This species occurs in a variety of damp or wet habitats with low vegetation.	*May occur.* Potentially suitable habitat is present but no previous records exist within the desktop search extent.
Myiagra cyanoleuca	Satin flycatcher	Migratory	Special least concern	Satin flycatchers inhabit heavily vegetated gullies in eucalypt-dominated forests and taller woodlands, and on migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests.	*Unlikely to occur.* No suitable habitat is present and no previous records exist within the desktop search extent.
Rhipidura rufifrons	Rufous fantail	Migratory	Special least concern	In east and south-east Australia, the rufous fantail mainly inhabits wet sclerophyll forests, often in gullies dominated by eucalypts with a dense shrubby understorey often including ferns. When on passage, they are sometimes recorded in drier sclerophyll forests and woodlands often with a shrubby or heath understorey.	*Unlikely to occur.* No suitable habitat is present and no previous records exist within the desktop search extent.

* Note: The distribution and habitat requirements have been sourced from DotE's Species Profile and Threats (SPRAT) database on 17 December 2015 via http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl

4.4 Aquatic values

Results of the desktop assessment are summarised as follows:

- The Protected Matters Search Tool identified that one nationally threatened fish species is predicted to occur within the 2 km search radius (refer Appendix A), namely Murray cod (*Maccullochella peelii*).
- The Wildlife Online search revealed that no fish species of conservation significance have previously been recorded within the 2 km search radius (refer Appendix B):
- The MSES mapping identifies that no declared fish habitat, no high ecological value waters, and no high ecological value significance wetlands are mapped within the Study

The field survey noted that Bungil Creek is a highly disturbed ephemeral watercourse with an extensively cleared catchment and a narrow riparian vegetation zone and cattle grazing. Within the Project footprint, the creek has a primarily sandy substrate with some cobbles present. There was tall, mature riparian vegetation present; however, the width of the riparian vegetation was less than 20 m. Abundant large snags, woody debris. trailing vegetation, undercut banks and pools of water were observed and these characteristics provide a variety of habitat for aquatic fauna including fish when water is present.

The field survey noted that there is potential for Murray cod to be present within Bungil Creek during times of moderate to high flow. Generally, this species is found in waters up to 5 m deep and in areas with complex structural cover including rocks, snags, woody debris or overhanging banks. The Murray cod is most frequently found in main river channels and larger tributaries. It can also be found in floodplain channels when they contain water; although this usage appears limited.

5. Ecological constraints and recommendations

5.1 Overview

Ecological values that were identified within the Project footprint may be subject to two predominant impacts from the Project, namely:

- Direct removal as a result of levee construction or other earthworks
- Changes to the hydrological regime

Key ecological constraints that were identified by the assessment are identified in the sections below, together with corresponding recommendations for the Project, as relevant. A summary of ecological approval requirements for the Project is provided in Table 3.

5.2 Flora species

No constraints with regards to flora species have been identified by this assessment.

5.3 Threatened ecological communities

An area of Weeping Myall Woodland may be present adjacent to the Project footprint[1]. Based on the current alignment, no direct impact to this community will occur (i.e. no vegetation clearing is proposed in proximity to the community). However, potential indirect impacts to this community may be experienced through changes to inundation depth, duration and/or frequency as a result of construction of the diversion drain. In this regards, the Commonwealth government's listing advice for this community states that:

> *"The Weeping Myall Woodlands generally occur on flat areas, shallow depressions or gilgais on raised (relict) alluvial plains. These areas are not associated with active drainage channels and are rarely if ever flooded (White et al. 2002; Keith 2004)."*

As such, any proposal to modify the current flooding regime of this community in terms of depth, duration and/or frequency of inundation has the potentially to impact this MNES. In order to confirm whether this vegetation meets the criteria necessary to constitute the TEC, permission to access the relevant property would need to be obtained and a survey can be undertaken to quantify the cover and composition of the community. Given the proximity of the vegetation to the alignment and the potential for indirect impact as a result of changes to inundation patterns, it is recommended that the need for an EPBC Referral be assessed following finalisation of the footprint and flood modelling.

5.4 Remnant Regional Ecosystems

Remnant REs are present within the alignment for the Western levee and the Eastern diversion. It is unlikely that the proposal will completely avoid impacts to REs given the extent of remnant vegetation along the entire length of the creek. The footprint within areas of remnant RE identified by Figure 2 should be minimised during Project design and construction.

The remnant REs within and adjacent to the Project footprint are riparian communities that are characteristically tolerant of occasional flooding, and as such it is not anticipated that the Project will lead to deterioration or reduced extent of remnant REs beyond the clearing zone.

[1] Note that access to the relevant property was not possible during the field survey such that it cannot currently be confirmed whether the vegetation meets the criteria to constitute the TEC.

The clearing extent should be clearly demarcated during vegetation removal so as to avoid any accidental clearing. Any ancillary works such as laydown areas should be located within areas that have already been cleared.

5.5 Terrestrial fauna

Terrestrial fauna habitat that may support threatened species (koala, yakka skink, grey snake) is present within the alignment for the Western levee and the Eastern diversion. Given the extent of habitat along the entire length of the creek, it is unlikely that clearing of suitable fauna habitat will be avoided. Similarly to above, the footprint within areas of remnant RE identified by Figure 2 should be minimised during Project design and construction.

With regards to yakka skink, the Commonwealth government's *Draft referral guidelines for the national listed Brigalow Belt reptiles* states that important habitat for this species is defined as:

> *"Any contiguous patch of suitable habitat, particularly remnant vegetation, where a colony is known or identified."*

Given the relatively recent yakka skink record in close proximity to the Project footprint within remnant vegetation that is contiguous with remnant vegetation in the Project footprint, this is likely to constitute important habitat for yakka skink.

With regards to the koala, the Project footprint meets the criteria of Commonwealth government's koala habitat assessment tool to constitute habitat critical to survival of the koala.

An assessment of the potential for significant impacts to MNES is recommended to be undertaken once the proposed clearing extent is known. This will identify whether submission of an EPBC Referral is required. .

Preparation of a Significant Species Management Program is recommended to comply with the provisions of the NC Regulations and is to be approved by DEHP prior to the commencement of works.

5.6 Aquatic values

One threatened fish species has the potential to occur within Bungil Creek, namely Murray cod. Works are currently not proposed within the watercourse, such that impacts to this species are unlikely. It is recommended that any works within the defined banks of the watercourse are avoided.

Should any change in design propose construction across Bungil Creek or propose works that will alter the watercourse, an application for a waterway barrier permit under the Fisheries Act may be necessary (unless the applicable self-assessable code can be complied with).

As the Project will alter overland flow, approval under the Water Act will be necessary. Schedule 15B of the *Water Regulation 2002* provides for the construction of levees. The proposed works constitute a Category 3 levee and consequently the State Development Assessment Provisions Module 7 will apply.

Table 3 Summary of ecological constraints and approvals

Legislation	Constraint	Recommendations	Approval required
Commonwealth			
EPBC Act	• Potential presence of Weeping Myall Woodland TEC adjacent to the Project footprint	• Seek approval to access the relevant property to confirm the on-ground characteristics of the vegetation. Alternatively, assume that the vegetation does meet the TEC criteria and undertake an assessment against the EPBC Act Significant Impact Guidelines following finalisation of the footprint and flood modelling.	Modification of the current flooding regime of this community in terms of depth, duration and/or frequency of inundation has the potentially to impact this TEC. Following finalisation of the footprint and flood modelling, an assessment should be made to determine whether preparation of an EPBC Referral is necessary.
	• Potential presence of significant species within the Project footprint (koala; yakka skink).	• Minimise the clearing footprint within areas of remnant REs, as possible.	Given the presence of a relatively recent yakka skink record in close proximity to the proposed works, together with the presence of potentially suitable habitat for yakka skink within the Project footprint, it is recommended that the need for an EPBC referral is considered. The Project may also result in the reduction of habitat critical to the survival of koala, and this should also be considered in terms of whether an EPBC referral is required.
Queensland			
VM Act	• Mapped RE is intersected by the Project footprint.	• Minimise the clearing footprint within areas of remnant REs, as possible.	Although the proposed works are classified by the SP Regulation as 'community infrastructure' (water cycle management), the clearing exemption for community infrastructure will not apply unless carried out on designated land. The approval options for the Project are: • Seek formal community infrastructure designation over the affected land;

Legislation	Constraint	Recommendations	Approval required
			OR • Apply for operational woks approval to undertake clearing. Further, as on-ground observations noted discrepancies with the certified RE mapping, MRC may either accept the current mapping or prepare a Property Map of Assessable Vegetation (PMAV) application to refine the type and extent of REs.
NC Act (flora)	Nil. No flora species of conservation significance are known or expected to occur within the Project footprint.	N/A	As the Project footprint is not located within a High Risk Trigger Area (refer Appendix C), there is currently no requirement to undertake a Protected Plants Assessment in accordance requirements identified by the *Nature Conservation (Wildlife Management) Regulation 2006*. As all flora species to be removed are least concern, there is no requirement for a Protected Plants (Clearing Permit).
NC Act (fauna)	• Potential animal breeding places are present within the Project footprint. • Potential presence of significant species (koala; yakka skink).	• Minimise the clearing footprint within areas of remnant REs, as possible. • Engage a licensed fauna-spotter catcher when undertaking clearing.	A Significant Species Management Program is to be prepared and submitted to DEHP for approval to comply with the requirements of the provisions of the NC Regulations.
Water Act	• Interfering with overland flow	• Minimise the clearing footprint within the riparian zone, as possible. • Prepare and implement an erosion and sediment control plan.	Schedule 15B of the *Water Regulation 2002* provides for the construction of levees. The proposed works constitute a Category 3 levee and consequently the State Development Assessment Provisions Module 7 will apply.

Legislation	Constraint	Recommendations	Approval required
Fisheries Act	• Watercourse	• No works are to be undertaken within the watercourse.	Works are currently not proposed within the watercourse. Should any change in design propose construction across Bungil Creek or propose works that will alter the watercourse, an application for a waterway barrier permit under the Fisheries Act may be necessary (unless the works can be completed under the relevant self-assessable code).
EO Act	• MSES Regulated Vegetation	• Minimise the clearing footprint within areas of mapped MSES Regulated Vegetation, as possible.	Provision of an offset under the EO Act may be necessary if significant residual impacts to an MSES are predicted to occur. If clearing of the of concern REs can be limited to a width of 20 m and an area of 3 ha, the MSES *Significant Impact Guidelines* state that a significant residual impact is unlikely to occur, in which case the project will not require an environmental offset for impacts to MSES Regulated Vegetation.

6. References

Keith, D. (2004) Ocean shores to desert dunes: the native vegetation of New South Wales and the ACT. NSW Department of Environment and Conservation, Sydney.

Queensland Herbarium (2015) Regional Ecosystem Description Database (REDD). Version 9.0, April 2015. Department of Science, Information Technology and Innovation, Brisbane.

White, M., Muir, A.M. and Webster, R. (2002) The reconstructed distribution of indigenous vegetation types across the NSW Riverina. A draft report to the NSW National Parks and Wildlife Service. NSW National Parks and Wildlife Service. Ecology Australia Pty. Ltd., Fairfield

This report has been prepared by GHD for MRC and may only be used and relied on by MRC for the purpose agreed between GHD and the MRC as set out in this report.

GHD otherwise disclaims responsibility to any person other than MRC arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

Appendices

Appendix A – Protected Matters Search Tool results

Australian Government

Department of the Environment

EPBC Act Protected Matters Report

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

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

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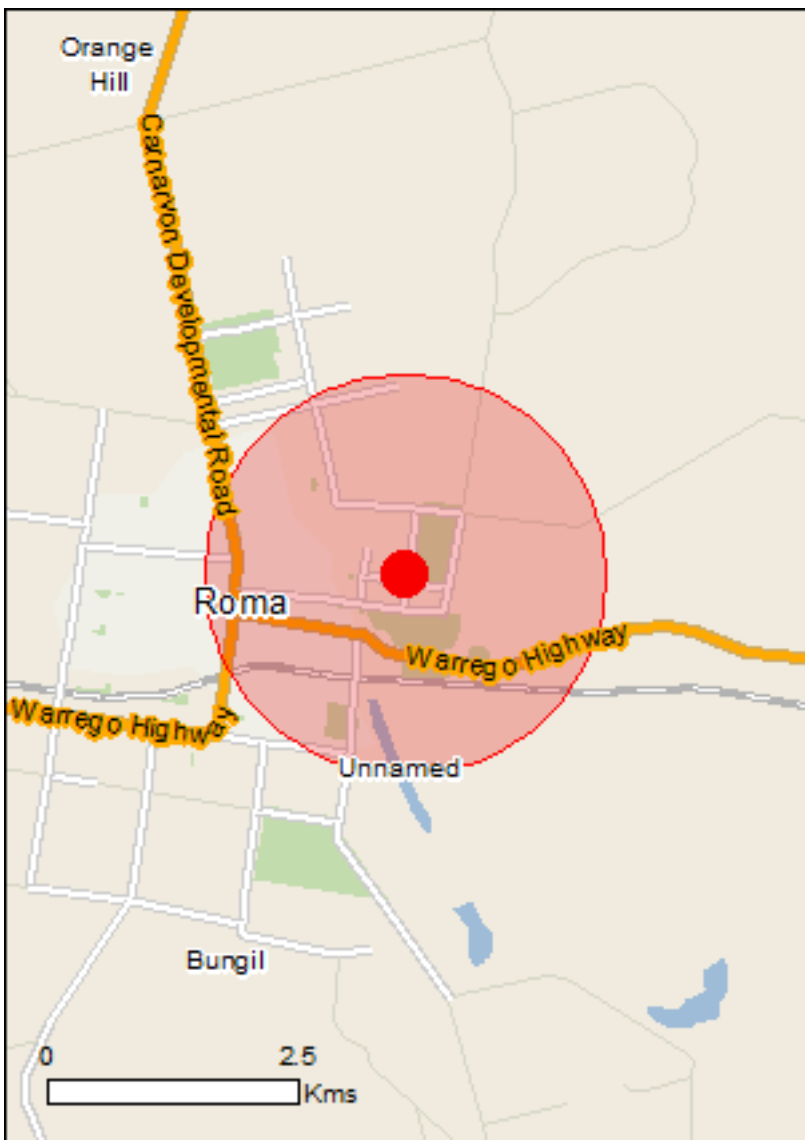

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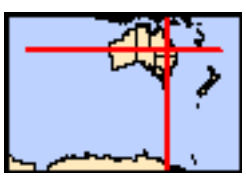

Summary

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.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	12
Listed Migratory Species:	9

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	11
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	None

Extra Information

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

State and Territory Reserves:	None
Regional Forest Agreements:	None
Invasive Species:	22
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Banrock station wetland complex	1100 - 1200km
Narran lake nature reserve	300 - 400km upstream
Riverland	1100 - 1200km
The coorong, and lakes alexandrina and albert wetland	1300 - 1400km

Listed 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
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered	Community may occur within area
Weeping Myall Woodlands	Endangered	Community likely to occur within area

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat may occur within area
Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat may occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Fish		
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area
Mammals		
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat may occur within area
Dasyurus hallucatus Northern Quoll [331]	Endangered	Species or species habitat may occur within area
Nyctophilus corbeni Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat may occur within area

Name	Status	Type of Presence
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)		
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
Reptiles		
Delma torquata		
Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area
Egernia rugosa		
Yakka Skink [1420]	Vulnerable	Species or species habitat known to occur within area
Furina dunmalli		
Dunmall's Snake [59254]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cuculus optatus		
Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Merops ornatus		
Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca		
Satin Flycatcher [612]		Species or species habitat may occur within area
Rhipidura rufifrons		
Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Ardea alba		
Great Egret, White Egret [59541]		Species or species habitat known to 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

Other Matters Protected by the EPBC Act

Commonwealth Land [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Defence - ROMA TRAINING DEPOT

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Cuculus saturatus Oriental Cuckoo, Himalayan Cuckoo [710]		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
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat may occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to 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
Birds		
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Acacia nilotica subsp. indica Prickly Acacia [6196]		Species or species habitat may occur within area
Asparagus africanus Climbing Asparagus, Climbing Asparagus Fern [66907]		Species or species habitat likely to occur within area
Asparagus plumosus Climbing Asparagus-fern [48993]		Species or species habitat likely to occur within area
Dolichandra unguis-cati Cat's Claw Vine, Yellow Trumpet Vine, Cat's Claw Creeper, Funnel Creeper [85119]		Species or species habitat likely to occur

Name	Status	Type of Presence 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 likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Parkinsonia aculeata Parkinsonia, Jerusalem Thorn, Jelly Bean Tree, Horse Bean [12301]		Species or species habitat likely to occur within area
Parthenium hysterophorus Parthenium Weed, Bitter Weed, Carrot Grass, False Ragweed [19566]		Species or species habitat likely to occur within area
Protasparagus plumosus Climbing Asparagus-fern, Ferny Asparagus [11747]		Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area
Reptiles		
Hemidactylus frenatus Asian House Gecko [1708]		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 and National Heritage properties, Wetlands of International and National 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

-26.5687 148.8025

Acknowledgements

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

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Parks and Wildlife Commission NT, Northern Territory Government
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Atherton and Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-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 – Wildlife Online results

Queensland Government

Wildlife Online Extract

Search Criteria: Species List for a Specified Point
Species: All
Type: All
Status: All
Records: All
Date: All
Latitude: -26.5687
Longitude: 148.8025
Distance: 2
Email: megan.ward@ghd.com
Date submitted: Friday 20 Nov 2015 13:11:46
Date extracted: Friday 20 Nov 2015 13:20:03

The number of records retrieved = 205

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Bufonidae	*Rhinella marina*	cane toad	Y			6
animals	amphibians	Hylidae	*Litoria peronii*	emerald spotted treefrog		C		1/1
animals	amphibians	Hylidae	*Litoria rubella*	ruddy treefrog		C		1/1
animals	amphibians	Hylidae	*Cyclorana cultripes*	grassland collared frog		C		1
animals	amphibians	Hylidae	*Cyclorana verrucosa*	rough collared frog		C		1
animals	amphibians	Hylidae	*Litoria fallax*	eastern sedgefrog		C		4
animals	amphibians	Hylidae	*Litoria caerulea*	common green treefrog		C		25/25
animals	amphibians	Myobatrachidae	*Crinia parinsignifera*	beeping froglet		C		1
animals	birds	Acanthizidae	*Gerygone fusca*	western gerygone		C		7
animals	birds	Acanthizidae	*Gerygone olivacea*	white-throated gerygone		C		15
animals	birds	Acanthizidae	*Smicrornis brevirostris*	weebill		C		17
animals	birds	Acanthizidae	*Acanthiza uropygialis*	chestnut-rumped thornbill		C		3
animals	birds	Acanthizidae	*Acanthiza chrysorrhoa*	yellow-rumped thornbill		C		13
animals	birds	Accipitridae	*Elanus axillaris*	black-shouldered kite		C		2
animals	birds	Accipitridae	*Accipiter fasciatus*	brown goshawk		C		1
animals	birds	Accipitridae	*Hieraaetus morphnoides*	little eagle		C		1
animals	birds	Accipitridae	*Accipiter cirrocephalus*	collared sparrowhawk		C		1
animals	birds	Accipitridae	*Aquila audax*	wedge-tailed eagle		C		1
animals	birds	Accipitridae	*Milvus migrans*	black kite		C		7
animals	birds	Acrocephalidae	*Acrocephalus australis*	Australian reed-warbler		SL		2
animals	birds	Aegothelidae	*Aegotheles cristatus*	Australian owlet-nightjar		C		1
animals	birds	Anatidae	*Biziura lobata*	musk duck		C		1
animals	birds	Anatidae	*Anas gracilis*	grey teal		C		3
animals	birds	Anatidae	*Anas sp.*					1
animals	birds	Anatidae	*Cygnus atratus*	black swan		C		1
animals	birds	Anatidae	*Aythya australis*	hardhead		C		1
animals	birds	Anatidae	*Anas superciliosa*	Pacific black duck		C		21
animals	birds	Anatidae	*Chenonetta jubata*	Australian wood duck		C		13
animals	birds	Anatidae	*Anas platyrhynchos*	northern mallard	Y			9
animals	birds	Anatidae	*Dendrocygna eytoni*	plumed whistling-duck		C		1
animals	birds	Anhingidae	*Anhinga novaehollandiae*	Australasian darter		C		3
animals	birds	Apodidae	*Hirundapus caudacutus*	white-throated needletail		SL		1
animals	birds	Ardeidae	*Nycticorax caledonicus*	nankeen night-heron		C		2
animals	birds	Ardeidae	*Ardea alba modesta*	eastern great egret		SL		2
animals	birds	Ardeidae	*Ardea intermedia*	intermediate egret		C		2
animals	birds	Ardeidae	*Ardea pacifica*	white-necked heron		C		5
animals	birds	Ardeidae	*Egretta novaehollandiae*	white-faced heron		C		9
animals	birds	Ardeidae	*Ardea ibis*	cattle egret		SL		1
animals	birds	Artamidae	*Cracticus nigrogularis*	pied butcherbird		C		19
animals	birds	Artamidae	*Artamus leucorynchus*	white-breasted woodswallow		C		7
animals	birds	Artamidae	*Cracticus torquatus*	grey butcherbird		C		12
animals	birds	Artamidae	*Strepera graculina*	pied currawong		C		9
animals	birds	Artamidae	*Cracticus tibicen*	Australian magpie		C		29
animals	birds	Cacatuidae	*Nymphicus hollandicus*	cockatiel		C		11
animals	birds	Cacatuidae	*Cacatua galerita*	sulphur-crested cockatoo		C		10
animals	birds	Cacatuidae	*Eolophus roseicapillus*	galah		C		35

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Campephagidae	*Coracina novaehollandiae*	black-faced cuckoo-shrike		C		17
animals	birds	Campephagidae	*Lalage tricolor*	white-winged triller		C		8
animals	birds	Charadriidae	*Vanellus miles miles*	masked lapwing (northern subspecies)		C		7
animals	birds	Charadriidae	*Vanellus tricolor*	banded lapwing		C		1
animals	birds	Charadriidae	*Vanellus miles*	masked lapwing		C		6
animals	birds	Climacteridae	*Climacteris picumnus*	brown treecreeper		C		1
animals	birds	Columbidae	*Ocyphaps lophotes*	crested pigeon		C		33
animals	birds	Columbidae	*Geopelia striata*	peaceful dove		C		3
animals	birds	Columbidae	*Columba livia*	rock dove	Y			9
animals	birds	Coraciidae	*Eurystomus orientalis*	dollarbird		C		5
animals	birds	Corcoracidae	*Corcorax melanorhamphos*	white-winged chough		C		4
animals	birds	Corcoracidae	*Struthidea cinerea*	apostlebird		C		23
animals	birds	Corvidae	*Corvus sp.*					1
animals	birds	Corvidae	*Corvus orru*	Torresian crow		C		33
animals	birds	Corvidae	*Corvus bennetti*	little crow		C		2
animals	birds	Corvidae	*Corvus coronoides*	Australian raven		C		7
animals	birds	Cuculidae	*Scythrops novaehollandiae*	channel-billed cuckoo		C		2
animals	birds	Cuculidae	*Cacomantis pallidus*	pallid cuckoo		C		1
animals	birds	Cuculidae	*Centropus phasianinus*	pheasant coucal		C		1
animals	birds	Cuculidae	*Eudynamys orientalis*	eastern koel		C		2
animals	birds	Estrildidae	*Taeniopygia bichenovii*	double-barred finch		C		1
animals	birds	Estrildidae	*Taeniopygia guttata*	zebra finch		C		2
animals	birds	Falconidae	*Falco peregrinus*	peregrine falcon		C		1
animals	birds	Falconidae	*Falco longipennis*	Australian hobby		C		4
animals	birds	Falconidae	*Falco cenchroides*	nankeen kestrel		C		8
animals	birds	Halcyonidae	*Dacelo novaeguineae*	laughing kookaburra		C		15
animals	birds	Halcyonidae	*Todiramphus sanctus*	sacred kingfisher		C		5
animals	birds	Hirundinidae	*Petrochelidon ariel*	fairy martin		C		2
animals	birds	Hirundinidae	*Hirundo neoxena*	welcome swallow		C		13
animals	birds	Hirundinidae	*Petrochelidon nigricans*	tree martin		C		4
animals	birds	Maluridae	*Malurus leucopterus*	white-winged fairy-wren		C		3
animals	birds	Maluridae	*Malurus lamberti*	variegated fairy-wren		C		3
animals	birds	Maluridae	*Malurus cyaneus*	superb fairy-wren		C		8/1
animals	birds	Megaluridae	*Megalurus gramineus*	little grassbird		C		1
animals	birds	Megaluridae	*Cincloramphus mathewsi*	rufous songlark		C		2
animals	birds	Meliphagidae	*Manorina melanocephala*	noisy miner		C		25
animals	birds	Meliphagidae	*Philemon citreogularis*	little friarbird		C		15
animals	birds	Meliphagidae	*Acanthagenys rufogularis*	spiny-cheeked honeyeater		C		4
animals	birds	Meliphagidae	*Plectorhyncha lanceolata*	striped honeyeater		C		12
animals	birds	Meliphagidae	*Ptilotula penicillata*	white-plumed honeyeater		C		8
animals	birds	Meliphagidae	*Philemon corniculatus*	noisy friarbird		C		3
animals	birds	Meliphagidae	*Lichmera indistincta*	brown honeyeater		C		11
animals	birds	Meliphagidae	*Gavicalis virescens*	singing honeyeater		C		1
animals	birds	Meliphagidae	*Entomyzon cyanotis*	blue-faced honeyeater		C		23
animals	birds	Meliphagidae	*Manorina flavigula*	yellow-throated miner		C		21
animals	birds	Meropidae	*Merops ornatus*	rainbow bee-eater		SL		3

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Monarchidae	*Grallina cyanoleuca*	magpie-lark		C		43
animals	birds	Monarchidae	*Myiagra inquieta*	restless flycatcher		C		1
animals	birds	Motacillidae	*Anthus novaeseelandiae*	Australasian pipit		C		4
animals	birds	Nectariniidae	*Dicaeum hirundinaceum*	mistletoebird		C		1
animals	birds	Oriolidae	*Oriolus sagittatus*	olive-backed oriole		C		2
animals	birds	Oriolidae	*Sphecotheres vieilloti*	Australasian figbird		C		9
animals	birds	Otididae	*Ardeotis australis*	Australian bustard		C		2
animals	birds	Pachycephalidae	*Colluricincla harmonica*	grey shrike-thrush		C		1
animals	birds	Pachycephalidae	*Pachycephala rufiventris*	rufous whistler		C		3
animals	birds	Pardalotidae	*Pardalotus punctatus*	spotted pardalote		C		1
animals	birds	Pardalotidae	*Pardalotus striatus*	striated pardalote		C		20
animals	birds	Passeridae	*Passer domesticus*	house sparrow	Y			21
animals	birds	Pelecanidae	*Pelecanus conspicillatus*	Australian pelican		C		2
animals	birds	Phaethontidae	*Phaethon lepturus*	white-tailed tropicbird		SL		2
animals	birds	Phalacrocoracidae	*Phalacrocorax sulcirostris*	little black cormorant		C		1
animals	birds	Phalacrocoracidae	*Phalacrocorax carbo*	great cormorant		C		1
animals	birds	Phalacrocoracidae	*Microcarbo melanoleucos*	little pied cormorant		C		5
animals	birds	Phasianidae	*Coturnix ypsilophora*	brown quail		C		2
animals	birds	Podargidae	*Podargus strigoides*	tawny frogmouth		C		4
animals	birds	Podicipedidae	*Tachybaptus novaehollandiae*	Australasian grebe		C		1
animals	birds	Pomatostomidae	*Pomatostomus temporalis*	grey-crowned babbler		C		2
animals	birds	Psittacidae	*Trichoglossus chlorolepidotus*	scaly-breasted lorikeet		C		5
animals	birds	Psittacidae	*Barnardius zonarius*	Australian ringneck		C		7
animals	birds	Psittacidae	*Parvipsitta pusilla*	little lorikeet		C		2
animals	birds	Psittacidae	*Platycercus adscitus*	pale-headed rosella		C		17
animals	birds	Psittacidae	*Psephotus haematonotus*	red-rumped parrot		C		4
animals	birds	Psittacidae	*Melopsittacus undulatus*	budgerigar		C		1
animals	birds	Psittacidae	*Northiella haematogaster*	blue bonnet		C		2
animals	birds	Psittacidae	*Trichoglossus haematodus moluccanus*	rainbow lorikeet		C		24
animals	birds	Psittacidae	*Aprosmictus erythropterus*	red-winged parrot		C		6
animals	birds	Ptilonorhynchidae	*Ptilonorhynchus maculatus*	spotted bowerbird		C		3
animals	birds	Rallidae	*Fulica atra*	Eurasian coot		C		1
animals	birds	Rallidae	*Gallinula tenebrosa*	dusky moorhen		C		1
animals	birds	Recurvirostridae	*Himantopus himantopus*	black-winged stilt		C		2
animals	birds	Rhipiduridae	*Rhipidura albiscapa*	grey fantail		C		3
animals	birds	Rhipiduridae	*Rhipidura leucophrys*	willie wagtail		C		32
animals	birds	Sturnidae	*Sturnus vulgaris*	common starling	Y			26
animals	birds	Threskiornithidae	*Threskiornis spinicollis*	straw-necked ibis		C		10
animals	birds	Threskiornithidae	*Threskiornis molucca*	Australian white ibis		C		6
animals	birds	Threskiornithidae	*Platalea regia*	royal spoonbill		C		1
animals	birds	Timaliidae	*Zosterops lateralis*	silvereye		C		2
animals	mammals	Emballonuridae	*Saccolaimus flaviventris*	yellow-bellied sheathtail bat		C		2
animals	mammals	Molossidae	*Mormopterus lumsdenae*	northern free-tailed bat		C		1
animals	mammals	Peramelidae	*Isoodon macrourus*	northern brown bandicoot		C		1
animals	mammals	Phalangeridae	*Trichosurus vulpecula*	common brushtail possum		C		2
animals	mammals	Phascolarctidae	*Phascolarctos cinereus*	koala		V	V	5

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	mammals	Pteropodidae	*Pteropus alecto*	black flying-fox		C		1
animals	mammals	Pteropodidae	*Pteropus scapulatus*	little red flying-fox		C		9
animals	mammals	Vespertilionidae	*Scotorepens greyii*	little broad-nosed bat		C		1
animals	mammals	Vespertilionidae	*Scotorepens balstoni*	inland broad-nosed bat		C		2
animals	ray-finned fishes	Cyprinidae	*Carassius auratus*	goldfish	Y			1
animals	reptiles	Chelidae	*Chelodina expansa*	broad-shelled river turtle		C		1
animals	reptiles	Elapidae	*Pseudechis australis*	king brown snake		C		1/1
animals	reptiles	Elapidae	*Demansia psammophis*	yellow-faced whipsnake		C		1
animals	reptiles	Elapidae	*Furina diadema*	red-naped snake		C		1
animals	reptiles	Elapidae	*Denisonia devisi*	De Vis' banded snake		C		2
animals	reptiles	Elapidae	*Hemiaspis damelii*	grey snake		E		2/2
animals	reptiles	Gekkonidae	*Heteronotia binoei*	Bynoe's gecko		C		2/2
animals	reptiles	Gekkonidae	*Gehyra dubia*			C		1/1
animals	reptiles	Scincidae	*Egernia striolata*	tree skink		C		1
animals	reptiles	Scincidae	*Ctenotus spaldingi*			C		1
animals	reptiles	Scincidae	*Tiliqua rugosa*			C		3/1
animals	reptiles	Scincidae	*Cryptoblepharus australis*	inland snake-eyed skink		C		1
animals	reptiles	Scincidae	*Egernia rugosa*	yakka skink		V	V	1
animals	reptiles	Scincidae	*Tiliqua scincoides*	eastern blue-tongued lizard		C		1/1
animals	reptiles	Scincidae	*Anomalopus leuckartii*			C		4
animals	reptiles	Typhlopidae	*Anilios wiedii*	brown-snouted blind snake		C		1
animals	reptiles	Varanidae	*Varanus varius*	lace monitor		C		3/1
animals	uncertain	Indeterminate	*Indeterminate*	Unknown or Code Pending		C		2
plants	higher dicots	Acanthaceae	*Ruellia simplex*		Y			3/3
plants	higher dicots	Anacardiaceae	*Schinus terebinthifolius*		Y			1/1
plants	higher dicots	Anacardiaceae	*Schinus molle var. areira*	pepper tree	Y			1/1
plants	higher dicots	Asteraceae	*Tridax procumbens*	tridax daisy	Y			1/1
plants	higher dicots	Asteraceae	*Vittadinia pterochaeta*	rough fuzzweed		C		1/1
plants	higher dicots	Asteraceae	*Parthenium hysterophorus*	parthenium weed	Y			1/1
plants	higher dicots	Asteraceae	*Senecio madagascariensis*	fireweed	Y			1/1
plants	higher dicots	Asteraceae	*Sonchus oleraceus*	common sowthistle	Y			1/1
plants	higher dicots	Bignoniaceae	*Dolichandra unguis-cati*	cat's claw creeper	Y			1/1
plants	higher dicots	Boraginaceae	*Cynoglossum australe*			C		1/1
plants	higher dicots	Brassicaceae	*Rapistrum rugosum*		Y			1/1
plants	higher dicots	Brassicaceae	*Sisymbrium irio*	london rocket	Y			1/1
plants	higher dicots	Campanulaceae	*Wahlenbergia gracilis*	sprawling bluebell		C		1/1
plants	higher dicots	Chenopodiaceae	*Atriplex muelleri*	lagoon saltbush		C		1/1
plants	higher dicots	Convolvulaceae	*Ipomoea cairica*		Y			2/2
plants	higher dicots	Euphorbiaceae	*Euphorbia serpens*		Y			1/1
plants	higher dicots	Euphorbiaceae	*Euphorbia hirta*		Y			1/1
plants	higher dicots	Geraniaceae	*Erodium crinitum*	blue crowfoot		C		1/1
plants	higher dicots	Loranthaceae	*Amyema congener subsp. rotundifolia*			C		1/1
plants	higher dicots	Moraceae	*Morus alba*	white mulberry	Y			1/1
plants	higher dicots	Nyctaginaceae	*Boerhavia pubescens*			C		1/1
plants	higher dicots	Oleaceae	*Jasminum didymum subsp. lineare*			C		1/1
plants	higher dicots	Onagraceae	*Oenothera speciosa*		Y			1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	higher dicots	Oxalidaceae	*Oxalis thompsoniae*			C		1/1
plants	higher dicots	Rosaceae	*Prunus persica var. persica*		Y			1/1
plants	higher dicots	Rubiaceae	*Asperula conferta*			C		1/1
plants	higher dicots	Salicaceae	*Salix babylonica*	weeping willow	Y			1/1
plants	higher dicots	Sapindaceae	*Cardiospermum grandiflorum*	heart seed vine	Y			1/1
plants	higher dicots	Solanaceae	*Cestrum parqui*	green cestrum	Y			1/1
plants	higher dicots	Solanaceae	*Solanum nodiflorum*		Y			1/1
plants	higher dicots	Solanaceae	*Lycium ferocissimum*	African boxthorn	Y			2/2
plants	higher dicots	Verbenaceae	*Phyla canescens*		Y			1/1
plants	lower dicots	Ranunculaceae	*Clematis microphylla*			C		1/1
plants	monocots	Alliaceae	*Nothoscordum borbonicum*		Y			2/2
plants	monocots	Arecaceae	*Phoenix dactylifera*		Y			1/1
plants	monocots	Asparagaceae	*Asparagus africanus*	ornamental asparagus	Y			1/1
plants	monocots	Asparagaceae	*Asparagus plumosus*	feathered asparagus fern	Y			1/1
plants	monocots	Cyperaceae	*Cyperus rotundus*	nutgrass	Y			1/1
plants	monocots	Poaceae	*Cynodon dactylon var. dactylon*		Y			1/1
plants	monocots	Poaceae	*Sporobolus coromandelianus*		Y			1/1
plants	monocots	Poaceae	*Urochloa mosambicensis*	sabi grass	Y			1/1
plants	monocots	Poaceae	*Rytidosperma tenuius*			C		1/1
plants	monocots	Poaceae	*Triticum aestivum*	wheat	Y			1/1
plants	monocots	Poaceae	*Arundo donax*		Y			1/1

CODES

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

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

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

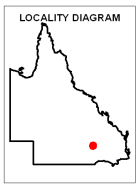
Records – The first number indicates the total number of records of the taxon for the record option selected (i.e. All, Confirmed or Specimens).
This number is output as 99999 if it equals or exceeds this value. The second number located after the / indicates the number of specimen records for the taxon.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

Appendix C – Protected Plant Trigger Map

Protected Plants Flora Survey Trigger Map

Legend

- Coordinates
- High risk area
- Cadastral line
  Property boundaries shown are provided as a locational aid only
- Freeways / motorways / highways
- Secondary roads / streets



N

0 490 980 1,470 1,960 2,450 m

This product is projected into:
GDA 1994 Queensland Albers

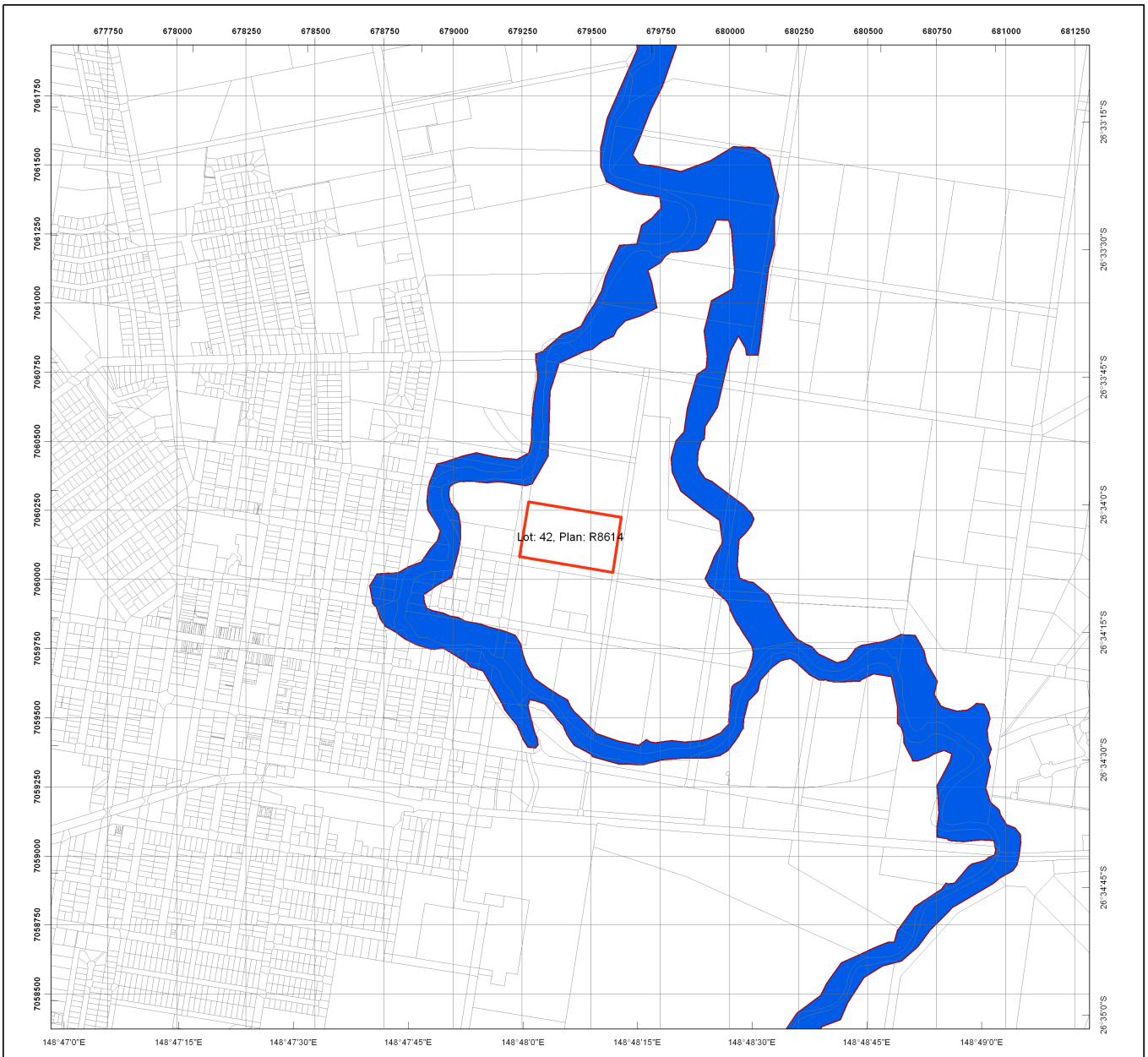
This map shows areas where particular provisions of the Nature Conservation Act 1992 apply to the clearing of protected plants.

This map is produced at a scale relevant to the size of the area selected and should be printed as A4 size in portrait orientation.

For further information or assistance with interpretation of this product, please contact the Department of Environment and Heritage Protection at palm@ehp.qld.gov.au

Disclaimer:
While every care is taken to ensure the accuracy of the data used to generate this product, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaim all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damages) and costs which might be incurred as a consequence of reliance on the data, or as a result of the data being inaccurate or incomplete in any way and for any reason.

Appendix D – Regulated Vegetation Management Map



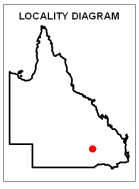
Regulated Vegetation Management Map

Legend

- Lot and Plan
- Category A area (Vegetation offsets/compliance notices/VDecs)
- Category B area (Remnant vegetation)
- Category C area (High-value regrowth vegetation)
- Category R area (Reef regrowth watercourse vegetation)
- Category X area (Vegetation not regulated under the VMA)
- Water
- Area not categorised
- Cadastral line
  Property boundaries shown are provided as a locational aid only

Queensland Government

LOCALITY DIAGRAM



N

0 200 400 600 800 1,000 m

This product is projected into:
GDA 1994 MGA Zone 55

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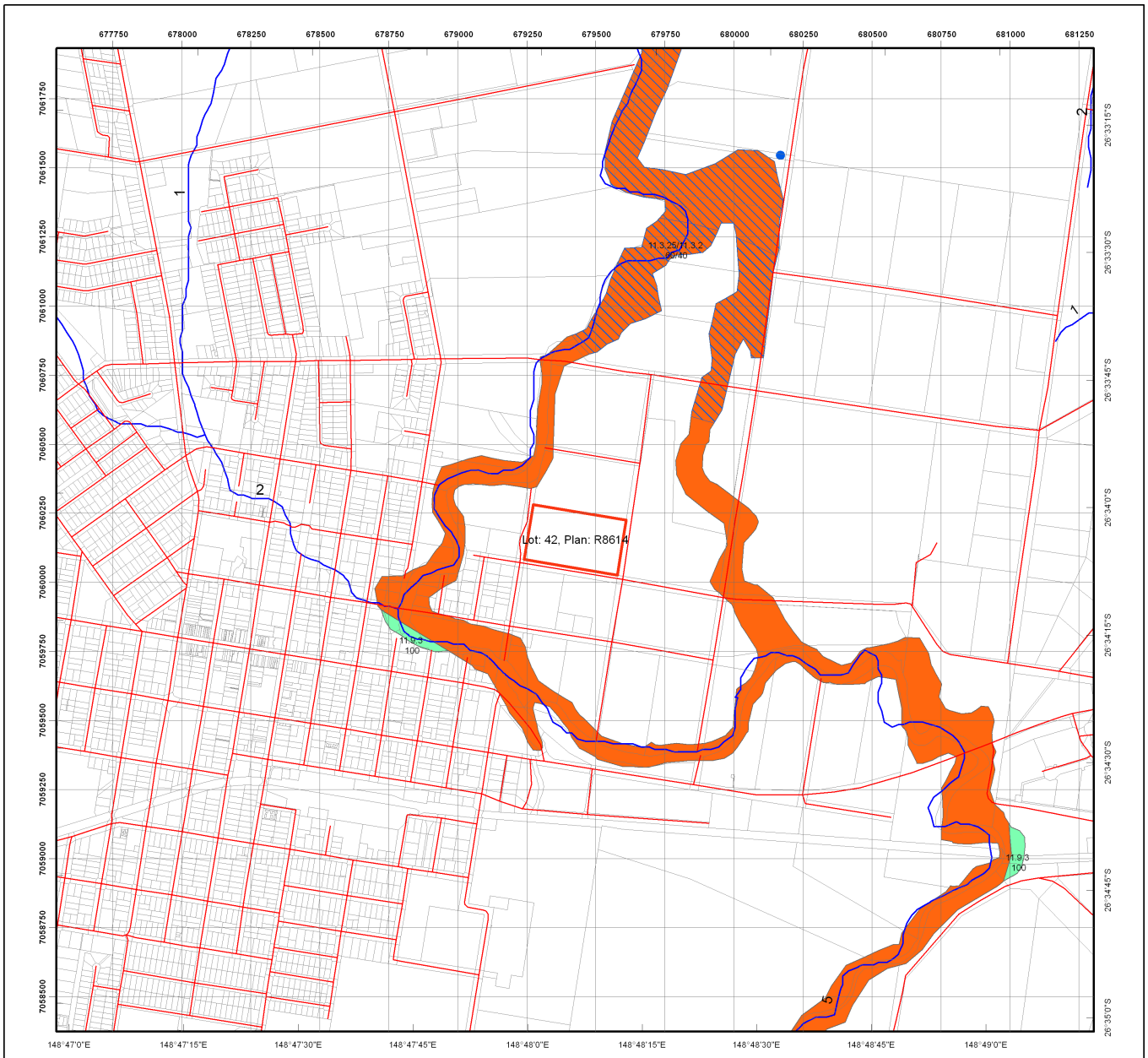
Additional information required for the assessment of vegetation values is provided in the accompanying "Vegetation Management Supporting map". For further information go to the web site: www.dnrm.qld.gov.au or contact the Department of Natural Resources and Mines.

Digital data for the regulated vegetation management map is available from the Queensland Spatial Portal at http://www.information.qld.gov.au/

This map is updated on a monthly basis to ensure new PMAVs are included as they are approved.



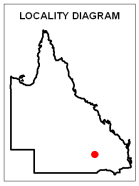
Vegetation Management Supporting Map

Legend

- Lot and Plan
- Category A or B area containing endangered regional ecosystems
- Category A or B area containing of concern regional ecosystems
- Category A or B area that is a least concern regional ecosystem
- Category A or B area containing remnant vegetation
- Category A or B area under Section 20AH
  These areas are edged in yellow and filled with the remnant RE Status
- Category C area containing endangered regional ecosystems
- Category C area containing of concern regional ecosystems
- Category C area that is a least concern regional ecosystem
- Category C area containing high value regrowth vegetation
- Category C area under Section 20AI
  These areas are edged in purple and filled with the remnant RE Status
- Non Remnant
- Water
- Wetland on the vegetation management wetlands map
- Essential habitat on the essential habitat map
- Essential habitat species record
- Watercourse on the vegetation management watercourse and drainage feature map
  (Stream order shown as black number against stream where available)
- Roads
- National Parks, State Forest and other reserves
- Cadastral line
  Property boundaries shown are provided as a locational aid only

Queensland Government

LOCALITY DIAGRAM



N

0 150 300 450 600 750 m

This product is projected into:
GDA 1994 MGA Zone 55

Labels for Essential Habitat are centred on the area of enquiry.

Regional ecosystem linework has been compiled at a scale of 1:100 000, except in designated areas where a compilation scale of 1:50 000 is available. Linework should be used as a guide only. The positional accuracy of RE data mapped at a scale of 1:100 000 is +/- 100 metres.

Disclaimer:
While every care is taken to ensure the accuracy of this product, the Department of Natural Resources and Mines makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.

Additional information may be required for the purposes of land clearing or assessment of a regional ecosystem map or PMAV applications. For further information go to the web site: www.dnrm.qld.gov.au or contact the Department of Natural Resources and Mines.

Digital data for the vegetation management watercourse and drainage feature map, vegetation management wetlands map, essential habitat map and the vegetation management remnant and regional ecosystem map are available from the Queensland Spatial Portal at http://www.information.qld.gov.au/

Vegetation Management Act 1999 - Extract from the essential habitat database

Essential habitat is required for assessment under the:

- State Development Assessment Provisions - Module 8: Native vegetation clearing which sets out the matters of interest to the state for development assessment under the *Sustainable Planning Act 2009*; and
- Self-assessable vegetation clearing codes made under the *Vegetation Management Act 1999*

Essential habitat for one or more of the following species is found on and within 1.1 km of the identified subject lot/s or on and within 2.2 km of an identified coordinate on the accompanying essential habitat map.

This report identifies essential habitat in Category A, B and Category C areas.

The numeric labels on the essential habitat map can be cross referenced with the database below to determine which essential habitat factors might exist for a particular species.

Essential habitat is compiled from a combination of species habitat models and buffered species records.

The Department of Natural Resources and Mines website (http://www.dnrm.qld.gov.au) has more information on how the layer is applied under the State Development Assessment Provisions - Module 8: Native vegetation clearing and the *Vegetation Management Act 1999*.

Regional ecosystem is a mandatory essential habitat factor, unless otherwise stated.

Essential habitat, for protected wildlife, means a category A area, a category B area or category C area shown on the regulated vegetation management map-

1) (a) that has at least 3 essential habitat factors for the protected wildlife that must include any essential habitat factors that are stated as mandatory for the protected wildlife in the essential habitat database; or
2) (b) in which the protected wildlife, at any stage of its life cycle, is located.

Essential habitat identifies endangered or vulnerable native wildlife prescribed under the *Nature Conservation Act 1994*.

Essential habitat in Category A and B (Remnant vegetation species record) areas:1100m Species Information

(no results)

Essential habitat in Category A and B (Remnant vegetation species record) areas:1100m Regional Ecosystems Information

(no results)

Essential habitat in Category A and B (Remnant vegetation) areas:1100m Species Information

(no results)

Essential habitat in Category A and B (Remnant vegetation) areas:1100m Regional Ecosystems Information

(no results)

Essential habitat in Category C (High value regrowth vegetation) areas:1100m Species Information

(no results)

Essential habitat in Category C (High value regrowth vegetation) areas:1100m Regional Ecosystems Information

(no results)

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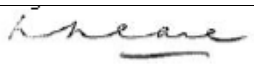
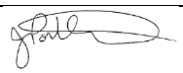
		Name	Signature	Name	Signature	Date
A	M Ward	K Keane	Draft	J Postlethwaite	Draft	23-12-15
0	M Ward	K Keane		J Postlethwaite		10-02-16

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