



Grassy White Box Woodland Endangered Ecological Community

**ECOLOGICAL CONSTRAINTS AND VALUES ASSESSMENT:
24 LAND PARCELS IDENTIFIED FOR REZONING AND
INVESTIGATIONS FOR FUTURE RESIDENTIAL OR RURAL
RESIDENTIAL PURPOSES IN QUIRINDI AND WERRIS
CREEK**

Liverpool Plains Shire LGA

February 2012

Report Prepared by

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For Liverpool Plains Shire Council



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EXECUTIVE SUMMARY

OzArk Environmental & Heritage Management (OzArk EHM) was commissioned by Liverpool Plains Shire Council (LPSC) to undertake an ecological values and constraints assessment of twenty four (24) land parcels (collectively termed the 'Project Site') around Quirindi and Werris Creek NSW. The objective of this ecological constraints and values analysis is to assess the suitability of certain lands for future residential or rural residential purposes within proximity to the urban centres of Quirindi and Werris Creek. A secondary objective is to provide planning advice on the potential for rezoning and subdivision of the land.

A 'cleared and disturbed' vegetation community in addition to three *Biometric* vegetation communities were recorded across the Project Site including:

- Bluegrass - Spear Grass - Redleg Grass derived grasslands of the Nandewar Bioregion;
- White Box - White Cypress Pine shrubby open forest of the Nandewar and Brigalow Belt South Bioregions;
- White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions.

All three Biometric communities are components of '*White Box-Yellow Box- Blakely's Red Gum Woodland Endangered Ecological Community*' and / or '*White Box- Yellow Box- Blakely's Red Gum Grassy Woodland – Derived Native Grasslands*' listed under the *NSW Threatened Species Conservation Act* (TSC Act) and /or *Commonwealth Environment Protection Biodiversity Conservation Act* (EPBC Act). On some sites the quality of the remnant only meets the NSW EEC criteria (the national listing applies to areas that meet minimum quality and size criterion, whilst the state listing protects any remnant of the community).

A total of 117 fauna species were recorded during the study including three (3) threatened bird species and six (6) threatened bat species:

- Rainbow Bee-eater (*Merops ornatus*) which is listed as migratory under the EPBC Act;
- Barking Owl (*Ninox connivens*) which is listed as vulnerable under the TSC Act
- Little Lorikeet (*Glossopsitta pusilla*) which is listed as vulnerable under the TSC Act;
- Yellow-bellied Sheath-tail-bat (*Saccolaimus flaviventris*) which is listed as vulnerable under the TSC Act;
- Eastern Cave Bat/Little Forest Bat (*Vespadelus troughtoni*) which is listed as vulnerable under the TSC Act;
- Large-eared Pied Bat (*Chalinolobus dwyeri*) which is listed as vulnerable under the TSC Act and EPBC Act.

- Eastern Falsistrelle (*Falsistrellus tasmaniensis*) which is listed as vulnerable under the TSC Act;
- Eastern Bentwing Bat (*Miniopterus schreibersii oceanensis*) which is listed as vulnerable under the TSC Act; and
- Greater Broad-nosed Bat (*Scoteanax rueppellii*) which is listed as vulnerable under the TSC Act.

It is likely that further threatened species known to occur in White Box Grassy Woodland in the Quirindi and Werris Creek locality would have been recorded in the Project Site, however due to inclement weather and time constraints, were not identified during the field assessment. These species include:

- Turquoise Parrot (*Neophema pulchella*) which is listed as a threatened species under the TSC Act);
- Diamond Firetail (*Stagonopleura guttata*) which is listed as a threatened species under the TSC Act);
- Speckled Warbler (*Chthonicola sagittatus*) which is listed as a threatened species under the TSC Act);
- Brown Treecreeper (*Climacteris picumnus victoriae*) which is listed as a threatened species under the TSC Act);
- Grey-crowned Babbler (*Pomatostomus temporalis temporalis*) which is listed as a threatened species under the TSC Act.
- Regent Honeyeater (*Xanthomyza Phrygia*) which is listed as critically endangered under the TSC Act and endangered under the EPBC Act;
- Koala (*Phascolarctos cinereus*) which is listed as a threatened species under the TSC Act and has a preliminary determination pending under the EPBC Act; and
- Hooded Robin (*Melanodryas cucullata*) which is listed as a threatened species under the TSC Act).

315 flora species were recorded across the Project Site. No threatened plants were recorded at the time of the assessment, however Lobed Blue Grass (*Bothriocloa Biloba*) listed under the EPBC Act is known to occur in Lots 1-3 DP255804.

Threatened flora species with potential to occur in less disturbed areas, but were not recorded during the assessment, are listed in **Table 17**. Various habitat features were found across the Project Site, predominately being native and derived grasslands, mature hollow bearing White

Box (*Eucalyptus albens*); along with some woody ground debris (WGD), leaf litter, rock outcrops, drainage lines and farm dams. The nature and extent of remnant vegetation combined with existing landuse and seasonal conditions resulted in a range of ecological constraints and opportunities across the Project Site that varied between the selected land parcels.

The land parcels comprising the Project Site also contribute to the connectivity across the Liverpool Plains landscape which is critical to conserve to maintain landscape ecosystem functionality as outlined in the Liverpool Plains Biodiversity Strategy (ELA 2010).

On the majority of the land parcels, portions or whole lands are suitable for the proposed new use (as outlined under the new zoning objectives in the Draft Liverpool Plains LEP 2011) while other areas are suitable with specific management and mitigation measures, such as restricting activities permitted on the land (eg. grazing and clearing).

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1 INTRODUCTION

1.1 PROPOSAL IDENTIFICATION

This report was commissioned by Liverpool Plains Shire Council (LPSC the “Proponent”). It details the results of an ecological values assessment of twenty four (24) parcels of land proposed for rezoning.

The full details of the land parcels and their locations have been provided in **Table 1** of this report. Approximately 558.25 ha of land have been assessed for the purpose of the proposal, all within 5 km of the city of Quirindi and Werris Creek, NSW (**Figures 1, 2 and 3**). The proposed rezoning varies from site to site, although it predominately involves Rural 1(a) zones changing to a variety of zones including Large-Lot Residential, Village, Primary Production, Environmental Living and Environmental Management.

1.1.1 Background

In 2009, Council adopted the *Liverpool Plains Shire Growth Management Strategy* which in turn led to the preparation of a comprehensive Local Environmental Plan known as the *Liverpool Plains Local Environmental Plan 2011* (LPLEP) for the region. The LEP is currently pending formal gazettal by the NSW Department of Planning & Infrastructure and it is expected that this process will be finalised in late 2011. To facilitate this process, the NSW Department of Planning and Infrastructure (NSW DP&I) has made funding available to Council for a range of related strategic planning initiatives in the Shire. Such strategic projects include background research required for the finalisation of Council's LEP in addition to further strategic analysis of lands previously identified as being potentially suitable for future urban expansion under the *Liverpool Plains Growth Management Strategy 2009*.

The land parcels assessed as part of this report were identified as part of the LEP preparation process and *Liverpool Plains Growth Management Strategy 2009*, as possessing the necessary merit to warrant further investigation in terms of its suitability for future urban expansion, or, alternatively a higher order use. One of the necessary steps in this investigation process is to determine the extent of any ecological constraints on the land.

Table 1: Property details of land parcels in the Project Site.

Corresponding figure number	Property Details	Location	Land Area	Current Zoning	Proposed Zoning under Draft LEP	Current Land Use
1	Lot 316 in DP751009	"Willandy", Bells Gate Road, Quirindi	36	1(a) Rural QLEP1991	Partial E4 (environmental living) /R5 (Large Lot residential). Land holder requests removal of part zoning E4 (environmental living) /R5 (Large Lot residential) to wholly R5.	Crop
3	Lot 317 in DP751009	Bells Gate Road, Quirindi	26	1(a) Rural QLEP1991	Partial E3/E4. Landholder requests change of part zoning of land from E3/E4 to wholly E4.	Grazing
2, 4, 5	Lots 1 – 3 in DP255804	South Street, Quirindi	24	1(a) Rural QLEP1991	RU1 (Primary Production). Landholder requests zoning of land as R1 (General Residential)	Grazing
6, 7	Lots 11 & 12 in DP1130672	Spains Lane, Quirindi	63	1(a) Rural QLEP1991	RU1 (Primary Production). Residential investigation under the Draft LEP Residential. Requests dwelling entitlements.	Grazing
24	Lot 221 in DP1105151		53	1(a) Rural QLEP1991	RU1 (Primary Production). Residential investigation under the Draft LEP	Crop
9, 10	Lot 14 Sec A in DP29984	Echo Hills Road, Werris Creek	120	1(a) Rural QLEP1991	RU1 (Primary Production). Residential investigation under the Draft LEP	Grazing
8	Lot 1 in DP624133		13	1(a) Rural QLEP1991	RU1 (Primary Production). Residential investigation under the Draft LEP	Grazing
11	Lots 12 in DP878120	240 Werris Creek Road Quirindi	65	1(a) Rural QLEP1991	RU1 (Primary Production). Residential investigation under the Draft LEP.	Grazing
12, 13	Lots 34 & 35 in DP875343	Henry Street Quirindi	4	1(a) Rural QLEP1991	RU1 (Primary Production). Residential investigation under the Draft LEP.	Grazing /pasture improvement
14, 15	Lots 36 & 37 in DP875343	1983 Seven Creeks Road, Quirindi	4.25	1(a) Rural QLEP1991	RU1 (Primary Production). Residential investigation under the Draft LEP.	Grazing / pasture improvement
18 17, 16, 19	Lots 1-4 in DP260891	"Hillview" Wallabadah Road, Quirindi	93	1(a) Rural QLEP1991	RU1 (Primary Production). Residential investigation under the Draft LEP.	Portions ploughed / Grazing

Corresponding figure number	Property Details	Location	Land Area	Current Zoning	Proposed Zoning under Draft LEP	Current Land Use
20	Lot 1 in DP112744	1293 Wallabadah Road, Quirindi	11	1(a) Rural QLEP1991	RU1 (Primary Production). Residential investigation under the Draft LEP.	Grazing
21	Lot 83 in DP751026		32	1(a) Rural QLEP1991	RU1 (Primary Production). Residential investigation under the Draft LEP.	Grazing
22	Pt Lot 2 in DP112744	321 Callaghans Lane, Quirindi	8	1(a) Rural QLEP1991	RU1 (Primary Production). Residential investigation under the Draft LEP.	Grazing
23	Pt Lot 84 in DP751026	281 Callaghans Lane, Quirindi	6	1(a) Rural QLEP1991	RU1 (Primary Production). Residential investigation under the Draft LEP.	Grazing
Total			558.25 ha			

1.2 DEFINITIONS USED IN THIS REPORT

Areas – A specific area within a land parcel that has been mapped identifying vegetation conditions and thus associated constraints.

Activity - has the same meaning as in the *Environmental Planning and Assessment Act 1979* (EP&A Act). The nature of the proposed activity is described in Section 3.1.

EEC - Endangered Ecological Community as identified under the TSC Act.

TEC – Threatened Ecological Community as identified under the EPBC Act.

CEEC – Critically Endangered Ecological Community as identified under both the TSC and EPBC Act.

Impact – An area that will be mechanically destroyed or altered to construct infrastructure associated with the activity.

LPSC – Liverpool Plains Shire Council.

Locality - means the area within a 50 km radius of the Study Area described in Section 2.0.

Low-condition vegetation – Low-condition vegetation was determined following the OEH Biobanking Assessment Methodology (BBAM) (DECCW 2008) where vegetation in low condition is defined as follows.

- Woody native vegetation with:
 - native over-storey percent foliage cover less than 25% of the lower value of the over-storey percent foliage cover benchmark for that vegetation type, and
 - less than 50% of groundcover vegetation is indigenous species, or
 - greater than 90% of groundcover vegetation is cleared.
- Native grassland, wetland or herbfield where:
 - less than 50% of groundcover vegetation is indigenous species, or
 - more than 90% of groundcover vegetation is cleared.

Project Site – The area where the proposed activity outlined in Section 3.1 will be undertaken (**Figure 1**). The Project Site consists of each land parcel identified in **Table 1** and are the areas ecologically assessed by OzArk.

Proposal – Assessment of certain lands within proximity of the urban centres of Quirindi and Werris Creek were suitable for further investigation and/or reinvestigation as to their suitability for future residential or rural residential purposes.

Land parcel – refers to each individual Lot and DP as listed in **Table 1**.

Red Flag – An area of land (part of a development site) with high biodiversity conservation values. The impact of the development on the biodiversity values of a red flag area cannot be offset by the retirement of biodiversity credits unless the Director General of OEH determines that strict avoidance of the red flag area is unnecessary in the circumstances.

1.3 SCOPE AND OBJECTIVES OF THE REPORT

The objective of the report is to provide a detailed ecological values and constraints analysis associated with the proposed rezoning and future subdivision of the subject land parcels. **Table 2** lists the specific objectives of the report.

This assessment was required to fulfil Part 3, Division 1, section 34A of the NSW *Environmental Planning & Assessment Act 1979* (EP&A Act) which requires that prior to rezoning, the subject land should have been assessed to identify any critical habitat or threatened species, populations or ecological communities, or their habitats, that will or may be affected by a change subsequent land use.

The investigation and report included the following aspects:

- A search of the OEH BioNet Wildlife Atlas website that encompasses the NSW OEH records of threatened Flora and Fauna, NSW Fisheries, Australian Museum, NSW Royal Botanic Gardens and Forests NSW databases.
- A review of current legislation including the *NSW National Parks and Wildlife Service Act 1974* (NP&W Act), *Threatened Species Conservation Act 1995* (TSC Act 1995), *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act 1999), *Fisheries and the Environmental Planning and Assessment Act* (EPA Act 1979);
- A search of the Office of Environment and Heritage (OEH) & Department of Sustainability Environment, Water, Population and Community (DSEWPaC) online databases and NSW Wildlife Atlas to identify species within the Local Government Area (LGA) of Catchment Management Authority (CMA) that are protected within the schedules of the TSC Act 1995 and EPBC Act 1999;
- A review of relevant literature including previous consulting reports, academic theses, articles and available works on the ecology, flora, fauna, of the Dubbo region;
- Consultation with OEH Threatened Species Unit if required;
- Pedestrian field survey to identify and record all species of flora and fauna within the Project Site for the proposed works.
- Seven-part Tests / Assessments of Significance to determine the significance of impacts to listed species, populations and communities and the formulation of appropriate management strategies; and,

- Completion of documentary evidence (e.g. updates for the OEH Bionet Wildlife Atlas) for any species located during the survey for the notification of the relevant authorities.

Table 2: Objectives of the report and structure.

The project has the following primary aims and objectives:	
a) To conduct an ecological assessment in relation to certain lands and verify their suitability, or otherwise, for future residential or rural residential purposes;	Consistent
b) To review currently available data and reporting frameworks in the context of this suitability analysis;	Report format discussed with LPSC. State and National government definitions, methodologies etcetera were used where relevant.
c) To provide concise and realistic recommendations including, but not limited to the suitability of the lands for future residential or rural residential uses; and	Section 8 and Table 16
d) To provide information in a format that is suitable for incorporation in a future Planning Proposal which will aim to rezone those land(s) to a higher order use (including residential or rural residential land uses).	Consistent
The broad scope of the project is to:	
1. Conduct an ecological assessment in relation to the lands defined in Table 3 .	Consistent
2. Assessment of the current condition of the targeted lands by groundtruthing and site visits	Ecological Assessment Results Section
3. Review currently available ecological data and environmental reports;	Section 5 and Table 13
1. Assess the accuracy of current reporting responses and prior strategic land use recommendations as applying to the land in accordance with the submitted: ➤ EcoLogical Australia Studies - Liverpool Plains Biodiversity Strategy dated February 2010, the Rezoning Investigations Ecological ➤ Constraints Assessment dated 8 June 2010 and the Ecological Constraints Assessment dated March 2008 (if applicable);	Section 5 and Table 13
1. Identify suitable lands suitable for future residential / rural residential purposes. 2.	Table 16
3. Provide site specific recommendations underpinned by supporting documentation including assessment methodology and analysis.	Table 16

1.4 OZARK EHM INVOLVEMENT

This assessment was undertaken by Phillip Cameron (Bsc, Ass Dip App Sci, MECANSW) and Heidi Kolkert (BA, Bsc Hons MECANSW) of OzArk under NSW Department of Primary Industries (DPI) Ethics Approval No 07/1601 & NSW Scientific Research License 11194. The aforementioned personnel wrote and edited this report. The flora and fauna assessment has been completed in accordance with Section 5a of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), for threatened species populations and ecological communities that could be affected by the Proposal.

1.5 DATE OF, AND WEATHER CONDITIONS DURING THE ASSESSMENT

The field assessment for this project was undertaken during the day of the 23rd to 25th of November 2011. The nocturnal components of the survey were carried out on the nights of the 22nd to 24th of November 2011. The vegetation communities occurring on the land parcels were determined, a list of vascular plants compiled, a list of fauna recorded on-site compiled, significant fauna and flora habitat assessed and the impact of proposed future subdivision investigated.

1.6 SURVEY CONSTRAINTS

Not all animals and plants can be fully accounted for within any given study area. This report is based upon data acquired from recent and current surveys, however, it should be recognised that the data gathered is indicative of the environmental conditions of the site at the time the report was prepared.

The presence of threatened species is not static. It changes over time, often in response to longer term natural forces that can, at any time, be dramatically influenced by man-made disturbance. Weather proved to be a constraint to the assessment (**Table 3**). Inclement weather during the field assessment period resulted in a reduction of faunal activity, such that it is likely some species that are known to occur in the locality were not recorded. Likewise, the composition of native grasslands in the Project Site has changed over time in response to weather and grazing intensity.

In order to overcome some of these limitations, database searches were conducted for threatened species, populations and ecological communities known to occur within the region as well as consultation with landowners. As such, the 'precautionary approach' for species occurrence has been adopted where required.

Table 3: Weather conditions during the assessment recorded at the Quirindi Post Office (BOM 2011).

Date	Day	Temps		Rain	9:00 AM				
		Min	Max		Temp	RH	Cld	Wind	Notes from field
		°C	°C		mm	°C	%	8th	km/h
22	Tuesday	16.8	31	2	24	61	0	Calm	At 7.00pm humid, overcast and light breeze. Heavy rain overnight.
23	Wednesday	15.6	21	5.8	18.6	94	8	Calm	Humid, overcast.
24	Thursday	14	24.4	21	17	86	8	Calm	Humid, overcast with showers during the day. Heavy rain overnight.
25	Friday	14.8	20.3	18	17.2	78	8	Calm	Humid, overcast and raining most of the day

2 ENVIRONMENTAL CONTEXT OF THE PROJECT SITE

The study location is around the towns of Quirindi, Werris Creek in the Liverpool Plains LGA, NSW, approximately 70km south of Tamworth. There are 24 land parcels. These are identified in **Figure 1** and **Table 1**.

2.1 TOPOGRAPHY OF THE PROJECT SITE

The Project Site is situated within the Nandewar Bioregion, Namoi River Basin, an area characterised by the transition from the elevated ranges associated with the Liverpool Ranges to the south, Great Dividing Range to the east, Nandewar Range to the north, and open plains to the west.

The Project Site is specifically situated in the undulating hilly landforms created by two north-south trending ridgelines extending from Werris Creek in the north to Quipolly Creek in the south. Elevations within this area are effectively bounded by the north-south oriented ridgelines and Werris and Quipolly Creeks and range from approximately 340 metres (m) AHD on the banks of Werris Creek to 940 m AHD on Mount Terrible, 3 km east of Werris Creek.

The Werris Creek land parcels are specifically situated on a toe slope and hill landform, the highest point being a peak at 900 m AHD, with the site falling away to the west and south to approximately 400 m AHD at Werris Creek itself.

The Quirindi area is dominated by low plains and undulating land to approximately 100m relief from valley floor.

2.2 HYDROLOGY OF THE PROJECT SITE

2.2.1 Watercourses

There are several mapped or naturally occurring drainage lines within the boundaries of the Project Site. In Quirindi, several properties are located within Marthouse Gully and have ephemeral drainage lines traversing the Project Site that drain into Quirindi Creek and Jacobs and Josephs Creek. Quirindi Creek drains into the Mooki River and then into the Namoi River.

In Werris Creek, drainage lines carry water from the hills into Werris Creek (1.4 km to the south) which then flows into the Mooki River and then into the Namoi River.

Natural drainage patterns within the Project Site and elsewhere on surrounding land have been previously modified through the installation of farm dams, contour/diversion banks and sediment retention structures, although the overall drainage pattern towards Werris, Quirindi and Jacob and Joseph Creeks remains the same.

The mountainous ridgelines and clay plains inhibit floodwaters from moving out of the Project Site and result in the locality being frequently inundated following heavy rainfalls.

2.2.2 Ground Water Dependent Ecosystems

Groundwater Dependant Ecosystems are ecosystems which have their species composition and their natural ecological processes determined by groundwater (ARMCANZ & ANZECC 1996, in DLWC 2004). There are different types of GDEs and Eamus et al. (2006a) identifies three primary classes of GDEs as follows:

- Aquifer and cave ecosystems, where stygofauna (groundwater-inhabiting organisms) reside within the groundwater resource. These ecosystems include karstic, fractured rock and alluvial aquifers. The hyporheic zones of rivers and floodplains are also considered in this category because these ecotones often support stygobites (obligate groundwater inhabitants);
- Ecosystems dependent upon the surface expression of groundwater. This includes base-flow rivers and streams, wetlands and some floodplains; and
- Ecosystems dependent on the subsurface presence of groundwater, often accessed by the roots of vegetation which penetrate into the capillary fringe (nonsaturated margins) of the water table.

All creeks identified in the Project Site have been identified as supporting GDE's: these are Werris Creek, Quirindi Creek, Jacob and Joseph Creek. The Quirindi Alluvial Groundwater Source is defined as the water contained in the unconsolidated alluvial deposits of the Quirindi Creek and Jacob and Joseph Creek (OEH 2011).

For the purposes of the proposed activity, potentially two types of GDE may be impacted upon in these catchments: Ecosystems dependant on surface expression of groundwater and those dependant on the subsurface presence of groundwater, i.e. terrestrial vegetation.

2.3 CLIMATE OF THE PROJECT SITE

The annual mean rainfall as measured at Quirindi Post Office is 682.9 mm (BOM 2011). Rainfall in the region predominantly falls in summer, with rains often in short duration, and high intensity rain events or thunderstorms (Ringrose-Voase et al. 2003).

Mean air temperatures as measured at Quirindi Post Office, are 24.6°C (maximum) and 8.9°C (minimum) with the hottest month occurring in January and coolest in July (BOM 2011).

Frost incidence is the other important climatic gradient. While temperatures vary as expected with elevation, there is a trend for more frequent frosts in the narrow alluvial valleys in the south

of the catchment (e.g. near Pine Ridge) due to topographic effects compared to the broader alluvial plains in the north (Ringrose-Voase et al. 2003).

2.4 GEOLOGY AND SOILS OF THE PROJECT SITE

Mitchell Landscapes are a system of ecosystem classification mapped at 1:25 000 scale, based on a combination of soils, topography and vegetation (Mitchell 2002). The Project Site falls three Mitchell Landscapes, being the Werris Creek Basalt Hills and Valleys; Gap Hills and Needles Basalt Peaks.

The soils of the site are predominately sandy clay loams to the characteristic black clays of the low lying plains, with shallower skeletal soils on many of the hill tops and ridges.

There are no significant geological issues which may affect future land uses on the site. Potential dryland salinity has been identified in some areas of the Liverpool Plains Shire, generally coinciding with vegetation removal and replanting with perennial grasses.

2.5 VEGETATION OF THE PROJECT SITE

The vegetation within the Project Site has been broadly mapped by Keith (2004) (**Figure 2**).

- Community 1 - Cleared - Cultivated / Pasture Lands.
- Community 2 - Cleared Land – Uncultivated.
- Community 4 - *Eucalyptus albens* (White Box) - *Eucalyptus melliodora* (Yellow Box) - *Eucalyptus blakelyi* (Blakely's Red Gum) Community.
- Community 5 - *Eucalyptus albens* (White Box) - *Angophora floribunda* (Roughbarked Apple) Community.
- Community 6 - *Eucalyptus dealbata* (Tumbledown Gum) Community.

Regionally, a vegetation map for the Namoi CMA has been produced (ELA 2009a). This mapping product is underpinned by a Regional Vegetation Community (RVC) classification which is linked to the vegetation type classification in the Biometric Vegetation Types Database. This map identified the following RVC's within the Project Site (**Figure 3**):

- White Box grassy woodlands of the Brigalow Belt South Bioregions and Nandewar;
- Derived grasslands, Brigalow Belt South and Nandewar;
- Box-Gum grassy Woodlands Brigalow Belt South Bioregions and Nandewar;
- Cropping;
- White Box-Pine-Silver-leaved ironbark shrubby open forests, Brigalow Belt South

Bioregions and Nandewar;

- Plains Grass- Bluegrass grasslands Brigalow Belt South Bioregions and Nandewar – derived occurrence; and
- Plains Grass - Bluegrass grasslands Brigalow Belt South Bioregions and Nandewar – natural occurrence.

Most recently the vegetation in proximity to the Project Site has been remapped to align with the Biometric Vegetation types preferred by the OEH (ELA 2010b), which correlate with threatened ecological communities listed under the EPBC and TSC Acts. Biometric Vegetation Types are also the base units used in the Biobanking Tool, which has been used to guide offset requirements for impacts to native vegetation at the Project Site. This mapping identified the following Biometric vegetation types:

- White Box grassy woodlands of the Nandewar and Brigalow Belt South Bioregions;
- Bluegrass – Spear Grass – Redleg Grass derived grasslands (derived from White Box grassy woodland) of the Nandewar Bioregion; and
- Brigalow – Belah woodlands on alluvial often gilgaied clay soil mainly in the Brigalow Belt South Bioregion.

Other vegetation onsite includes disturbed and exotic pasture; this land has been classified as 'Cleared land'.

Other vegetation types found on surrounding properties include, 'White Box – White Cypress Pine – Silver-leaved Ironbark shrubby woodlands', 'Yellow Box – Blakely's Red Gum grassy woodlands', 'Rust Fig – Wild Quince – Native Olive dry rainforest', 'Rough-barked Apple riparian forb/grass open forest' and 'Plains Grass – Bluegrass grasslands'.

Several ecological assessments have been undertaken within close proximity of the Project Site by Eco Logical (see reference list) and provide a detailed view of environmental factors in the locality.

Figure 2: Keith (2004) vegetation formations in and surrounding the Project Site.

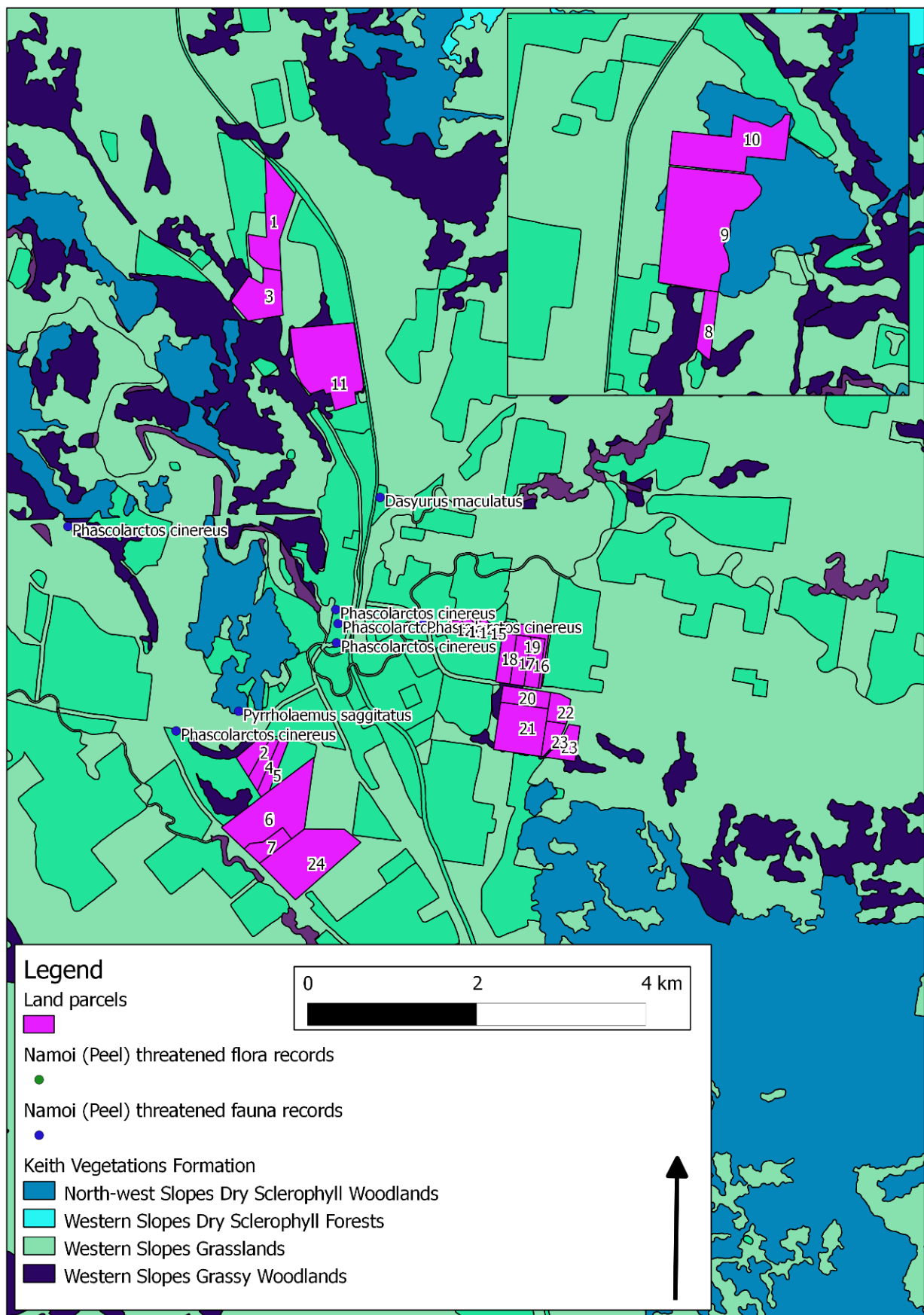
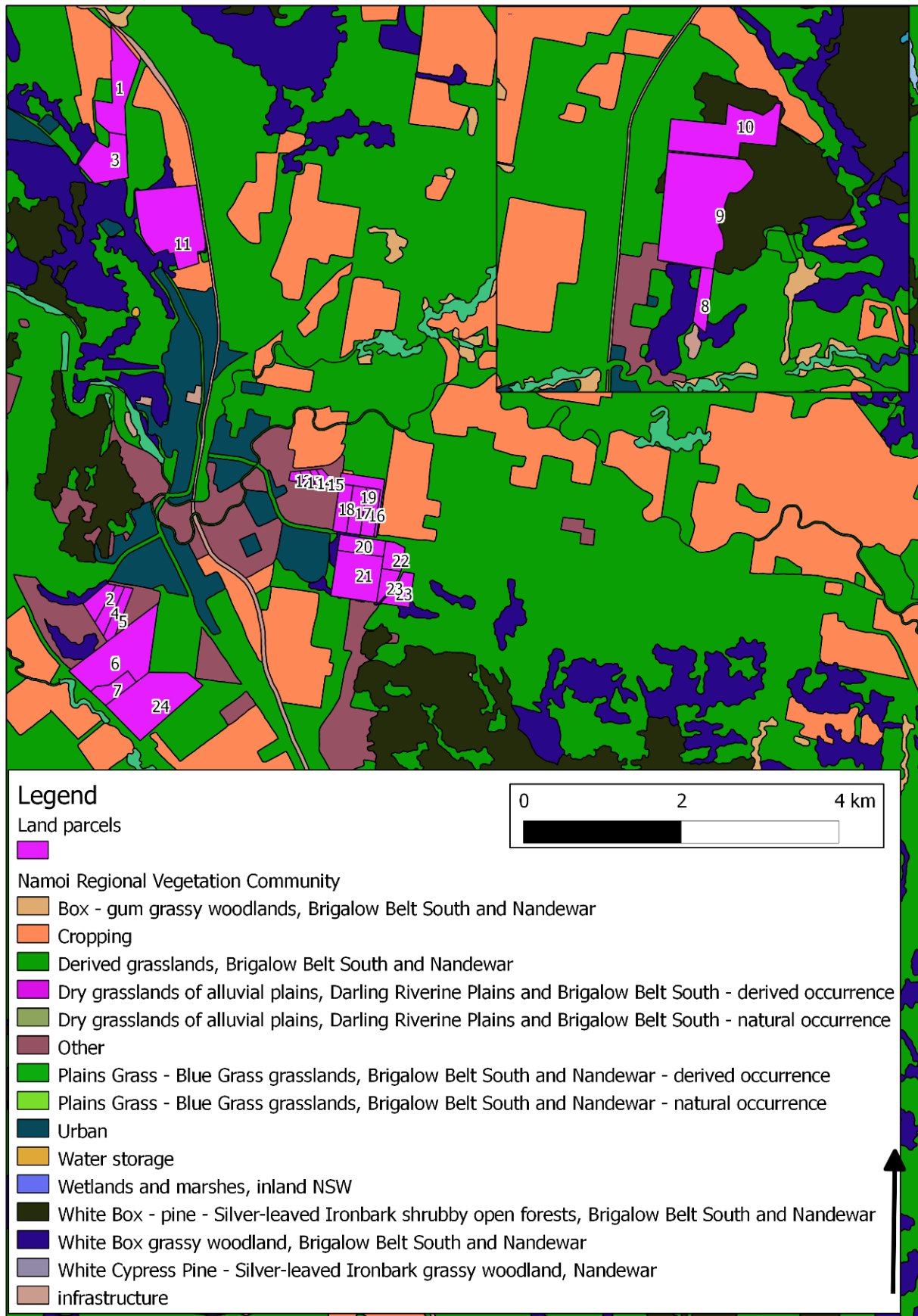


Figure 3: Regional Vegetation Communities in and surrounding the Project Site.

2.6 LANDSCAPE HISTORY AND DISTURBANCE

The land parcels collectively have undergone various levels of disturbance. The more arable soils of the area have been cleared for pasture or crops, whilst remnant woodland generally occurs on the higher ground and scattered throughout the surrounding plains. A matrix of mixed farming practices typifies the land uses in the locality and Project Site. This mixed farming involves a combination of cropping (generally wheat, oats or lucerne) and cattle grazing with or without varying levels of pasture improvement. The Project Site consists predominantly of White Box grassy woodlands, derived native grasslands, exotic pastures and cropping lands. These agricultural practises have been practised across the Project Site at varying intensities across each land parcel for several decades and have resulted in the native vegetation of the Project Site being either cleared, or extensively modified so that the remnant native vegetation is generally in a degraded and simplified condition state. As such, native vegetation communities vary in condition across the Project Site according to current and past grazing intensity and pastoral impacts. Within the locality other current or previous land uses include open cut mining and gravel extraction quarries.

Further discussion of the mapped vegetation and condition classes is included in Section 6 of this report.

Despite the history of agricultural land use, at the time of survey (November 2011), sustained rainfall as a result of the the La Nina weather pattern (during 2010 and 2011) may have contributed to large areas of remnant vegetation meeting the State and National criteria for listing as threatened / endangered ecological communities.

3 PROPOSAL

The Project Site are located in the township of Quirindi and in Werris Creek 11 km north-northwest of Quirindi, in the Liverpool Plain Local Government Area. This area is located within the North West Slopes and Plains of New South Wales. Based on cadastre lot layout, the Project Site encompasses an area of 558.25 ha and it falls within the following Lot and DPs (Table 3).

3.1 ASSESSMENT METHODOLOGY

The assessment was undertaken following the general auspices of the OEH¹ *Biodiversity Survey Guidelines Working Draft* (DEC 2004), *Threatened Species Assessment Guidelines: The Part 5A of the EP&A Act 7-part Assessment of Significance* (DECC 2007) and *OEH Field Survey Methods* (DECCW 2009). Notable constraints have been included in Section 4.1.1 of this report. To predict the likely effect of the Proposal on species generally detected through this type of survey effort, the precautionary principle has been applied.

This assessment applied the OEH 'precautionary principle'.

The OEH Biodiversity Survey Guidelines (DEC 2004: 30–34) state '*It is advised that where adequate surveys have not been conducted within the Study Area due to time limitations (you can also infer season timing etc), the precautionary principle should always be adopted. This involves assuming that threatened biodiversity which are likely to occur in the Study Area (based upon the presence of suitable habitat and recent records) inhabit the whole of the Study Area. The Assessment of Significance (7-part tests) would then be conducted on this basis*'

3.1.1 Flora

Survey of the Project Site was conducted according to the Random Meander Method described by Cropper (1993: 30) following the proposed alignment. Detailed botanical survey for native plants was carried out and the observed species composition within the community was aligned to *BioMetric*. Plant identification was made according to recent nomenclature in Harden 1990–2002, Cunningham *et al.* 1992, Royal Botanic Gardens (RBG 2011), and PlantNet NSW Flora Online (RBG 2011a). The national conservation significance of flora was determined by referencing *Rare or Threatened Australian Plants* (ROTAP) (Briggs and Leigh 2006) and the Schedules associated with the TSC Act or the EPBC Act.

¹ The departments formally known as the NSW DEC, DECC and DECCW are now a division in the Department of Premier and Cabinet (DPC) known as The Office of Environment and Heritage (OEH).

Special consideration was given to locating rare or threatened plants identified in the NSW Wildlife Atlas database (OEH 2011a) or those being predicted to occur by OEH (OEH 2011b) or DSEWPaC (DSEWPaC 2011) for the Project Site (**Appendix I**).

Visibility was good and plants without flowers/seed heads were relatively straightforward to identify given that the *BioMetric* (Gibbons *et al.* 2005) database provides detailed lists of known species associations with the greatest affiliation with the community.

Where areas had a combination of key habitat elements which were more likely to provide an environment in which a threatened plant would be recorded, it was given closer inspection.

Community composition, health, age status, habitat value for fauna and flora species, overall conservation significance and structural or habitat importance of the vegetation present was assessed. The extent/distribution of the vegetation communities was mapped in the field.

3.1.2 Fauna

Fauna surveys included general habitat searches and targeted surveys for threatened species. Tailored searches for species identified as likely to occur (based upon the habitat present) but not previously recorded were undertaken.

Identification of the species present, and their diversity, can indicate the type of habitat that is present within the Project Site. Further, an assessment of the habitat present within the Project Site will also dictate which identified threatened species, although they remained unobserved during the current survey, may utilise it (the basis of the precautionary principle). The likely impacts of development can be addressed through this process.

Fauna identification was achieved via:

- Identification of scats, diggings, tracks and other traces;
- Direct observation: i.e. bird watching;
- Ground, leaf litter and other refuge searches;
- Call identification; and
- Searches for indirect evidence of mammals (vocalisation, tracks, scats, burrows etc);

3.1.3 Vegetation condition scores and constraints for urban development.

Although the entire BioBanking Methodology for assessing vegetation was not utilised for this assessment, it provides an accepted, consistent and scientifically-based set of rules to assess biodiversity values. The condition scores allocated to each land parcel are consistent with the Biobanking Methodology which has been adopted by most government agencies as the preferred method of vegetation assessment including the LPSC (**Table 4**).

Table 4: Vegetation condition methodology and correlated vegetation type (Biobanking Methodology).

Vegetation scores (as per Biobanking Methodology)	Biobanking Methodology condition definitions	Constraint level for rezoning/ urban development.	Reason for constraint	Management	Control Measures
Moderate to Good (Good)	Native vegetation that is not in low condition.	High	• A 'red flag' area • Hollow dependent threatened species identified under the TSC and / or EPBC Act • EEC, TSC Act • CEEC EPBC Act • Bush Fire Prone Land APZ • CRZ required under State Protected Land • Koala Feed Trees identified under SEPP 44 • Removal of 'Native Vegetation', 'Removal of Hollow Bearing Trees' and 'Bushrock Removal' would contribute to NSW listed KTP's.	• These land parcels are not suitable for rezoning to a higher order of land use or the erection of dwellings.	• Land Covenants. • Recommended for zoning as E3 or partial E3/E4 if suitable • Biobanking agreements.
Moderate to Good	Native vegetation that is not in low condition.	High	• Consistent with moderate to Good (Good), however land may be subject to more intensive grazing practices. • Land parcel may be adjacent to Moderate to Good (good) condition land or special habitat feature.	• These land parcels are not suitable for rezoning to a higher order of land use or the erection of dwellings. • Land may not be suitable for future subdivision or dwellings unless strict controls are implemented.	• Land Covenants. • Grazing controls. • Tree removal controls. • Recommended for zoning as E3 or partial E3/E4 if suitable
Moderate to Good	Native vegetation that is not in low condition.	Moderate	• Consistent with moderate to Good (Good) however land is subject to more intensive grazing. In these areas the land parcel may be ➢ Areas where canopy cleared. ➢ Areas with higher weedy component in understorey. ➢ Area of existing land use has a greater pressure on biological diversity ➢ A smaller remnant than that described above / or shows connectivity with a low condition land parcel.	• These land parcels may be suitable for rezoning, however controls may be implemented. • Land may not be suitable for future subdivision or dwellings unless strict controls are implemented.	• Land Covenants. • Grazing controls. • Tree removal controls. • Strategic placement of any future dwellings. • Potential for future residential or rural residential uses.
Low	Low-condition	Low	• Cleared and weedy understorey / or land parcel under	• Land management	• Suitable for future

	vegetation		crop. • Koala Feed Trees identified under SEPP 44 may be present. • Development may contribute to NSW listed KTP's including Removal of 'Native Vegetation', 'Removal of Hollow Bearing Trees' and 'Bushrock Removal'.	would remain the same.	residential or rural residentialuses • Any remnant scattered White Box can be avoided through strategic planning.
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3.1.4 Designation of habitat values to trees

All trees within the Project Site were physically inspected (with or without binoculars as required) to determine habitat potential. Notes were taken on hollow sizes {small (2-5cm), medium (5-15cm), large (15-30cm), very large (>30cm)} and Hollow types (branch, trunk, spout, fissure).

3.1.5 Ultrasonic Bat Call Detection

Two microbat recording devices (Anabat SD2 and ZCAIM) were set as stationary sound activated units to record between the hours of 7.00 pm and 7.00am. **Table 5** and **Figure 4** show the location of the devices within the Project Site. Habitat suitable for hollow bearing dependent microbat species was specifically targeted.

Calls were analysed by a bat specialist employed by LesryK Environmental Consultants.

Table 5: Details of Anabat bat detector and call playback locations.

Easting / Northing GDA 94 Zone 56	Day	unit	Lot / DP	Call playback
150.699855 / -31.516236	Tuesday	SD2	Lot 1-4 in D 260891	
150.704945 / -31.519103	Tuesday	ZCAIM	Pt Lot 84 in DP751026	
150.664071 / -31.531928	Wednesday	SD2	Lot 12 in DP878120	Yes
150.673770 / -31.479269	Wednesday	ZCAIM	Lot 11 DP1130672	
150.660644 / -31.330143	Thursday	SD2	Lot 14 Sec A in DP29984	Yes
150.660261 / -31.325600	Thursday	ZCAIM	Lot 14 Sec A in DP29984	

3.1.6 Call Playback

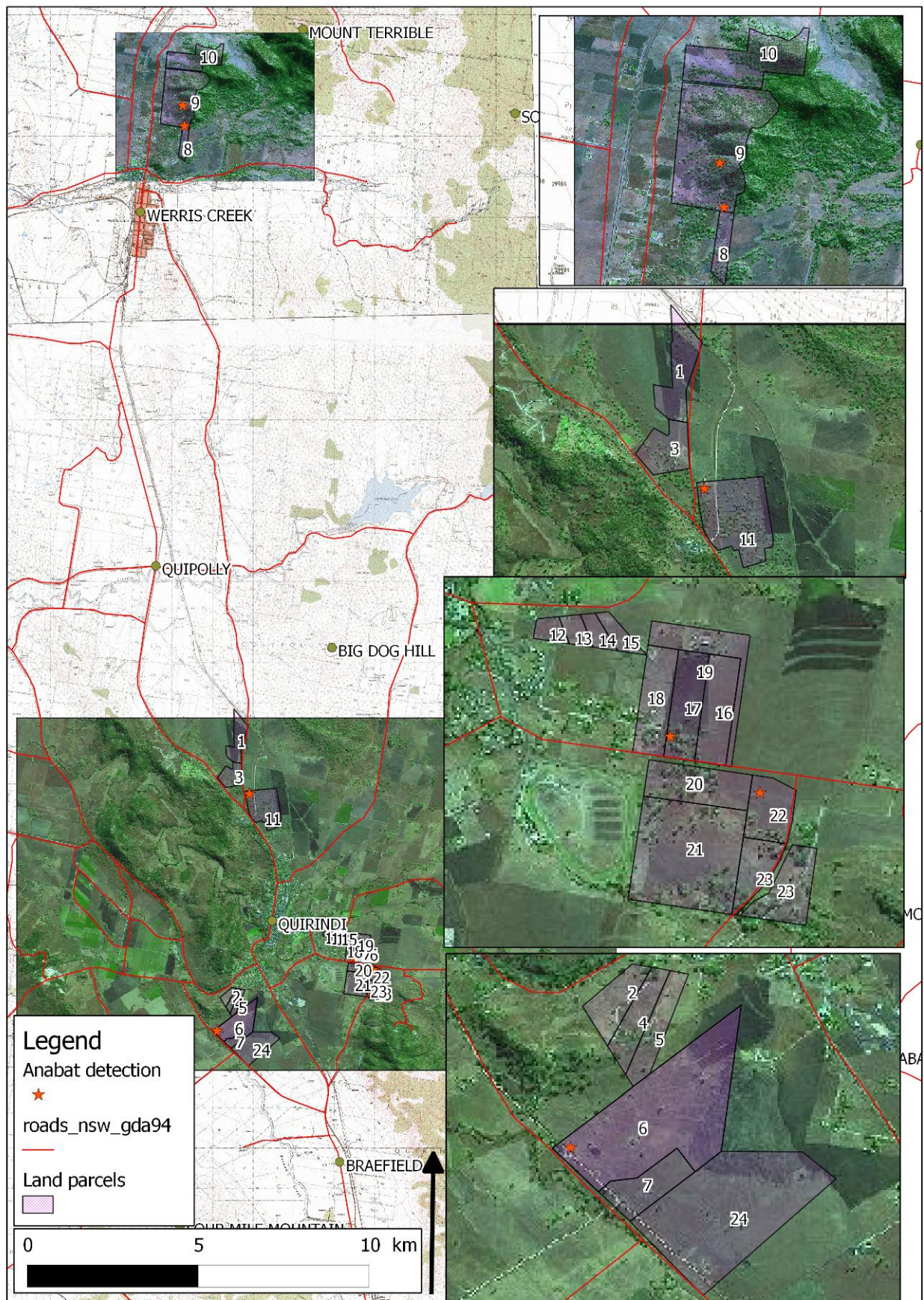
Nocturnal birds, marsupials and frogs were surveyed through call playback and spotlighting in the properties identified in the table above.

Call playback followed the methods described by Kavanagh and Peake (1993) and Debus (1995). This method requires an initial listening period of 10 to 15 minutes after playing the respective call, followed by a spotlight search for ten minutes to detect any animals in the immediate vicinity, followed by intermittently playing the call for another five minutes and a ten minute listening period. A general search of the immediate environs was then undertaken to see if any non-vocalising animals were present. Call playback detailed can be found in **Tables 5 and 6**. Attention was also given to the distinctive call of the Bushstone Curlew, Spotted Tailed Quoll and Growling Grass Frog during the nocturnal assessment.

Table 6: Details of species used in call playback.

Common Name	Scientific Name
Booroolong Frog	<i>Litoria booroolongensis</i>
Davies Tree Frog	<i>Litoria davesea</i>
Giant Burrowing Frog	<i>Heleioporus australiacus</i>
Green and Golden Frog	<i>Litoria aurea</i>
Littlejohn's Tree Frog	<i>Litoria littlejohni</i>

Stuttering Frog	<i>Mixophyes balbus</i>
Giant Barred Frog	<i>Mixophyes iteratus</i>
Koala	<i>Phascolarctus cinereus</i>
Quirrel Glider	<i>Petaurus norfolcensis</i>
Yellow Bellied Glider	<i>Petaurus asutralia</i>
Powerful Owl	<i>Ninox strenua</i>
Barking Owl	<i>Ninox connivens</i>
Masked Owl	<i>Tyto novaehollandiae</i>
Sooty Owl	<i>Tyto tenebricosa</i>

Figure 4: Anabat bat detector locations.

3.1.7 Bird Survey (Diurnal and Nocturnal)

OzArk undertook bird point assessment, complimenting the results obtained from general observations and spotlighting, listening and observing periods. The task was undertaken opportunistically in each land parcel.

Taking into consideration the discussion in the OEH working draft on methods to survey diurnal birds, an area-search method was used at each site. A 30 minute search was used where the observer walked around each site, as well as observing and listening for calls from a single point. The usual search time is 20 minutes, but this was increased to 30 minutes to increase the likelihood of recording more species. Craig (as cited in Denny 2005) states that studies have shown that an area search of 30 minutes duration detected a similar number of species as line transects and point counts, but gave higher estimates of overall bird density. The difference is likely due to the longer survey period and the greater chance of detecting cryptic species.

3.1.8 Scat and Tracks

All scats and raptor pellets (owls, eagles and hawks) encountered during the course of the field survey was collected and examined to determine species presence. Scats and tracks were identified with the aid of Trigg's (2004).

3.1.9 Herpetofauna Survey (Diurnal and Nocturnal)

Both nocturnal and diurnal herpetological surveys were conducted at the same time as the bird surveys and opportunistically during all other activities in the Project Site.

The diurnal component consisted of hand searches for frogs and reptiles under rocks, logs, bark, ground debris and other debris around drainage lines and dams, specifically targeting the freshwater dam sites. The habitat of the Project Site was assessed in terms of its suitability for threatened herpetofauna species.

4 ECOLOGICAL CONTEXT

4.1 DATABASE SEARCHES

Table 7 presents a summary of databases searches indicated for TSC and EPBC listed species, ecological communities and populations. Copies of the Office of Heritage and Environment (OEH), NSW Trade and Investment (Department of Primary Industries {DPI}) and Commonwealth Department of Sustainability Environment, Water, Population and Communities (DSEWPaC) Protected Matters (EPBC Act) threatened species database searches have been provided as **Appendix 1**.

An assessment of likelihood of occurrence was made for threatened and migratory species identified from the database search. This assessment was based on database or other records, presence or absence of suitable habitat, features of the proposal site, results of the field investigations and professional judgement.

Table 7: Desktop Database Search Results

Name of database searched	Date of search	Type of search	Comment
Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) Protected Matters (EPBC Act) Database; http://www.environment.gov.au/erin/ert/epbc/index.html	20.11.2011	Liverpool Plains LGA	Threatened Ecological Communities: 3 Threatened species: 36 Migratory Species: 14 Listed Marine Species: 12 Invasive Species: 18 Nationally Important Wetlands Species or species habitat listed as having potential/ likely or known to occur in the search area.
Office of Environment and Heritage (OEH) Threatened Species online database; http://www.threatenedspecies.environment.nsw.gov.au/index.aspx	7.11.2011	Combined geographic and habitat search Namoi (Peel) Catchment Management Authority	70 items predicted or known to occur in the Namoi (Peel) CMA. 4 EECs, 1 endangered population, 9 threatened plant species and 56 threatened fauna including the critically endangered Regent Honeyeater.
NSW Wildlife Atlas database 2011 http://wildlifeatlas.nationalparks.nsw.gov.au/wildlifeatlas/watlasSpecies.jsp	10.11.2011	Namoi (Peel) Catchment Management Authority	No threatened flora or fauna has been previously recorded in the Project Site. The Koala, Speckled Warbler, Spotted Tailed Quoll, Barking Owl and Eastern Bentwing Bat have been recorded within 5 km of the land parcel locations.
NSW Legislation website: SEPP 44: Koala Habitat Protection http://www.legislation.nsw.gov.au/fragview/inforce/epi%2B5%2B1995%2Bcd%2B0%2BN?	7.11.11	Schedule 1: LGAs listed and Schedule 2: Feed Trees listed	The Liverpool Plains Shire Council is listed in schedule 1. Previous vegetation mapping within the Project Site indicates that feed tree species are located in the Project Site. The Project Site would only be used by transient koalas accessing nearby habitat and as such the Project Site is assessed not containing koala habitat.
The OEH list of Key Threatening Processes (KTP)	7.11.2011	Key Threatening Processes	One KTP 'clearing of native vegetation' will be exacerbated by the Proposal.

Name of database searched	Date of search	Type of search	Comment
http://www.environment.nsw.gov.au/threatenedspecies/KeyThreateningProcessesByDoctype.htm			The nature and extent of the proposed impacts have been discussed in the preceding sections.
NSW I&I (Fisheries) http://www.dpi.nsw.gov.au/fisheries/species-protection/records/viewer	7.11.11	Namoi CMA LPSC LGA	The following 4 threatened fish species have been previously recorded in the Central West CMA. None have been recorded in the Talbragar River. • Murray cod, cod, (<i>Maccullochella peelii peelii</i>); • Murray Hardyhead (<i>Craterocephalus fluviatilis</i>) • Silver Perch (<i>Bidyanus bidyanus</i>), • Freshwater Catfish (<i>Tandanus tandanus</i>) No threatened fish species have been previously recorded in the Liverpool Plains LGA.
LPSC Draft Local Environment Plan (2011) Quirindi Local Environmental Plan 1991 Parry Local Environmental Plan 1987	18.1.2011	Project Site	The lands on which this study are focused are mainly currently zoned Rural 1(a). The permissible uses within Rural 1(a) differ slightly between the original LEPs. Council is currently preparing a new LEP in concurrence with the new standard LEP requirements under Section 5 of the Environmental Planning and Assessment Act 1979. The new LEP is being informed by Council's Growth Management Strategy (Edge Planning 2009). Land parcels are noted for 'urban expansion', 'large lot residential' 'Village' or 'Primary Production' in the GMS (Edge Planning 2009).
State Environmental Planning Policy (Infrastructure) 2007	18.1.2011	Project Site	State Environmental Planning Policy (Infrastructure) 2007 aims to facilitate the effective delivery of infrastructure across the State. The Project Site is not located on land reserved under the National Parks and Wildlife Act 1974 and does not affect land or development regulated by State Environmental Planning Policy No. 14 – Coastal Wetlands, State Environmental Planning Policy No. 26 – Littoral Rainforests or State Environmental Planning Policy (Major Projects) 2005.

4.1.1 Current and proposed zoning information

The following table (**Table 8**) indicates the objectives of the proposed draft LPSC LEP 2011 and implications associated with approved land use. Land zoned under the previous Quirindi LEP 1991 as 'Rural "A" Zone is outlined as follows::

1) Objectives of zone:

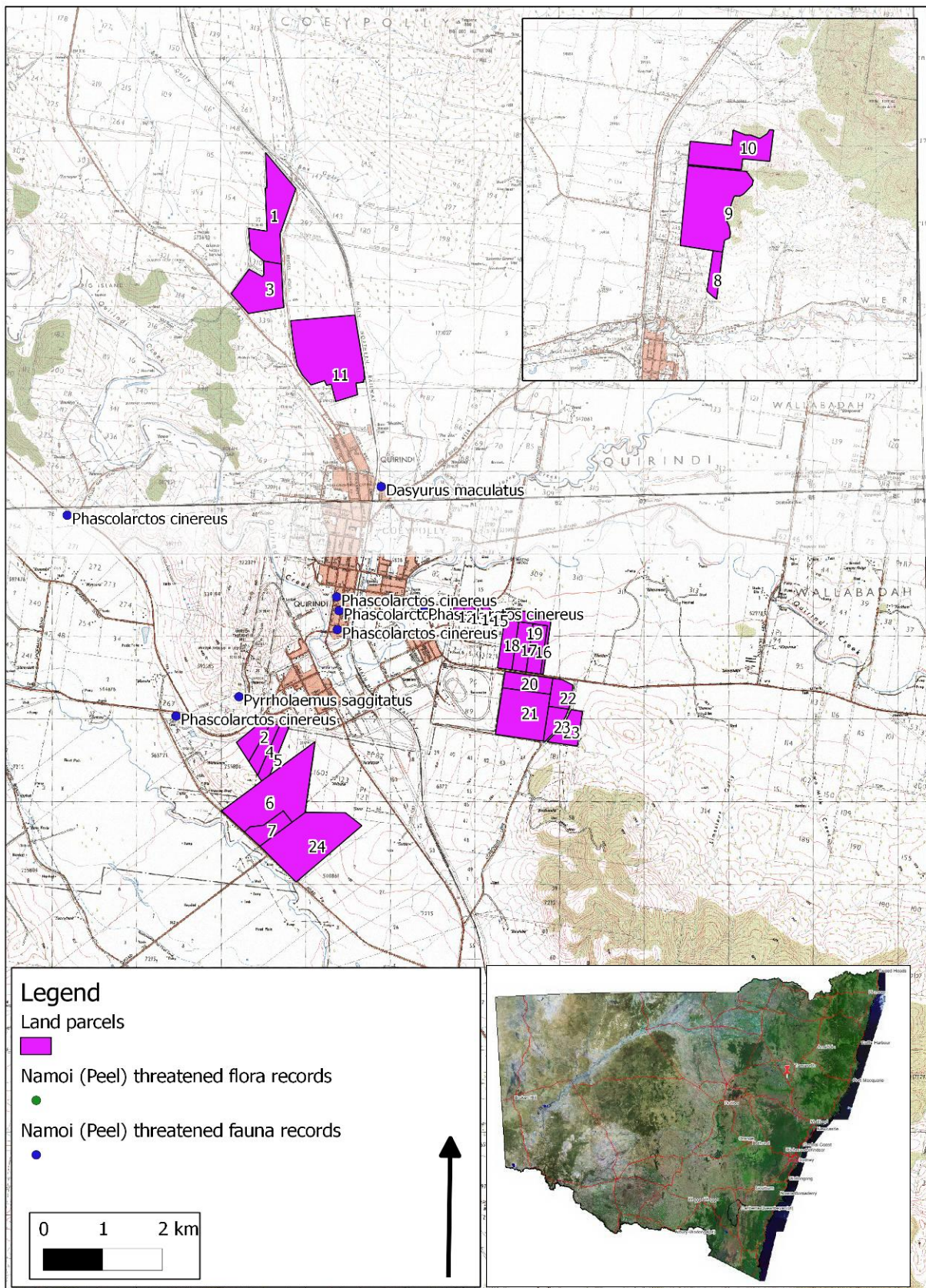
- a) to encourage the productive and efficient use of land for agricultural purposes,
 - b) to prevent inappropriate development of prime crop and pasture land for purposes other than agriculture,
 - c) to control subdivision of land having regard to the efficient use of land for agricultural purposes,
 - d) to ensure that the type and intensity of development is appropriate, having regard to the characteristics of the land, the rural environment and the cost of providing public services and amenities, and
 - e) to protect the natural and scenic resources of the Shire of Quirindi.
2. Without development consent Agriculture (other than intensive animal husbandry establishments and animal boarding, breeding and training establishments); forestry.
 3. Only with development consent Any purpose other than a purpose included in item 2 or 4.
 4. Prohibited Bulk stores (other than those associated with agriculture); car repair stations; commercial premises (other than veterinary hospitals or veterinary surgeons establishments); hospitals; hotels; industries (other than rural industries, home industries or extractive industries); institutions; junk yards; liquid fuel depots; motor showrooms; professional consulting rooms; recreation facilities; refreshment rooms; residential flat buildings; shops (other than general stores); service stations; taverns; transport terminals; warehouses.

Table 8: Zoning information from earlier LEPs compared with the zoning and objectives proposed in the draft LPSC LEP 2011.

New LPSC LEP 2011 zoning	Old LEP zoning	Objective of proposed LPSC LEP 2011 zones
Rural Zones		
RU1 Primary Production	1(a) General Rural	RU1 Primary Production This zone is generally intended to cover land used for most kinds of primary industry production, including extensive agriculture, horticulture, intensive livestock agriculture, mining, forestry and extractive industries. The zone is aimed at maintaining and enhancing the natural resource base.
RU3 Forestry	1(f) Forestry	RU3 Forestry This zone is generally intended to identify and protect land that is to be used for long-term forestry use. The zone applies to NSW State Forests.
RU5 Village	2(v) Village or Urban	RU5 Village This zone is generally intended to cover rural villages where a mix of residential, retail, and other uses is to be established or maintained.
RU6 Transition	Not previously provided	RU6 Transition This zone is generally intended to minimise conflict between land uses of varying environmental sensitivity.
Residential Zones		
R1 General Residential	2(v) Village or Urban	R1 General Residential This zone is generally intended to provide for a variety of housing types and densities, including

		dwelling houses, multi-dwelling housing, residential flat buildings, boarding houses and seniors housing. The zone also provides for facilities or services to residents, including neighbourhood shops and child care centres.
R5 Large Lot Residential	1(c) Rural Small Holdings	R5 Large Lot Residential This zone is generally intended to cater for development that provides for residential housing in a rural setting.
Recreation Zones		
RE1 Public Recreation	2(v) Village or Urban	RE1 Public Recreation This zone is generally intended for a wide range of public recreation areas and activities, including local and regional open spaces.
RE2 Private Recreation	2(v) Village or Urban	RE2 Private Recreation This zone is generally intended to cover a wide range of recreation areas and facilities on land that is privately owned or managed
Environmental Protection Zones		
E1 National Parks and Nature Reserves	Not previously provided	E1 National Parks & Nature Reserves This zone is generally intended to cover existing national parks and reserves.
E3 Environmental Management	Not previously provided	E3 Environmental Management This zone is generally intended to be applied to land that has environmental or scenic values, but where a limited range of development may be permitted
E4 Environmental Living	Not previously provided	E4 Environmental Living This zone is generally intended for low impact residential development in areas with special ecological, scientific or aesthetic values.

Figure 5: Threatened Species recorded in proximity to the Project Site.



5 LITERATURE REVIEW

Table 9 identifies those surveys most relevant to the current proposal in identifying the potential for threatened flora, fauna and ecological communities.

Table 9: Previous ecological work undertaken in the locality.

Report	Summary of Findings
Rezoning investigations: Ecological Constraints Assessment. EcoLogical 8 June 2010. Prepared for Liverpool Plains Shire Council	- The field survey results show approximately 84% or 619ha of the three sites support an ecological community listed as either “endangered” under the TSC Act or “critically endangered” under the EPBC Act. The Grassy White Box Woodland present across the Project Site is listed on the NSW TSC Act as Endangered under the name of “White Box Yellow Box Blakely’s Red Gum Woodland”, and also as “Critically Endangered” on the EPBC Act under the name of “White Box-Yellow Box-Blakely’s Red Gum Grassy Woodland and Derived Native Grassland”. - One threatened flora species was recorded during the field surveys, Lobed Blue Grass (<i>Bothriochloa biloba</i>), a vulnerable species listed under the Commonwealth EPBC Act. The database searches together with an assessment of the likelihood of occurrence for each species had found 3 further endangered or vulnerable flora species with potential to occur on site. - The Project Site contains a number of broad habitat elements for flora and fauna. No threatened fauna species were recorded within the Project Site. The database searches together with an assessment of the likelihood of occurrence for each species found a further 13 fauna species with potential or likely to occur on site. An ecological constraints assessment has been made of all of the environmental values found in the Project Site and three site maps produced to identify areas with high, “moderate” and “low” ecological constraints. Based on the preliminary ecological investigations there should be no impediment to the use of “low” constrained lands for development. Areas with “Moderate” and “High” constraint will trigger a more detailed environmental assessment under the EPBC and TSC Act as part of any future development applications. The “High” constrained land is not recommended for development; particularly the Box-Gum Woodland, listed under the TSC Act and EPBC Act. The report identifies areas that may support rezoning with conditions to protect the ecological assets within the Project Site.
Rezoning investigations: Ecological Constraints Assessment. EcoLogical 2007. Prepared for Liverpool Plains Shire Council.	Ten broad vegetation communities were recorded from across all the sites including a large amount of Box-Gum Woodland EEC (White Box-Yellow Box-Blakely’s Red Gum Woodland Endangered Ecological Community) was found across the Project Site, listed under both the Commonwealth Environment. Protection Biodiversity Conservation Act and the NSW Threatened Species Conservation Act, specifically on sites 1, 3, 4, 5, 6, 8, 10, 11, 12 and 13. A total of 48 fauna species were recorded during the study, two of which are listed as threatened species under the TSC Act - turquoise parrot (<i>Neophema pulchella</i>) and diamond firetail (<i>Stagonopleura guttata</i>) - and one which is listed as migratory under the EPBC Act - rainbow bee-eater (<i>Merops ornatus</i>).
Fauna and Flora Impact Assessment Report for the Proposed Subdivision of Who’d A Thought It Hill, Quirindi (NWES 2005).	- No threatened plants or ecological communities found on site or considered likely to occur - Five threatened fauna species were recorded; koala, speckled warbler, Turquoise Parrot, Brown Treecreeper and Yellow-bellied Sheathtail Bat. - A further seven threatened fauna species were considered likely to occur - The Project Site Area is not ‘core koala habitat’ under SEPP 44 - Numerous dead trees and hollow bearing trees were recorded. - No significant impacts as a result of the rezoning were considered likely

	and the rezoning was considered acceptable provided a number of recommendations were followed.
Seven Part Test: Report for the Proposed Subdivision of Who'd A Thought It Hill, Quirindi (Wildthing 2007)	No threatened flora or fauna were identified on site. The proposed rezoning was considered unlikely to have a significant impact on any of the threatened species considered likely to occur on the site.
Environmental Impact Statement for the Proposed Werris Creek Coal Mine (RW Corkery & Co 2004)	- White Box-Yellow Box-Blakely's Red Gum Woodland EEC on site and significant other areas exist in the Werris Creek and Quirindi region. - The impacts were not considered significant to this community. - Mine unlikely to impact on any threatened species considered likely to occur on the site or any areas of environmental significance in the region.
Proposed Werris Creek Open Cut Coal Mine	- No Threatened Flora species, Endangered Flora Populations or Critical Habitat have been recorded within the project site. However, remnants of two Endangered Ecological Communities (EECs) occur within the project site: - Brigalow within the Brigalow Belt South, Nandewar and Darling Riverine Plains; and - White Box Yellow Box Blakely's Red Gum Woodland. - The 2 threatened species are known to occur in the Project Site are: - Hooded Robin (<i>Melanodrya cucullata</i>); and - Large Bentwing-bat (<i>Miniopterus schreibersii</i>). - Threatened species that have the potential to occur on the project site are: - Brown Treecreeper (<i>Climacteris picumnus</i>); - Diamond Firetail (<i>Stagonopleura guttata</i>); - Regent Honeyeater (<i>Xanthomyza phrygia</i>); - Speckled Warbler (<i>Pyrrholaemus sagittatus</i>); and - Turquoise Parrot (<i>Neophelma pulchella</i>).
Biodiversity Impact Assessment: Werris Creek Coal Mine Life of Mine Project. Prepared by: EcoLogical Australia Pty Ltd. Specialist Consultant Studies Compendium Volume 2, Part 5 December 2010	- The assessment identified two threatened ecological communities (TECs) present at the Project Site, namely: - White Box – Yellow Box – Blakely's Red Gum woodlands (and derived grasslands); and - Brigalow (<i>Acacia harpophylla</i> dominant and co-dominant) woodlands. - These TECs are both listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), the former as 'critically endangered' and the latter as 'endangered'. They are also both listed as 'endangered' under the NSW Threatened Species Conservation Act 1995 (TSC Act). - There were eight threatened fauna species recorded during the survey period 2004 to 2010: Little Eagle (<i>Hieraetus morphnoides</i>); Hooded Robin (<i>Melanodryas cucullata</i>); Brown Treecreeper (<i>Climacteris picumnus</i>); Little Lorikeet (<i>Glossopsitta pusilla</i>); Eastern Bent-wing Bat (<i>Miniopterus schreibersii oceanensis</i>); Yellow-bellied sheath-tail Bat (<i>Saccolaimus flaviventris</i>); Eastern False Pipistrelle (<i>Falsistrellus tasmaniensis</i>); and Greater Broad-nosed Bat (<i>Scoteanax rueppellii</i>). These species are all listed as 'vulnerable' under the TSC Act. - There were no threatened or migratory species, listed under the EPBC Act, recorded at the Project Site during the survey period 2004 to 2010. The supplementary DGR's issued to address NES Matters (DoP 2010b) required the impacts of the LOM Project on four threatened species, which potentially occurred on the site, to be assessed: Regent Honeyeater (also a listed migratory species); Swift Parrot (<i>Lathamus discolor</i>); Finger Panic Grass (<i>Digitaria porrecta</i>); and Prasophyllum sp. Wybong. These threatened and migratory species were not recorded during the field surveys. No threatened flora, listed under the EPBC Act or the TSC Act, were recorded at the Project Site.

Table 10: Threatened Flora, Fauna, populations and ecological communities identified in the database searches.

Common Name	Scientific Name	Type of species	Threat Status		Database Search Records			Potential to occur in Project Site
			NSW (TSC or FM Act)	EPBC	OEH Namoi (Peel) CMA search. Known or Predicted to occur	EPBC Search centred on Project Site	Wildlife Atlas Records OEH Namoi (Peel) CMA	
Austral Toadflax	<i>Thesium australe</i>	Plant > Herbs and Forbs	V	V	Known		2	Potential to occur where stands of Kangaroo Grass exist and previous land-use disturbances associated with grazing and cropping are low.
Australasian Bittern	<i>Botaurus poiciloptilus</i>	Animal > Birds	E	E	Known	Species or species habitat known to occur within area		Potential to occur.
Australian Brush-turkey population in the Nandewar and Brigalow Belt South bioregions	<i>Alectura lathamii</i> - E population	Animal > Birds	EP		Known			Potential to occur.
Australian Grayling	<i>Prototroctes maraena</i>	Animal > Fish		V		Species or species habitat may occur within area		Suitable habitat is not available in the Project Site for this species.
Barking Owl	<i>Ninox connivens</i>	Animal > Birds	V		Known		5	Potential to occur near permanent water and larger hollow bearing trees
Barrington Tops Ant Orchid	<i>Chiloglottis platyptera</i>	Plant > Orchids	V		Predicted			Suitable habitat is not available in the Project Site for this species.
Biconvex Paperbark [5583]	<i>Melaleuca biconvexa</i>	Plant > Trees		v		Species or species habitat likely to occur within area		Suitable habitat is not available in the Project Site for this species.
Black-breasted Buzzard	<i>Hamirostra melanosternon</i>	Animal > Birds	V		Predicted			Unlikely

Common Name	Scientific Name	Type of species	Threat Status		Database Search Records			Potential to occur in Project Site
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Blackbutt Candelbark	<i>Eucalyptus rubida</i> <i>subsp. barbigerorum</i>	Plant > Trees	V	V			3	Suitable habitat is not available in the Project Site for this species.
Black-chinned Honeyeater (eastern subspecies)	<i>Melithreptus gularis</i> <i>gularis</i>	Animal > Birds	V		Known		39	Potential to occur
Black-faced Monarch	<i>Monarcha melanopsis</i>	Animal > Birds> migratory		Migratory Species		Breeding may occur within area		Potential to occur
Black-necked Stork	<i>Ephippiorhynchus</i> <i>asiaticus</i>	Animal > Birds	E		Known		1	Potential to occur around wetland / dams.
Black-tailed Godwit	<i>Limosa limosa</i>	Animal > Birds	V		Predicted			Potential to occur in farm dams.
Blue-billed Duck	<i>Oxyura australis</i>	Animal > Birds	V		Known			Potential to occur in farm dams.
Bluegrass	<i>Dichanthium setosum</i>	Plant > Herbs and Forbs	V	V	Known		5	Potential to occur
Booroolong Frog	<i>Litoria booroolongensis</i>	Animal > Amphibians	E	E	Known		24	Suitable habitat is not available in the Project Site for this species.
Border Thick-tailed Gecko	<i>Underwoodisaurus</i> <i>sphyrurus</i>	Animal > Reptiles	V	V	Known		26	Potential to occur
Broad-headed Snake	<i>Hoplocephalus</i> <i>bungaroides</i>	Animal > Reptiles	V	V		Species or species habitat likely to occur within area		Potential to occur
Bridled Nailtail Wallaby	<i>Onychogalea fraenata</i>	Animal > Marsupials	PE				2	Unlikely
Brolga	<i>Grus rubicunda</i>	Animal > Birds	V		Predicted			Unlikely
Brown Treecreeper (eastern subspecies)	<i>Climacteris picumnus</i> <i>victoriae</i>	Animal > Birds	V		Known		146	Potential to occur

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			NSW (TSC or FM Act)	EPBC	OEH Namoi (Peel) CMA search. Known or Predicted to occur	EPBC Search centred on Project Site	Wildlife Atlas Records OEH Namoi (Peel) CMA	
Brush-tailed Phascogale	<i>Phascogale tapoatafa</i>	Animal > Marsupials	V		Predicted			Potential to occur
Brush-tailed Rock-wallaby	<i>Petrogale penicillata</i>	Animal > Marsupials	E		Known	Species or species habitat may occur within area	2	Suitable habitat is not available in the Project Site for this species. Prefers rocky ridgelines.
Brush-tailed Bettong (South-East Mainland)	<i>Bettongia penicillata penicillata</i>	Animal > Marsupials	PE	PE			1	Unlikely
Bush Stone-curlew	<i>Burhinus grallarius</i>	Animal > Birds	E		Predicted		1	Suitable habitat is not available in the Project Site for this species.
Camden White Gum, Nepean River Gum [2821]	<i>Eucalyptus benthamii</i>	Plant > Trees		V		Species or species habitat likely to occur within area		Suitable habitat is not available in the Project Site for this species.
Cattle Egret	<i>Ardea ibis</i>	Animal > Birds> migratory and Migratory Wetland	Not Listed	Migratory / Marine species		Species or species habitat may occur within area		Likely to occur in farmlands around cattle / waterbodies
Cobar Greenhood Orchid	<i>Pterostylis cobarensis</i>	Plant > Herbs and Forbs	V	V				Suitable habitat is not available in the Project Site for this species.
Comb-crested Jacana	<i>Irediparra gallinacea</i>	Animal > Birds	V		Known			Suitable habitat is not available in the Project Site for this species.
Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest		Community > Threatened Ecological Communities		CE		Community likely to occur within area		Suitable habitat is not available in the Project Site for this species.
Davies' Tree Frog	<i>Litoria daviesae</i>	Animal > Amphibians	V		Known		6	Potential to occur

Common Name	Scientific Name	Type of species	Threat Status		Database Search Records			Potential to occur in Project Site
			NSW (TSC or FM Act)	EPBC	OEH Namoi (Peel) CMA search. Known or Predicted to occur	EPBC Search centred on Project Site	Wildlife Atlas Records OEH Namoi (Peel) CMA	
Deane's Melaleuca [5818]	<i>Melaleuca deanei</i>	Plant > Shrubs		V		Species or species habitat likely to occur within area		Suitable habitat is not available in the Project Site for this species.
Diamond Firetail	<i>Stagonopleura guttata</i>	Animal > Birds	V		Known		105	Likely to occur.
Downy Wattle	<i>Acacia pubescens</i>	Plant > Shrubs		V		Species or species habitat likely to occur within area	1	Potential to occur, however unlikely due to previous land use disturbance.
Dungowan Starbush	<i>Asterolasia</i> sp. "Dungowan Creek"	Plant > Shrubs	E		Known		11	Potential to occur, however unlikely due to previous land use disturbance.
Dungowan Starbush	<i>Asterolasia</i> sp. "Dungowan Creek"	Plant > Shrubs	V				6	Potential to occur, however unlikely due to previous land use disturbance.
Eastern Bentwing-bat	<i>Miniopterus schreibersii</i> <i>oceanensis</i>	Animal > Bats	V		Known		13	Known to occur in White Box Woodland in the Project Site.
Eastern Cave Bat	<i>Vespadelus troughtoni</i>	Animal > Bats					1	Suitable habitat is not available in the Project Site for this species.
Eastern False Pipistrelle	<i>Falsistrellus</i> <i>tasmaniensis</i>	Animal > Bats	V		Known		14	Potential to occur in areas with hollow bearing trees.
Eastern Freetail-bat	<i>Mormopterus</i> <i>norfolkensis</i>	Animal > Bats	V				1	Potential to occur in areas with hollow bearing trees.
Eastern Hare-wallaby	<i>Lagorchestes leporides</i>	Animal > Rodent	PE	PE			1	Unlikely

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			NSW (TSC or FM Act)	EPBC	OEH Namoi (Peel) CMA search. Known or Predicted to occur	EPBC Search centred on Project Site	Wildlife Atlas Records OEH Namoi (Peel) CMA	
Eastern Pygmy-possum	<i>Cercartetus nanus</i>	Animal > Marsupials	V		Predicted			Potential to occur
Euphrasia arguta	<i>Euphrasia arguta</i>	Plant > Shrubs	CE	CE			5	Potential to occur
Fairy Tern (Australian)	<i>Sternula nereis nereis</i>	Animal > Birds> migratory		V		Species or species habitat may occur within area		Suitable habitat is not available in the Project Site for this species.
Finger Panic Grass	<i>Digitaria porrecta</i>	Plant > Herbs and Forbs	E		Known		2	Potential to occur
Flame Robin	<i>Petroica phoenicea</i>	Animal > Birds	V		Known		2	Potential to occur
Fork-Tailed Swift	<i>Apus pacificus</i>	Animal > Birds> migratory	Not Listed	Migratory / Marine species		Species or species habitat may occur within area		Suitable habitat is not available in the Project Site for this species.
Freckled Duck	<i>Stictonetta naevosa</i>	Animal > Birds	V		Predicted			Potential to occur in farm dams or larger wetland areas.
Gang-gang Cockatoo	<i>Callocephalon fimbriatum</i>	Animal > Birds	V		Known			Suitable habitat is not available in the Project Site for this except near Werris Creek..
Giant Barred Frog	<i>Mixophyes iteratus</i>	Animal > Amphibians		E		Species or species habitat likely to occur within area		Potential to occur
Giant Burrowing Frog	<i>Heleioporus australiacus</i>	Animal > Amphibians		V		Species or species habitat likely to occur within area		Potential to occur

Common Name	Scientific Name	Type of species	Threat Status		Database Search Records			Potential to occur in Project Site
			NSW (TSC or FM Act)	EPBC	OEH Namoi (Peel) CMA search. Known or Predicted to occur	EPBC Search centred on Project Site	Wildlife Atlas Records OEH Namoi (Peel) CMA	
Glossy Black-cockatoo	<i>Calyptrorhynchus lathamii</i>	Animal > Birds	V		Known		4	Potential to occur. However, feed tree species are not located in the Project Site.
Great Egret	<i>Ardea alba</i>	Animal > Birds> migratory and Migratory Wetland	Not Listed	Migratory / Marine species		Species or species habitat may occur within area		Potential to occur in cleared areas. Mainly associated with far dams and cattle.
Greater Broad-nosed Bat	<i>Scoteanax rueppellii</i>	Animal > Bats	V		Known		5	Known to occur in White Box Woodland in the Project Site.
Greater Long-eared Bat	<i>Nyctophilus timoriensis</i> (South-eastern form)	Animal > Bats	V	V	Known		25	Known to occur in White Box Woodland in the Project Site.
Green and Golden Bell Frog	<i>Litoria aurea</i>	Animal > Amphibians		V		Species or species habitat likely to occur within area		Suitable habitat is not likely to occur in the Project Site.
Gould's Mouse	<i>Pseudomys gouldii</i>	Animal > rodent	PE	PE				Unlikely
Grey-crowned Babbler (eastern subspecies)	<i>Pomatostomus temporalis temporalis</i>	Animal > Birds	V		Known		16	Potential to occur
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	Animal > Bats	V	V	Known	Roosting known to occur within area	2	Potential to occur
Growling Grass Frog	<i>Litoria raniformis</i>	Animal > Amphibians		v		Species or species habitat may occur within area		Potential to occur
Hooded Robin (south-eastern form)	<i>Melanodryas cucullata cucullata</i>	Animal > Birds	V		Known		37	Potential to occur
Illawarra Greenhood	<i>Pterostylis gibbosa</i>	Plant > Orchids	E	E		Species or species habitat known to		Suitable habitat is not available in the Project

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			NSW (TSC or FM Act)	EPBC	OEH Namoi (Peel) CMA search. Known or Predicted to occur	EPBC Search centred on Project Site	Wildlife Atlas Records OEH Namoi (Peel) CMA	
						occur within area		Site for this species.
Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	<i>Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions</i>	Community > Threatened Ecological Communities	E	E	Predicted			Potential to occur
Kangaloon Sun-orchid	<i>Thelymitra sp. Kangaloon</i>	Plant > Orchids		CE		Species or species habitat May to occur within area		Suitable habitat is not available in the Project Site for this species. This species occurs in swamps
Koala	<i>Phascolarctos cinereus</i>	Animal > Marsupials	V		Known		57	Potential to occur. White Box (feed tree) is known to occur in the Project Site
Lake Keepit Hakea	<i>Hakea pulvinifera</i>	Plant > Shrubs	E		Known		15	Unlikely
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	Animal > Bats	V	V	Known	Species or species habitat may occur within area	57	Known to occur in Project Site.
Large-leafed Monotaxis	<i>Monotaxis macrophylla</i>	Plant > Herbs and Forbs	E		Known			Potential to occur
Latham's Snipe	<i>Gallinago hardwickii</i>	Animal > Birds> migratory and Migratory Wetland	Not Listed	Migratory / Marine species		Species or species habitat may occur within area		Potential to occur
Little Eagle	<i>Hieraaetus morphnoides</i>	Animal > Birds	V		Known		35	Potential to occur

Common Name	Scientific Name	Type of species	Threat Status		Database Search Records			Potential to occur in Project Site
			NSW (TSC or FM Act)	EPBC	OEH Namoi (Peel) CMA search. Known or Predicted to occur	EPBC Search centred on Project Site	Wildlife Atlas Records OEH Namoi (Peel) CMA	
Little Lorikeet	<i>Glossopsitta pusilla</i>	Animal > Birds	V		Predicted		107	Potential to occur in the Project Site
Littlejohn's Tree Frog, Heath Frog	<i>Litoria littlejohni</i>	Animal > Amphibians		V		Species or species habitat may occur within area		Potential to occur in the Project Site
Rattus villosissimus	<i>Long-haired Rat</i>	Animal > Rodent						Unlikley to occur
Long-nosed Potoroo (SE mainland)	<i>Potorous tridactylus tridactylus</i>	Animal > Marsupials		V		Species or species habitat may occur within area	1	Unlikley to occur
Macquarie Perch	<i>Macquaria australasica</i>	Animal > Fish		E		Species or species habitat may occur within area		Habitat for this species does not occur in the Project Site
Magenta Lilly Pilly	<i>Syzygium paniculatum</i>	Plant > Shrubs	E	V			1	Potential to occur in the Project Site
Magpie Goose	<i>Anseranas semipalmata</i>	Animal > Birds	V		Predicted			Potential to occur in wetlands areas / farm dams. Unlikely.
Masked Owl	<i>Tyto novaehollandiae</i>	Animal > Birds	V		Known		4	Potential to occur in the Project Site
Merops ornatus	<i>Rainbow Bee-eater</i>	Animal > Birds> migratory	Not Listed	Migratory / Marine species		Species or species habitat may occur within area		Potential to occur in the Project Site
Narrow-leaved Black Peppermint	<i>Eucalyptus nicholii</i>	Plant > Trees	V		Known		4	Potential to occur in the Project Site
Native Vegetation on Cracking Clay Soils of the Liverpool Plains	<i>Native Vegetation on Cracking Clay Soils of the Liverpool Plains</i>	Community > Threatened Ecological Communities	E	CE	Known			Potential to occur in the Project Site. All vegetation on clays.

Common Name	Scientific Name	Type of species	Threat Status		Database Search Records			Potential to occur in Project Site
			NSW (TSC or FM Act)	EPBC	OEH Namoi (Peel) CMA search. Known or Predicted to occur	EPBC Search centred on Project Site	Wildlife Atlas Records OEH Namoi (Peel) CMA	
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and northern New South Wales and southern Queensland	<i>Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and northern New South Wales and southern Queensland</i>	Community > Threatened Ecological Communities	Not Listed	CE				Potential to occur in the Project Site.
New England Peppermint (Eucalyptus nova-anglica) Grassy Woodlands	<i>New England Peppermint</i>	Community > Threatened Ecological Communities	E	CE				Potential to occur in the Project Site.
New Holland Mouse	<i>Pseudomys novaehollandiae</i>	Animal > Rodent		v		Species or species habitat likely to occur within area		Potential to occur in the Project Site
Persoonia nutans	<i>Persoonia nutans</i>	Plant > Herbs and Forbs		e		Species or species habitat likely to occur within area		Unlikely to occur based on lack of suitable habitat.
Pimelea spicata	<i>Pimelea spicata</i>	Plant > Herbs and Forbs		e		Species or species habitat likely to occur within area		Potential to occur
Pimelea curviflora var. curviflora	<i>Pimelea curviflora var. curviflora</i>	Plant > Herbs and Forbs		v		Species or species habitat likely to occur within area		Potential to occur
Pultenaea parviflora	<i>Pultenaea parviflora</i>	Plant > Herbs and Forbs	e	v		Species or species habitat likely to occur within area		Potential to occur
Olive Whistler	<i>Pachycephala olivacea</i>	Animal > Birds	V		Known			Potential to occur

Common Name	Scientific Name	Type of species	Threat Status		Database Search Records			Potential to occur in Project Site
			NSW (TSC or FM Act)	EPBC	OEH Namoi (Peel) CMA search. Known or Predicted to occur	EPBC Search centred on Project Site	Wildlife Atlas Records OEH Namoi (Peel) CMA	
Ooline	<i>Cadellia pentastylis</i>	Plant > Trees	EEC in NSW	V			1	Unlikely.
Osprey	<i>Pandion haliaetus</i>	Animal > Birds					1	Unlikely. Mainly coastal.
Painted Honeyeater	<i>Grantiella picta</i>	Animal > Birds	V		Known		4	Potential to occur.
Plains Rat	<i>Pseudomys sp.</i>	Animal > Rodent	PE	PE			1	Unlikely.
Plains Rat	<i>Pseudomys australis</i>	Animal > Rodent					1	Unlikely.
Painted Snipe (Australian subspecies)	<i>Rostratula benghalensis australis</i>	Animal > Birds> migratory and Migratory Wetland	E	V	Predicted	Species or species		Potential to occur
Pale-headed Snake	<i>Hoplocephalus bitorquatus</i>	Animal > Reptiles	V		Known	area		Potential to occur
Philotheca ericifolia	<i>Philotheca ericifolia</i>	Plant > Shrubs	Vulnerable	Vulnerable				Potential to occur
Powerful Owl	<i>Ninox strenua</i>	Animal > Birds	V		Known		4	Potential to occur
Regent Honeyeater	<i>Anthochaera phrygia</i>	Animal > Birds> migratory	CE	E	Known	Species or species habitat likely to occur within area	117	Potential to occur
Rufous Bettong	<i>Aepyprymnus rufescens</i>	Animal > Marsupials	V		Predicted			Unlikely to occur based on lack of suitable habitat
Rufous Fantail	<i>Rhipidura rufifrons</i>	Animal > Birds> migratory		Migratory Species		Breeding may occur within area		Potential to occur
Rufous Pomaderris	<i>Pomaderris brunnea</i>	Plant > Shrubs		v		Species or species habitat likely to occur		Potential to occur

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						within area		
Rupp's Boronia	<i>Boronia ruppiae</i>	Plant > Shrubs	E		Known			Potential to occur
Satin Flycatcher	<i>Myiagra cyanoleuca</i>	Animal > Birds> migratory		Migratory Species		Breeding likely to occur within area		Potential to occur
Satin Flycatcher [612]	<i>Myiagra cyanoleuca</i>	Animal > Birds> migratory	Not Listed	Migratory / Marine species		Species or species habitat likely to occur within area		Potential to occur
Scarlet Robin	<i>Petroica boodang</i>	Animal > Birds	V		Known		20	Potential to occur in the Project Site
Semi-evergreen Vine Thicket in the Brigalow Belt South and Nandewar Bioregions	<i>Semi-evergreen Vine Thicket in the Brigalow Belt South and Nandewar Bioregions</i>	Community > Threatened Ecological Communities	E	E	Known			Potential to occur
Shale/Sandstone Transition Forest		Community > Threatened Ecological Communities		E		Community likely to occur within area		Potential to occur in the Project Site
Small-flower Grevillea	<i>Grevillea parviflora subsp. parviflora</i>	Plant > Shrubs	V	V		Species or species habitat likely to occur within area		Unlikely to occur. Suitable habitat does not occur in the Project Site.
Small-fruited Mountain Gum	<i>Eucalyptus oresbia</i>	Plant > Trees	V		Known		23	Potential to occur
Snipe	<i>Rostratula australis</i>	Animal > bird		V		habitat may occur within		May occur in undisturbed areas near wetlands and farm dams.
Sooty Owl	<i>Tyto tenebricosa</i>	Animal > Birds	V		Known		1	Potential to occur in the Project Site

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Southern Brown Bandicoot	<i>Isoodon obesulus obesulus</i>	Animal > Marsupials		E		Species or species habitat may occur within area		Unlikle to occur
Speckled Warbler	<i>Pyrrholaemus saggitatus</i>	Animal > Birds	V		Known		91	Likley to occur
Spotted Harrier	<i>Circus assimilis</i>	Animal > Birds	V		Known		3	Likely to occur
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	Animal > Marsupials	V	E	Known	Species or species habitat may occur within area	52	Potential to occur, particularly in larger remnants with connectivity.
Square-tailed Kite	<i>Lophoictinia isura</i>	Animal > Birds	V		Known		4	Likely to occur.
Squirrel Glider	<i>Petaurus norfolcensis</i>	Animal > Marsupials	V		Known		33	Potential to occur, particularly in larger remnants with connectivity.
Stuttering Frog	<i>Mixophyes balbus</i>	Animal > Amphibians		v		Species or species habitat likely to occur within area		Potential to occur
Superb Parrot	<i>Polytelis swainsonii</i>	Animal > Birds> migratory	V	V		Species or species habitat likely to occur within area		Potential to occur
Swift Parrot	<i>Lathamus discolor</i>	Animal > Birds> migratory	E	E	Known	Species or species habitat likely to occur within area	5	Potential to occur
Sydney Plains Greenhood	<i>Pterostylis saxicola</i>	Plant > Orchids	e	e		Species or species habitat known to occur		Potential to occur

Common Name	Scientific Name	Type of species	Threat Status		Database Search Records			Potential to occur in Project Site
			NSW (TSC or FM Act)	EPBC	OEH Namoi (Peel) CMA search. Known or Predicted to occur	EPBC Search centred on Project Site	Wildlife Atlas Records OEH Namoi (Peel) CMA	
						within area		
Tall Velvet Sea-berry	<i>Haloragis exalata subsp. velutina</i>	Plant > Shrubs	V		Known		1	Suitable habitat for this species is not available in the Project Site.
Thick-lipped Spider-orchid	<i>Caladenia tessellata</i>	Plant > Orchids		v		Species or species habitat likely to occur within area		Potential to occur in less disturbed areas.
Turpentine-Ironbark Forest in the Sydney Basin Bioregion		Community > Threatened Ecological Communities		CE		Community likely to occur within area		Unlikley to occur
Turquoise Parrot	<i>Neophema pulchella</i>	Animal > Birds	V		Known		104	Potential to occur in the Project Site.
Tylophora linearis	<i>Tylophora linearis</i>	Plant > Epiphytes and climbers	V	E	Known		1	Potential to occur
Velvet Thread-petal	<i>Stenopetalum velutinum</i>	PE	PE	PE			1	Potential to occur
Varied Sittella	<i>Daphoenositta chrysoptera</i>		v				31	Potential to occur in areas of large woodland remnant
Western Barred Bandicoot (mainland)	<i>Perameles bougainville fasciata</i>		PE				1	Unlikely to occur.
Western Quoll	<i>Dasyurus geoffroii</i>	Animal > Marsupail	PE	PE			1	Unlikely to occur.
Weeping Myall Woodlands	<i>Weeping Myall Woodlands</i>	Community > Threatened Ecological Communities	E	E				Likely to occur on plains associated with arable soils on the Liverpool Plains
White-footed Tree-rat	<i>Conilurus albipes</i>	Animal > Rodent	PE	PE			2	Unlikely to occur.

Common Name	Scientific Name	Type of species	Threat Status		Database Search Records			Potential to occur in Project Site
			NSW (TSC or FM Act)	EPBC	OEH Namoi (Peel) CMA search. Known or Predicted to occur	EPBC Search centred on Project Site	Wildlife Atlas Records OEH Namoi (Peel) CMA	
White Box Yellow Box Blakely's Red Gum Woodland	<i>White Box Yellow Box Blakely's Red Gum Woodland</i>	Community > Threatened Ecological Communities	CE	CE	Predicted			Known to occur in Project Site.
White-bellied Sea Eagle	<i>Haliaeetus leucogaster</i>	Animal > Birds> migratory	Not Listed	Migratory / Marine species		Species or species habitat likely to occur within area		Unlikely to occur.
White-flowered Wax Plant [12533]	<i>Cynanchum elegans</i>	Plant > Shrubs	E	E		Species or species habitat likely to occur within area		Unlikely to occur.
White-throated Needletail	<i>Hirundapus caudacatus</i>	Animal > Birds> migratory	Not Listed	Migratory / Marine species		Species or species habitat may occur within area		Unlikely to occur.
Yellow-bellied Glider	<i>Petaurus australis</i>	Animal > Marsupials	V		Known		2	Potential to occur in areas of large woodland remnant
Yellow-bellied Sheath-tail-bat	<i>Saccolaimus flaviventris</i>	Animal > Bats	V		Known		36	Likely to occur
Euphrasia ruptura	<i>Euphrasia ruptura</i>	Plant > Herbs and Forbs	PE	E			1	Unlikely to occur

E = Endangered

V = Vulnerable

PE = Presumed Extinct

5.1 PREDICTIVE MODEL FOR THREATENED SPECIES DETECTION

The concepts of the modelling described below formed the basis of the methodology designed for the current assessment. These reflect the predominant patterns of threatened species distribution as elicited from prior survey work and from applying habitat preference for those species within a transport corridor.

Remnant patch size is the primary factor appearing to determine the location of threatened plants and animals in the region and to a lesser degree in disturbed habitats proximity to a permanent water supply. Predictive modelling for EECs in the region is fairly straight forward:

- And remnant native vegetation is likely to be '*White Box-Yellow Box-Blakelys Red Gum EEC*'; and
- On clay soils, '*Native Vegetation on Cracking Clay Soils of the Liverpool Plains*' EEC (Liverpool Plains Native Vegetation EEC).

Historical disturbance reduces the possibility of threatened plants occurring in the majority of the Project Site. If grazing levels are low or absent a swathe of threatened plants listed as having potential to occur in **Table 9** could be present in the Project Site, some however may remain undetected.

Considering the proximity and connectivity to forested rideglines and mountains (a stronghold for many threatened species) the potential for threatened species to occur in the Project Site connected areas increases. Threatened plants with the highest potential to be recorded based on potential habitat and the precautionary approach to their cryptic flowering periods are listed in **Table 17**.

The majority of the regions threatened birds and migratory species have potential to utilise resources within the Project Site. During previous surveys of the Quirindi and Werris Creek areas, species such as the Speckled Warbler, Brown Treecreeper, Barking Owl, Koala and Rainbow Bee-eater have been recorded which increases the likelihood of these species specifically being recorded in the Project Site.

It is possible that any microbat species known to occur in the locality could utilise the existing Project Site for foraging or roosting if appropriate habitat exists.

Most marsupials known to occur in the CMA are likely to permanently occupy areas with mature hollows bearing trees close to water or food resources.

6 RESULTS

6.1 GENERAL HABITAT VALUES

The rolling forested hills in the Werris Creek area, rocky outcropping and White Box Woodlands provide good habitat for a variety of common native bird, mammal and reptile species. There are a number of mature trees on every land parcel that contain a variety of hollows types which provide shelter and nesting sites for possums, bats, parrots. Some areas with multi aged trees (indicating regeneration) in combination with a diverse and mostly native understorey are more likely to provide habitat to threatened species.

Vegetation communities in the locality are both variable and in various conditions, reflecting the different land use patterns associated with the arable soils of the valley floors and rocky outcropping associated with the hills.

Notes on the environmental values of each land parcel in the Study can be found in **Table 11**.

Table 11: Environmental descriptors of each land parcel in the Project Site.

Feature	Lot 316 DP 751009	Lot 317 DP751009	Lots 1-3 DP255804	Lots 11 &12 DP1130672	Lot 221 DP1105151
Mitchell Landscape	Gap Hills	Werris Creek Basalt Hills and Valleys	Gap Hills	Werris Creek Basalt Hills and Valleys	Werris Creek Basalt Hills and Valleys
Keith	Grassland Western Slopes Grassy Woodland	Grassland Western Slopes Grassy Woodland	Grassland Western Slopes Grassy Woodland	Grassland Western Slopes Grassy Woodland	Dry Sclerophyll Forests (Shrub/grass subformation) North-west Slopes Dry Sclerophyll Woodlands
Biometric	Cleared	White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions	White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions	Low Area: Plains Grass grassland on basaltic black earth soils mainly on the Liverpool Plains in the Brigalow Belt South Bioregion (Benson 102) Hills Area: White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions	Cleared
Condition (Biobanking)	Low	Moderate - Good (Good)	Moderate - Good (Good)	Moderate - Good	Low
EEC	None	White Box Yellow Box Blakely's Red Gum Woodland (TSC Act) White Box Yellow Box Blakely's Red Gum Woodland and derived native grassland (EPBC Act)	White Box Yellow Box Blakely's Red Gum Woodland (TSC Act) White Box Yellow Box Blakely's Red Gum Woodland and derived native grassland (EPBC Act)	Both vegetation types identified as White Box Yellow Box Blakely's Red Gum Woodland (TSC Act) White Box Yellow Box Blakely's Red Gum Woodland and derived native grassland (EPBC Act) Native Vegetation on Cracking Clay Soils of the Liverpool Plains (TSC Act) Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland (EPBC Act)_	None
Disturbance	Has been previously ploughed and is currently under crop.	Currently grazed.	Grazed, suspect historical ploughing.	Currently grazed.	Ploughed and cropped. Currently complete wheat crop.
% Native grassy ground cover	5%	95%	70%	65%	0%
Creek / Groundwater Dependent Ecosystems (GDE) and landscape features	Aquatic habitat in floodplain. No aquatic vegetation or GDE.	Aquatic habitat in floodplain. No aquatic vegetation or GDE.	No aquatic habitat, vegetation or GDE. Drainage line dry	Aquatic habitat in farm dams. No aquatic vegetation or GDE.	No aquatic vegetation or GDE.
Habitat values	Cleared with scattered mature	Eastern portion of block	Rocky habitat and Gully creek	Scattered White Box and good	Under crop. None

	White Box. Scattered Paddock Trees with hollows..	cleared and devoid of trees, however western portion is good quality Box-Gum Woodland. Open Woodland areas. Scattered Paddock Trees with hollows, grassy understorey. Grassland areas. Farm Dams, drainage lines.	adjacent to the highway in Lot 1. Good grassy understorey. Rocky habitat in Lot 1. Scattered Paddock Trees with hollows, with grassy understorey. Farm Dams, drainage lines. Some woody ground debris and leaf litter	native grassy understorey. Rocky outcropping in areas. Predominately cleared. Open Woodland areas. Scattered Paddock Trees with hollows, with grassy understorey. Grassland areas. Farm Dams, drainage lines. Woody ground debris and leaf litter	
Feature	Lot 14 Sec A in DP29984	Lot 1 in DP624133	Lot 12 DP 878120	Lots 34-35 DP875543	Lots 36-37 DP875543
Mitchell Landscape	Needles Basalt Peaks	Needles Basalt Peaks	Werris Creek Basalt Hills and Valleys	Werris Creek Basalt Hills and Valleys	Werris Creek Basalt Hills and Valleys
Keith	Grassland Western Slopes Grassy Woodland	Grassland Western Slopes Grassy Woodland	Grassland Western Slopes Grassy Woodland	Grassland Western Slopes Grassy Woodland	Grassland Western Slopes Grassy Woodland
Biometric	White Box - White Cypress Pine shrubby open forest of the Nandewar and Brigalow Belt South Bioregions	White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions	White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions	Bluegrass - Spear Grass - Redleg Grass derived grasslands of the Nandewar Bioregion	Bluegrass - Spear Grass - Redleg Grass derived grasslands of the Nandewar Bioregion
Condition (Biobanking)	Moderate - Good (Good)	Moderate - Good (Good)	Ploughed 0% - Low Grazed 60% - Moderate - Good Vegetated 98% - Moderate - Good (Good)	Low	Low
EEC	White Box Yellow Box Blakely's Red Gum Woodland (TSC Act) White Box Yellow Box Blakely's Red Gum Woodland and derived native grassland (EPBC Act)	White Box Yellow Box Blakely's Red Gum Woodland (TSC Act)	White Box Yellow Box Blakely's Red Gum Woodland (TSC Act) White Box Yellow Box Blakely's Red Gum Woodland and derived native grassland (EPBC Act)	Included within White Box Yellow Box Blakely's Red Gum Woodland (TSC Act). Does not meet the criteria (12 native and 1 important species) for EPBC Act listing. Degraded remnants that have few, if any, native species in the understorey are typical of Box-Gum Woodland where agricultural practices have been more intensive (e.g. pasture improvement over long periods).	Included within White Box Yellow Box Blakely's Red Gum Woodland (TSC Act). Does not meet the criteria (12 native and 1 important species) for EPBC Act listing. Degraded remnants that have few, if any, native species in the understorey are typical of Box-Gum Woodland where agricultural practices have been more intensive (e.g. pasture improvement over long periods).
Disturbance	Currently grazed, however slopes and hill peaks deter stock. Majority in very good condition, highly diverse understorey and generally high biomass of groundcovers. Cleared further down slope and contour /diversion banks.	Good condition grassland and scattered mature White box. Erosion at drainae lines evident. Closer to the landfill the incidence of exotic weeds creeps into the native understorey	Currently grazed. Small areas are under crop. Northern portion of land is treed with a good grassy understorey and has no prior impact.	No trees, cleared paddock. Grass short grazed.	No trees, cleared paddock. Grass short grazed.

% Native grassy ground cover	98%	85%	Grazed 60% Ploughed 0% Vegetated 98%	80%	20%
Creek / Groundwater Dependent Ecosystems (GDE) and landscape features	Aquatic habitat in farm dams. No aquatic vegetation or GDE.	Aquatic habitat in farm dams. No aquatic vegetation or GDE.	Aquatic habitat in farm dams. No aquatic vegetation or GDE.	No aquatic habitat, aquatic vegetation or GDE.	No aquatic habitat, aquatic vegetation or GDE.
Habitat Values	Open Woodland Areas on rocky habitat. Scattered Paddock Trees with hollows and shrubby mid-storey on hill and grassy understorey on toe-slopes. Grassland areas. Farm Dams, drainage lines. Substantial woody ground debris and leaf litter	Open Woodland areas. Scattered Paddock Trees with hollows, with no understorey (under crop). Grassland areas. Farm Dams, drainage lines.	Habitat values matrix.	Mainly Queensland Bluegrass and Austroanthonia. Grassland	Mainly Queensland Bluegrass and Austroanthonia. Grassland
Feature	Lot 1-4 DP260891	Lot 1 DP112744	Lot 83 DP751026	Pt Lot 2 DP112744	Pt Lot 84 DP751026
Mitchell Landscape	Werris Creek Basalt Hills and Valleys	Werris Creek Basalt Hills and Valleys	Werris Creek Basalt Hills and Valleys	Werris Creek Basalt Hills and Valleys	Werris Creek Basalt Hills and Valleys
Keith	Grassland Western Slopes Grassy Woodland	Grassland Western Slopes Grassy Woodland	Grassland Western Slopes Grassy Woodland	Grassland Western Slopes Grassy Woodland	Grassland Western Slopes Grassy Woodland
Biometric	White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions	White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions	White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions	White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions	White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions
Condition (Biobanking)	Moderate - Good (Lots 1 and 2) Low (Lots 3 and 4)	Moderate - Good	Moderate - Good (Good)	Moderate - Good (Good)	Moderate - Good
EEC	White Box Yellow Box Blakely's Red Gum Woodland (TSC Act)	White Box Yellow Box Blakely's Red Gum Woodland (TSC Act)	White Box Yellow Box Blakely's Red Gum Woodland (TSC Act)	White Box Yellow Box Blakely's Red Gum Woodland (TSC Act)	White Box Yellow Box Blakely's Red Gum Woodland (TSC Act)
Disturbance	Currently grazed at low stocking rate. Treeless areas within Lot 4 have been ploughed.	Ground surface disturbances. Grazed.	Currently grazed, pasture improvement noted, however good quality ground cover. Deeply incised drainage line and rocky outcropping	Previously heavily grazed. Now low grazing regime, with good grassy ground cover and large tussock grasses	Moderate disturbance, with derived grassy understorey. Undulating land with good rocky habitat near drainage line. Three age cohorts of White Box with evidence of regrowth.
% Native grassy ground cover	20% Lot 4 70% Lot 1-3	80%	70%	90%	20%
Creek / Groundwater Dependent	Creek is dry with no GDE.	No aquatic habitat, aquatic vegetation or GDE.	Creek is dry with no GDE.	Creek is dry with no GDE.	Creek is dry with no GDE..

Ecosystems (GDE) and landscape features					
Habitat Values	Good White Box regeneration. Only small amount of GWD and leaf litter. Open Woodland Areas on rocky habitat. Grassland areas.	Scattered White Box with derived native grassy understorey. Currently grazed, majority cleared. Derived grassland, no saplings. 41 White Box and 2 Sugar Gums. Scattered Paddock Trees with variety of hollows, with grassy understorey. Grassland areas. Farm Dams, drainage lines.	Majority of trees have spout, trunk, branch and fissure hollows. ~100 large White Box and Blakelys Red Gum with 1 very old tree (300+ years). Ground surface is more exposed in areas through grazing than surrounding properties. 30 Blakely's Red Gum, Yellow Box, White Cypress Pine, Rough Barked Apple, Kurrajong and White Box. One main age class with little regeneration. Good areas of rocky habitat. Woody ground debris and leaf litter. Open Woodland Areas on rocky habitat.	33 White Box trees with grassy understorey. Trunk hollows present (c. 2 or 3) and spout hollows. Scattered Paddock Trees with hollows, with grassy understorey Woody ground debris and leaf litter. Open Woodland Areas on rocky habitat. Farm Dams, drainage lines.	Only few large trees with hollows, however 3 age cohorts indicating regeneration is present. 6 old growth white box, 50 young (20 years) white box. Scattered Paddock Trees with hollows, with grassy understorey Good areas of rocky habitat. Woody ground debris and leaf litter. Open Woodland Areas on rocky habitat. Farm Dams, drainage lines.

6.2 FLORA SPECIES

In total 315 species of flora from 63 families were recorded across the 24 land parcels comprising the Project Site. No threatened plants as listed under the TSC or EPBC list were recorded. Disturbance in the Project Site except on land parcel Lot 14 Sec A DP29984 and a portion of Lot 12 in DP878120 precludes threatened orchids from occurring. All lots with moderate to good Box-Gum Woodland have potential for other threatened plants identified in **Table13** however due to the cryptic flowering period were not identified (if actually present) during the field assessment.

Although not recorded during the assessment, Lobed Blue Grass (*Bothriocloa Biloba*) listed under the EPBC Act is known to occur in the northern portion of Lots 1-3 DP255804.

6.3 ECOLOGICAL COMMUNITIES

Vegetation within the Project Site is consistent with Keith's (2004) 'Western Slopes Grassy Woodlands' vegetation formation and 'Grassy Woodlands' vegetation class. The hill area of Lot 14 Sec A in DP29984 is consistent with Keith's 'North-west Slopes Dry Sclerophyll Woodlands' vegetation formation and Dry Sclerophyll Forests (Shrub/grass subformation) vegetation class.

At a finer scale three Biometric vegetation communities (**Table 12**) in addition to a 'cleared landscape' were recorded in the Project Site.

- 'White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions'. This vegetation is consistent with the state listed 'White Box - Yellow Box - Blakely's Red Gum Endangered Ecological Community' and Nationally listed 'White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland' (EPBC Act).
- Plains Grass grassland on basaltic black earth soils mainly on the Liverpool Plains in the Brigalow Belt South Bioregion (Benson 102). Tall tussock closed or open grassland. Occurs on deep, black alluvial cracking clay-loam (black earths) soils derived from basalt. Mainly distributed in the Brigalow Belt South Bioregion south from Boggabri to Quirindi on the Liverpool Plains.
- White Box - White Cypress Pine shrubby open forest of the Nandewar and Brigalow Belt South Bioregions. This vegetation is consistent with the state listed 'White Box - Yellow Box - Blakely's Red Gum Endangered Ecological Community' and Nationally listed 'White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland' (EPBC Act).
- Cleared and disturbed.

Using the BioBanking Assessment Methodology criterion (BBAM 2009) the majority of the Project Site would be classified as in Moderate to Good' condition. Land parcels under crop were classed as in 'Low Condition', this classification recognises the high levels of disturbance to the community but its proximity to part of the same remnant outside the Project Site in Moderate to Good condition (see **Table 4** regarding methodology).

Table 12: Biometric vegetation communities recorded in the Project Site.

Vegetation type	Dominant canopy spp	Main associated spp	Landscape position	Characteristic mid-storey spp	Characteristic groundcover spp	Vegetation formation [CMA]	Vegetation class	Cleared Estimate rounded to nearest 5%
Bluegrass - Spear Grass - Redleg Grass derived grasslands of the Nandewar Bioregion		White Cypress Pine (<i>Callitris glaucophylla</i>), White Box (<i>Eucalyptus albens</i>), Silver-leaved Ironbark (<i>Eucalyptus melanophloia</i>)	Flats or lower slopes in undulating terrain.	Queensland Bluegrass (<i>Dichanthium sericeum</i> subsp. <i>sericeum</i>), Speargrass (<i>Austrostipa scabra</i> subsp. <i>scabra</i>), <i>Bothriochloa decipiens</i> , <i>Aristida leptopoda</i> , <i>Bothriochloa biloba</i>	Usually a derived grassland community, sometimes with scattered trees.	Grassy Woodlands [BRG]	Western Slopes Grassy Woodlands	n/a
White Box - White Cypress Pine shrubby open forest of the Nandewar and Brigalow Belt South Bioregions	White Box (<i>Eucalyptus albens</i>), White Cypress Pine (<i>Callitris glaucophylla</i>)	Rough-barked Apple (<i>Angophora floribunda</i>), Kurrajong (<i>Brachychiton populneus</i> subsp. <i>populneus</i>), Yellow Box (<i>Eucalyptus melliodora</i>), Tumbledown Red Gum (<i>Eucalyptus dealbata</i>), Narrow-leaved Ironbark (<i>Eucalyptus crebra</i>), Silver-leaved Ironbark (<i>Eucalyptus melanophloia</i>)	On hilly terrain on the North West Slopes.	Sticky Daisybush (<i>Olearia elliptica</i>), Native Olive (<i>Notelaea microcarpa</i> var. <i>microcarpa</i>), <i>Cassinia quinquefaria</i> , <i>Dodonaea viscosa</i> subsp. <i>angustifolia</i> , Sticky Wallaby Bush (<i>Beyeria viscosa</i>), Blackthorn (<i>Bursaria spinosa</i> subsp. <i>spinosa</i>)	<i>Aristida ramosa</i> , <i>Desmodium brachypodium</i> , Barbed Wire Grass (<i>Cymbopogon refractus</i>), <i>Cheilanthes sieberi</i> subsp. <i>sieberi</i> , <i>Dichondra</i> species A,	Dry Sclerophyll Forests (Shrub/grass subformation) [N]	North-west Slopes Dry Sclerophyll Woodlands	55

Vegetation type	Dominant canopy spp	Main associated spp	Landscape position	Characteristic mid-storey spp	Characteristic groundcover spp	Vegetation formation [CMA]	Vegetation class	Cleared Estimate rounded to nearest 5%
White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions	White Box (<i>Eucalyptus albens</i>)	Rough-barked Apple (<i>Angophora floribunda</i>), White Cypress Pine (<i>Callitris glaucophylla</i>), Yellow Box (<i>Eucalyptus melliodora</i>), Silver-leaved Ironbark (<i>Eucalyptus melanophloia</i>), Pilliga Box (<i>Eucalyptus pilligaensis</i>), Silvertop Stringybark (<i>Eucalyptus laevopinea</i>), Kurrajong (<i>Brachychiton populneus</i> subsp. <i>populneus</i>)	On creek flats, lower slopes and alluvial plains mainly on sedimentary substrates.	Cassinia laevis, Sticky Daisybush (<i>Olearia elliptica</i>), Acacia buxifolia, Western Rosewood (<i>Alectryon oleifolius</i> subsp. <i>canescens</i>), Acacia implexa, Native Olive (<i>Notelaea microcarpa</i> var. <i>microcarpa</i>), Sticky Wallaby Bush (<i>Beyeria viscosa</i>), Quinine Bush (<i>Alstonia constricta</i>), Wilga (<i>Geijera parviflora</i>)	Glycine tabacina, Barbed Wire Grass (<i>Cymbopogon refractus</i>), <i>Aristida ramosa</i> , <i>Desmodium brachypodium</i> , Speargrass (<i>Austrostipa scabra</i> subsp. <i>scabra</i>), <i>Cyperus gracilis</i>	Grassy Woodlands [N]	Western Slopes Grassy Woodlands	85

6.4 FAUNA

A total of 117 fauna species were recorded during the study, of which includes three (3) threatened bird species and six (6) threatened bat species:

- Rainbow Bee-eater (*Merops ornatus*) which is listed as migratory under the EPBC Act;
- Little Lorikeet (*Glossopsitta pusilla*) which is listed as vulnerable under the TSC Act;
- Barking Owl (*Ninox connivens*) which is listed as vulnerable under the TSC Act
- Yellow-bellied Sheath-tail-bat (*Saccolaimus flaviventris*) which is listed as vulnerable under the TSC Act;
- Eastern Cave Bat/Little Forest Bat (*Vespadelus troughtoni*) which is listed as vulnerable under the TSC Act;
- Large-eared Pied Bat (*Chalinolobus dwyeri*) which is listed as vulnerable under the TSC Act and EPBC Act.
- Eastern Falsistrelle (*Falsistrellus tasmaniensis*) which is listed as vulnerable under the TSC Act;
- Eastern Bentwing Bat (*Miniopterus schreibersii oceanensis*) which is listed as vulnerable under the TSC Act; and
- Greater Broad-nosed Bat (*Scoteanax rueppellii*) which is listed as vulnerable under the TSC Act.

It is suspected that further threatened species known to occur in White Box Grassy Woodland in the Quirindi and Werris Creek locality would have habitat in the Study Area, however due to inclement weather and time constraints were not identified during the field assessment. These species include:

- Turquoise Parrot (*Neophema pulchella*) which is listed as a threatened species under the TSC Act);
- Diamond Firetail (*Stagonopleura guttata*) which is listed as a threatened species under the TSC Act);
- Speckled Warbler (*Chthonicola sagittatus*) which is listed as a threatened species under the TSC Act);
- Brown Treecreeper (*Climacteris picumnus victoriae*) which is listed as a threatened species under the TSC Act);
- Regent Honeyeater (*Xanthomyza phrygia*) which is listed as a threatened species under

the TSC Act and EPBC Act);

- Koala (*Phascolarctos cinereus*) which is listed as a threatened species under the TSC Act and has a preliminary determination pending under the EPBC Act);
- Hooded Robin (*Melanodryas cucullata*) which is listed as a threatened species under the TSC Act); and
- Grey Crowned Babbler (*Pomatostomus temporalis temporalis*) which is listed as a threatened species under the TSC Act.

6.4.1 Koala Habitat SEPP 44

The Liverpool Plains Local Government Area is identified under Schedule 1 – Local Government Areas of State Environmental Planning Policy No 44 (SEPP 44) – Koala Habitat Protection. This policy seeks to protect the species by encouraging the proper conservation and management of areas that provide habitat for Koalas.

All land parcels except Lots 34-35 DP875543 and Lots 36-37 DP875543 possessed feed tree species listed under Schedule 2 of SEPP 44. ‘Primary Koala Habitat’ was not considered to occur within the Project Site. ‘Potential Koala Habitat’ was identified in all remaining land parcels (except those listed above and Lot 316 DP751009), due to the proximity of these areas to Quirindi, Werris and Jacob and Joseph Creek and known occurrence of Koalas in the town of Quirindi. Interviews with local landholders have only identified Koalas in the township itself in association with the Quirindi riverine environments.

None of the land parcels were assessed as being ‘Core koala habitat’ as a resident population of koala, evidenced by attributes such as breeding females, recent sightings and records of a population were not evident, however, there is potential for the species to occur as transient and dispersing individuals.

6.4.2 Wildlife Corridors

Fauna wildlife corridors are usually associated with waterways, wetlands and riverine environments or specific continuous habitats (for example escarpments, woodlands). The land parcels located in Quirindi are likely to provide a movement pathway to and from the Quirindi Creek and Jacob and Josephs Creek radiating along the numerous wooded drainage lines.

In Werris Creek, the two larger land parcels are likely to provide connectivity to and from the wet forested hills south to Werris Creek or Quipolly Dam.

Both derived grassland and scattered trees are considered as providing connectivity across the landscape. Potential disruption of these corridors is therefore an important consideration.

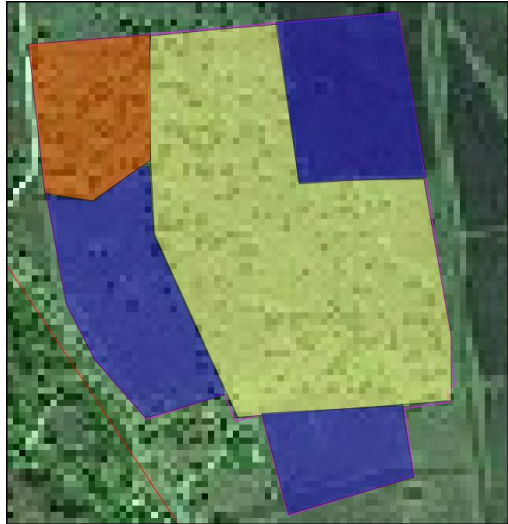
6.4.3 Aquatic Habitat

Drainage lines or farm dams in the Project Site are not likely to provide habitat for threatened aquatic fauna due to the ephemeral nature of all drainage lines and lack of aquatic vegetation. Pools of water and farm dams were noted as providing common frog habitat and habitat for migratory waders.

6.5 COMPARISON PREVIOUS ECOLOGICAL ASSESSMENTS IN THE PROJECT SITE

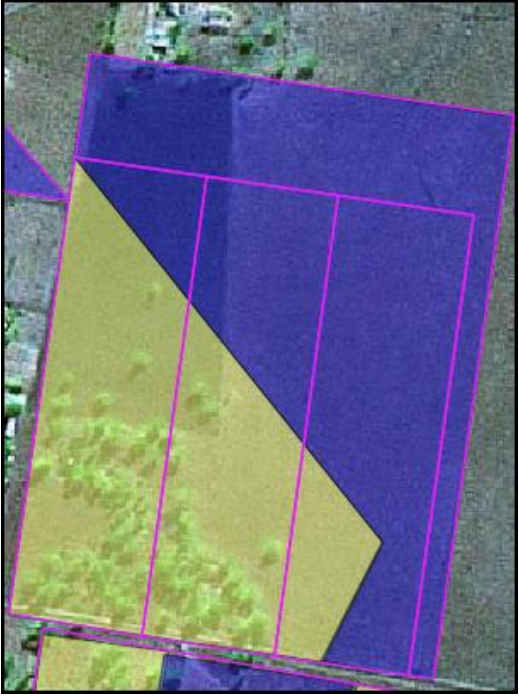
The following tables (**Table 13** and **14**) provide a comparative assessment between the constraints identified by OzArk (OzArk 2011) and the constraints and management identified by EcoLogical (ELA 2008, 2010) for proposed rezoning within the Project Site. The following table only provide constraints identified by OzArk, as a detailed management plan has been provided in **Section 8** and **Table 16** of this report.

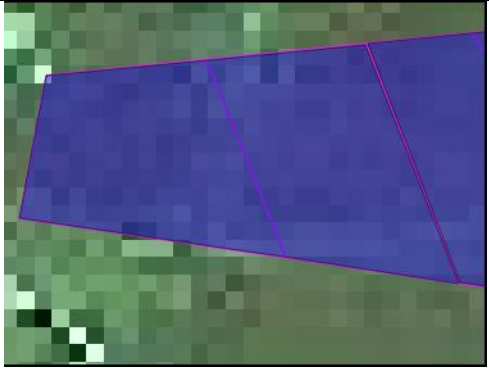
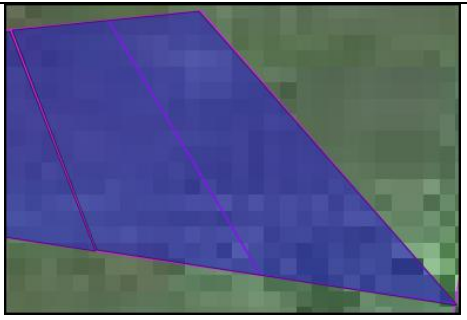
Table 13: Zoning / urban development constraints identified in ELA 2008 report.

Site (ELA 2010)	ELA 2010 Constraints	ELA 2010 Management	OzArk 2011 Constraints	OzArk Constraints maps
Site 1 (Lot 12 DP 878120)	High Moderate Low	- No impediment to the use of the "Low" constrained lands for development. - Areas with "Moderate" and "High" constraint will trigger a more detailed environmental assessment under the EPBC and TSC Act as part of any future development applications. The "High" constrained land is not recommended for development; particularly the Box-Gum Woodland, listed under the TSC Act and EPBC Act. Should Council proceed with rezoning, a portion of the site may be suitable for development with conditions. It is recommended that the centre of the site be protected through an environmental protection corridor aimed at protecting and enhancing core Box-Gum Woodland habitat.	- No impediment to the use of the "Low" constrained lands for rezoning to a higher order of land use or the erection of dwellings. The lands are under crop and have been cleared. - Constraints identified in 'Moderate' to 'High' constraint areas require careful consideration and may prevent rezoning to a higher order of land use and / or the erection of dwellings. If the quality of remnant woodland was to decline as a result of rezoning and a higher order of land use, then this would trigger further assessment under the TSC and / or EPBC Act. Likewise, assessment under the TSC and / or EPBC Act may be required as supporting documentation for any future Development Applications (DA). - Constraints identified within this Land Parcel are as follows: - Hollow dependent threatened species identified under the TSC and / or EPBC Act. - EEC, TSC Act. - CEEC EPBC Act. - Bush Fire Prone Land. - Drainage line – core riparian zone of 10 m required under State Protected Land. - Landscape connectivity and wildlife corridors. - Koala Feed Trees identified under SEPP 44. - Removal of 'Native Vegetation', 'Removal of Hollow Bearing Trees' and 'Bushrock Removal' would contribute to NSW listed KTP's.	 Legend "High" constraint "Moderate" constraint "Low" constraint

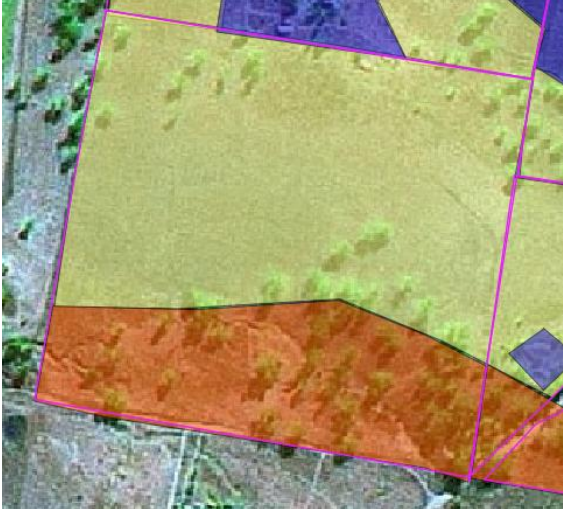
Site (ELA 2010)	ELA 2010 Constraints	ELA 2010 Management	OzArk 2011 Constraints	OzArk Constraints maps
Site 2 (Lots 1 in DP255804 Lots 2 in DP255804 Lots 3 in DP255804)	High High Moderate	• High" constrained land is not recommended for development; particularly the Box-Gum Woodland, listed under the TSC Act and EPBC Act. However, there is opportunity within the southern portion of the site for development with the north eastern portion of the site dedicated to an environmental protection corridor aimed at protecting and enhancing core Box-Gum Woodland habitat.	• No impediment to the use of the "Low" constrained lands for rezoning to a higher order of land use or the erection of dwellings. • Constraints identified in 'Moderate' to 'High' constraint areas require careful consideration and may prevent rezoning to a higher order of land use and / or the erection of dwellings. If the quality of remnant woodland was to decline as a result of rezoning and a higher order of land use, then this would trigger further assessment under the TSC and / or EPBC Act. Likewise, assessment under the TSC and / or EPBC Act may be required as supporting documentation for any future Development Applications (DA). • Constraints identified within this Land Parcel are as follows: ➢ Hollow dependent threatened species identified under the TSC and / or EPBC Act ➢ <i>Bothriochloa Biloba</i> (EPBC Act) ➢ EEC, TSC Act ➢ CEEC EPBC Act ➢ Bush Fire Prone Land ➢ Drainage line – core riparian zone of 10 m required under State Protected Land. ➢ Koala Feed Trees identified under SEPP 44 ➢ Removal of 'Native Vegetation', 'Removal of Hollow Bearing Trees' and 'Bushrock Removal' would contribute to NSW listed KTP's.	 Legend "High" constraint "Moderate" constraint "Low" constraint

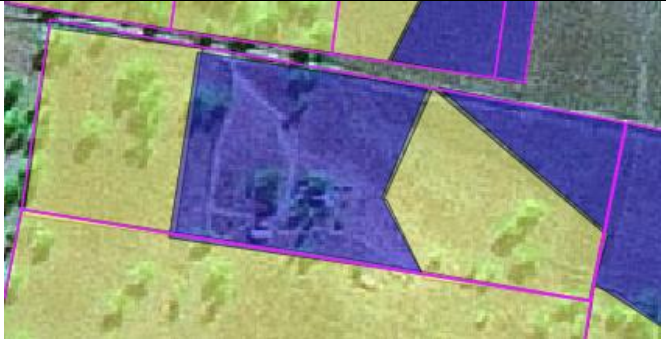
Table 14: Zoning / urban development constraints identified in ELA 2008 report.

Lot / DP in OzArk 2011	ELA 2008 Constrains	ELA 2008 Management	OzArk 2011 Constraints	Constraints Map
Lots 1-4 in DP260891	Lot 1 (moderate & High) Lot 2 (moderate & High) Lot 3 (moderate & High) Lot 4 (moderate)	• Suitable as 'residential zoning' • Suitable in low and very low constraint areas, moderately constrained areas require controls and not suitable in high constrained areas	• No impediment to the use of the "Low" constrained lands for rezoning to a higher order of land use or the erection of dwellings. There are no constrained identified in Lot 4. • Constraints identified in 'Moderate' areas require careful consideration and may prevent rezoning to a higher order of land use and / or the erection of dwellings. If the quality of remnant woodland was to decline as a result of rezoning and a higher order of land use, then this would trigger further assessment under the TSC and / or EPBC Act. Likewise, assessment under the TSC and / or EPBC Act may be required as supporting documentation for any future Development Applications (DA). • Constraints identified within this Land Parcel are as follows: ➤ If land use (i.e. grazing) remains the same there would be no constraints to this zoning ➤ Hollow dependent threatened species identified under the TSC and / or EPBC Act ➤ EEC, TSC Act ➤ Bush Fire Prone Land APZ. ➤ Koala Feed Trees identified under SEPP 44 ➤ Removal of 'Native Vegetation' and 'Removal of Hollow Bearing Trees' would contribute to NSW listed KTP's.	 Legend "High" constraint (Red) "Moderate" constraint (Yellow) "Low" constraint (Blue)

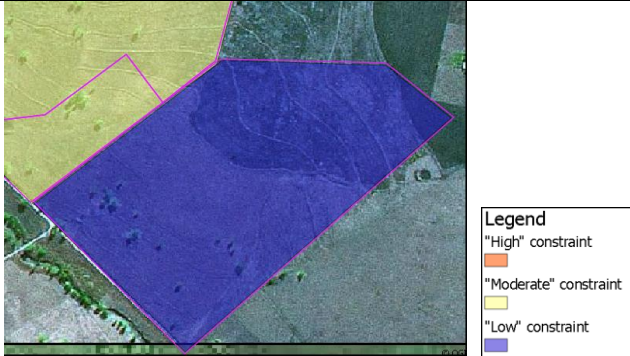
Lot / DP in OzArk 2011	ELA 2008 Constrains	ELA 2008 Management	OzArk 2011 Constraints	Constraints Map
			Constraints identified in Lots 1 to 3 can be managed to provide for rezoning.	
Lots 34 in DP875343 Lots 35 in DP875343	Moderate Moderate	- Suitable as 'residential zoning'. - Suitable in low and very low constraint areas, moderately constrained. - areas require controls and not suitable in high constrained areas.	- No impediment to the use of the "Low" constrained lands for rezoning to a higher order of land use or the erection of dwellings. - This land parcel is suitable for future residential or rural residential which is consistent with the LPSC GMS 2011.	
Lots 36 in DP875343 Lots 37 in DP875343	Very Low / moderate Very Low	- Suitable as 'residential zoning'. - Suitable in low and very low constraint areas, moderately constrained areas require controls and not suitable in high constrained areas.	- No impediment to the use of the "Low" constrained lands for rezoning to a higher order of land use or the erection of dwellings. - This land parcel is suitable for future residential or rural residential which is consistent with the LPSC GMS 2011.	

Lot / DP in OzArk 2011	ELA 2008 Constrains	ELA 2008 Management	OzArk 2011 Constraints	Constraints Map
Lot 1 in DP624133	Not identified	Not identified	- No impediment to the use of the "Low" constrained lands for rezoning to a higher order of land use or the erection of dwellings. - If land use (i.e. grazing) remains the same there would be no constraints to this zoning. - This land parcel is suitable for future residential or rural residential which is consistent with the LPSC GMS 2011. - Constraints identified in 'Moderate' constraint areas require careful consideration and may prevent rezoning to a higher order of land use and / or the erection of dwellings. If the quality of remnant woodland was to decline as a result of rezoning and a higher order of land use, then this would trigger further assessment under the TSC and / or EPBC Act. Likewise, assessment under the TSC and / or EPBC Act may be required as supporting documentation for any future Development Applications (DA). - Constraints identified within this Land Parcel are as follows: - Hollow dependent threatened species identified under the TSC and / or EPBC Act - EEC, TSC Act. - Bush Fire Prone Land. - Proximity to Landfill. - Koala Feed Trees identified under SEPP 44 - Removal of 'Native Vegetation',	 Legend "High" constraint "Moderate" constraint "Low" constraint

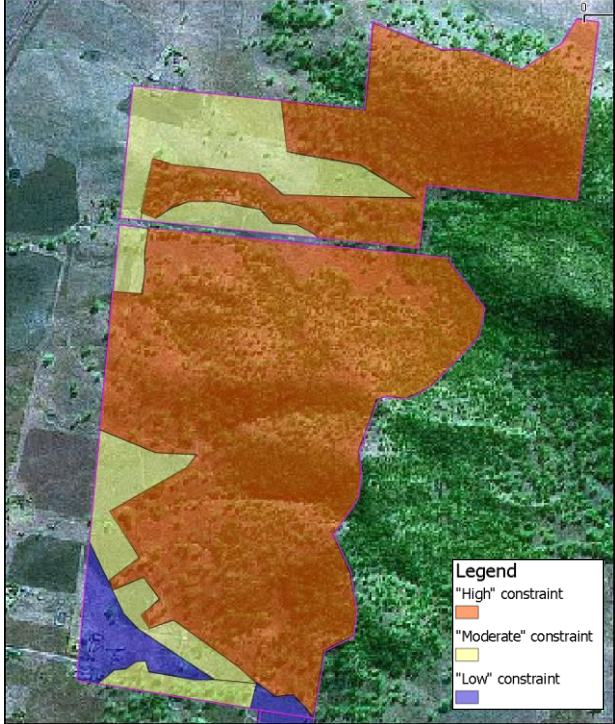
Lot / DP in OzArk 2011	ELA 2008 Constrains	ELA 2008 Management	OzArk 2011 Constraints	Constraints Map
			'Removal of Hollow Bearing Trees' and 'Bushrock Removal' would contribute to NSW listed KTP's	
Lot 83 in DP751026	Not identified	Not identified	- Constraints identified in 'Moderate' and 'High' constraint areas require careful consideration and may prevent rezoning to a higher order of land use and / or the erection of dwellings. If the quality of remnant woodland was to decline as a result of rezoning and a higher order of land use, then this would trigger further assessment under the TSC and / or EPBC Act. Likewise, assessment under the TSC and / or EPBC Act may be required as supporting documentation for any future Development Applications (DA). - Constraints identified within this Land Parcel are as follows: ➤ Hollow dependent threatened species identified under the TSC and / or EPBC Act ➤ EEC, TSC Act ➤ CEEC EPBC Act ➤ Bush Fire Prone Land ➤ Landscape connectivity and wildlife corridors. ➤ CRZ of 10 m required under State Protected Land either side of a drainage line. ➤ Koala Feed Trees identified under SEPP 44 ➤ Removal of 'Native Vegetation', 'Removal of Hollow Bearing Trees' and 'Bushrock Removal' would	 Legend "High" constraint "Moderate" constraint "Low" constraint

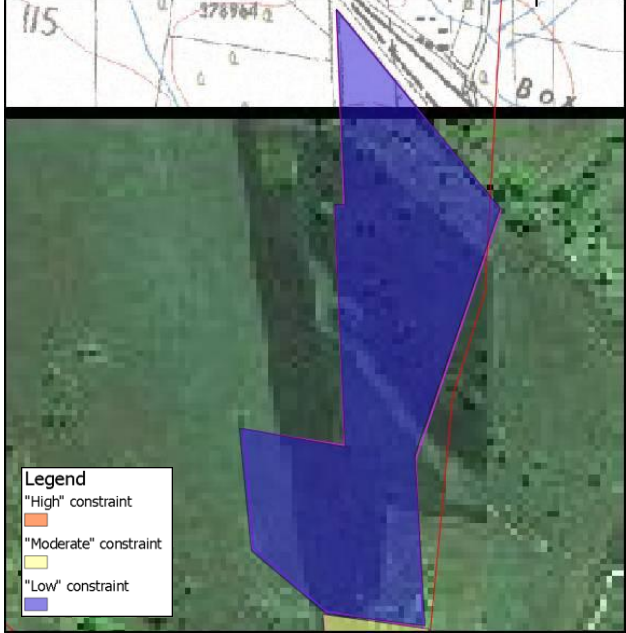
Lot / DP in OzArk 2011	ELA 2008 Constrains	ELA 2008 Management	OzArk 2011 Constraints	Constraints Map
			contribute to NSW listed KTP's	
Pt Lot 1 in DP112744	Not identified	Not identified	- No impediment to the use of the "Low" constrained lands for rezoning to a higher order of land use or the erection of dwellings. - If land use (i.e. grazing) remains the same there would be no constraints to this zoning. - This land parcel is suitable for future residential or rural residential which is consistent with the LPSC GMS 2011. - Constraints identified in 'Moderate' constraint areas require careful consideration and may prevent a higher order of land use and / or the erection of dwellings. If the quality of remnant woodland was to decline as a result of rezoning and a higher order of land use, then this would trigger further assessment under the TSC and / or EPBC Act. Likewise, assessment under the TSC and / or EPBC Act may be required as supporting documentation for any future Development Applications (DA). - Constraints identified within this Land Parcel are as follows: - Hollow dependent threatened species identified under the TSC and / or EPBC Act. - EEC, TSC Act. - CEEC EPBC Act. - Bush Fire Prone Land. - Drainage line – core riparian zone of 10 m required under State Protected	 Legend "High" constraint "Moderate" constraint "Low" constraint

Lot / DP in OzArk 2011	ELA 2008 Constrains	ELA 2008 Management	OzArk 2011 Constraints	Constraints Map
			Land. ➤ Koala Feed Trees identified under SEPP 44 ➤ Removal of 'Native Vegetation', 'Removal of Hollow Bearing Trees' and 'Bushrock Removal' would contribute to NSW listed KTP's	
Lots 11 & 12 in DP1130672	Not identified	• Not identified	• Constraints identified in 'Moderate' constraint areas require careful consideration. If the quality of remnant woodland was to decline as a result of rezoning and a higher order of land use, then this would trigger further assessment under the TSC and / or EPBC Act. Likewise, assessment under the TSC and / or EPBC Act may be required as supporting documentation for any future Development Applications (DA). • Constraints identified within this Land Parcel are as follows: ➤ Hollow dependent threatened species identified under the TSC and / or EPBC Act. ➤ EEC, TSC Act. ➤ CEEC EPBC Act. ➤ Bush Fire Prone Land APZ ➤ Drainage line – core riparian zone of 10 m required under State Protected Land. ➤ Koala Feed Trees identified under SEPP 44. ➤ Removal of 'Native Vegetation', 'Removal of Hollow Bearing Trees' and 'Bushrock Removal' would	 Legend "High" constraint "Moderate" constraint "Low" constraint

Lot / DP in OzArk 2011	ELA 2008 Constrains	ELA 2008 Management	OzArk 2011 Constraints	Constraints Map
			contribute to NSW listed KTP's.	
Lot 221 in DP1105151	Not identified	Not identified	This land parcel is suitable for future residential or rural residential which is consistent with the LPSC GMS 2011. There are no constraints to rezoning this land parcel to RU1.	
Pt Lot 84 in DP751026	Not identified	Not identified	- Constraints identified in 'Moderate' and 'High' constraint areas require careful consideration and may prevent rezoning to a higher order of land use and / or the erection of dwellings. If the quality of remnant woodland was to decline as a result of rezoning and a higher order of land use, then this would trigger further assessment under the TSC and / or EPBC Act. Likewise, assessment under the TSC and / or EPBC Act may be required as supporting documentation for any future Development Applications (DA). - Constraints identified within this Land Parcel are as follows: - Hollow dependent threatened species identified under the TSC and / or EPBC Act. - EEC, TSC Act. - Bush Fire Prone Land.	

Lot / DP in OzArk 2011	ELA 2008 Constrains	ELA 2008 Management	OzArk 2011 Constraints	Constraints Map
			➤ Drainage line – core riparian zone of 10 m required under State Protected Land. ➤ Koala Feed Trees identified under SEPP 44. ➤ Landscape connectivity and wildlife corridors ➤ Removal of 'Native Vegetation', 'Removal of Hollow Bearing Trees' and 'Bushrock Removal' would contribute to NSW listed KTP's.	

Lot / DP in OzArk 2011	ELA 2008 Constrains	ELA 2008 Management	OzArk 2011 Constraints	Constraints Map
Lot 14 Sec A in DP29984	Not identified	Not identified	- Constraints identified in 'Moderate' and 'High' constraint areas require careful consideration and may prevent rezoning to a higher order of land use and / or the erection of dwellings. If the quality of remnant woodland was to decline as a result of rezoning and a higher order of land use, then this would trigger further assessment under the TSC and / or EPBC Act. Likewise, assessment under the TSC and / or EPBC Act may be required as supporting documentation for any future Development Applications (DA). - The 'High' constraint areas are not suitable for - Constraints identified within this Land Parcel are as follows: - Hollow dependent threatened species identified under the TSC and / or EPBC Act. - Large area of remnant EEC, TSC Act - Large area of remnant CEEC EPBC Act. - Bush Fire Prone Land APZ - Drainage line – core riparian zone of 10 m required under State Protected Land. - Koala Feed Trees identified under SEPP 44. - Removal of 'Native Vegetation', 'Removal of Hollow Bearing Trees' and 'Bushrock Removal' would contribute to NSW listed KTP's.	

Lot / DP in OzArk 2011	ELA 2008 Constrains	ELA 2008 Management	OzArk 2011 Constraints	Constraints Map
Lot 316 in DP751009	Not identified	• Not identified	• Low constraints to rezoning, however controls required to zone as partial E4 / R5 or wholly as zone R5. Recommendations support either selected zoning. • Constraints identified within this Land Parcel are as follows: ➤ Koala Feed Trees identified under SEPP 44. ➤ Drainage line – core riparian zone of 10 m required under State Protected Land. ➤ This land parcel is suitable for future residential or rural residential which is consistent with the LPSC GMS 2011.	

Lot / DP in OzArk 2011	ELA 2008 Constrains	ELA 2008 Management	OzArk 2011 Constraints	Constraints Map
Lot 317 in DP751009	Not identified	Not identified	- Due to the quality 'High constraint' of the EEC (TSC and EPBC Act) a portion of the land parcel is not suitable to be wholly zoned as E4 of for future residential / rural residential purposes, without strict controls. - Controls required to zone as partial E3 / E4 - Constraints identified within this Land Parcel are as follows: - Hollow dependent threatened species identified under the TSC and / or EPBC Act. - EEC, TSC Act - CEEC EPBC Act - Bush Fire Prone Land APZ - Drainage line – core riparian zone of 10 m required under State Protected Land. - Koala Feed Trees identified under SEPP 44 - Removal of 'Native Vegetation', 'Removal of Hollow Bearing Trees' and 'Bushrock Removal' would contribute to NSW listed KTP's.	 Legend "High" constraint (Orange) "Moderate" constraint (Green) "Low" constraint (Blue)

Lot / DP in OzArk 2011	ELA 2008 Constrains	ELA 2008 Management	OzArk 2011 Constraints	Constraints Map
Lot 2 DP112744	Not identified	Not identified	- No impediment to the use of the "Low" constrained lands for rezoning to a higher order of land use or the erection of dwellings. Low constraints to rezoning in majority of land parcel. - If land use (i.e. grazing) remains the same there would be no constraints to this zoning. - This land parcel is suitable for future residential or rural residential which is consistent with the LPSC GMS 2011. - Constraints identified in 'Moderate' constraint areas require careful consideration. If the quality of remnant woodland was to decline as a result of rezoning and a higher order of land use, then this would trigger further assessment under the TSC and / or EPBC Act. Likewise, assessment under the TSC and / or EPBC Act may be required as supporting documentation for any future Development Applications (DA). - Constraints identified within this Land Parcel are as follows: - Hollow dependent threatened species identified under the TSC and / or EPBC Act. - EEC, TSC Act - Koala Feed Trees identified under SEPP 44. - Drainage line – core riparian zone of 10 m required under State Protected Land.	

7 LEGISLATION

7.2 State Legislation

7.1.1 Environmental Planning and Assessment Act, 1979 (EP&A Act)

Relevance to the current proposal: This assessment has considered critical habitat, threatened species, populations or ecological communities, or their habitats which occur in the Project Site.

7.1.2 Ecologically Sustainable Development (ESD)

Relevance to the current proposal: Consideration has been given to how the proposed modifications accord with ESD principles throughout the assessment, particularly with regard to the environmental constraints posed in the Project Site. It is summarised that the rezoning and subdivision following prescriptive management measures would be discrete such that those ecological values present / or having potential to occur would be protected or managed for future generations.

7.1.3 The Native Vegetation Act 2003 (NV Act)

Clearing native vegetation or protected regrowth requires approval under the *Native Vegetation Act 2003* unless the clearing is a permitted activity.

7.1.4 The Noxious Weeds Act 1993 (NW Act)

Relevance to the current proposal: The ecological assessment included a search for noxious weeds. Several Class 4 noxious weeds was identified in the Project Site and will require management as per the *Noxious Weeds Act*.

7.1.5 The Rural Fires Act 1997

The Rural Fires Act, 1997 (RF Act) requires public authorities and owners/occupiers of land to take all practicable steps to prevent the occurrence of bushfires and to minimise the danger of the spread of bushfires on or from that land.

A bush fire hazards risk map was prepared for the LPSC. Due to the lack of scale on the map, the bushfire zoning of each area cannot be confidently ascertained. The Project Site is however identified as being within bush fire prone land, however only timbered blocs would be considered as high risk. In accordance with the Rural Fire Services guidelines, Planning for Bushfire Protection (RFS 2006), a bushfire risk assessment must be undertaken and appropriate mitigation measures devised, as defined by Local Council or Rural Fire Service Bush Fire Prone Land Maps. Any new dwellings or structures would be required to have bushfire protection zones as per the State Environmental Planning Policy (Exempt and

Complying Development Codes. The degree of clearing required to implement a bushfire protection zone is dependent on vegetation type, slope and distance of vegetation from any proposed dwelling.

Within the fire protection zone the vegetation will need to be significantly reduced with all understorey vegetation and small trees to be removed. Isolated larger trees can be retained within this zone provided there is separation between the ground and canopy and horizontal separation between tree crowns.

7.1.6 The Water Management Act 2000 (WM Act).

All controlled development on or under waterfront land is regulated by the Water Management Act (WMA) 2000. The Act aims to minimise impacts on waterfront land and water courses and requires buffer zone, called the riparian corridor, between the waterfront and the adjacent development.

The NSW Office of Water (NOW) administers the WMA and is required to assess the impact of any proposed controlled activity to ensure that no more than minimal harm will be done to waterfront land as a consequence of carrying out the controlled activity. Waterfront land includes the bed and bank of any river, lake or estuary and all land within 40 metres of the highest bank of the river, lake or estuary. This means that a Controlled Activity Approval must be obtained from the NOW before commencing the controlled activity.

Guidelines for Controlled Activities – Riparian Corridors

The ‘**Guidelines for Controlled Activity – Riparian Corridors**’ (February 2008) relates to the design and construction of works within a watercourse or on waterfront land. In-stream works include modifications or enhancements to the watercourse, channel realignment, bed control structures, pipe laying and cable trenching etc. This Act requires that General Terms of Approval (GTAs) are sought for Controlled Activities as defined by the Act. While Part 3A applications do not require GTAs, the DGRs require consistency with this guideline. The Guideline provides for Riparian Corridors to be established where a defined channel for a watercourse exists. The width of the Riparian Corridor is dependent on the type of watercourse, as categorised in accordance with the ‘Strahler System of Ordering Watercourses’ under the Water Management Act and as depicted on 1:25,000 topographic maps. The Project Site contains all ‘First Order Watercourses’ as defined by the Strahler method. A Riparian Corridor comprises the following components with the associated requirements:

- Core Riparian Zone (CRZ) – as “measured from the top of the highest bank and on both sides of the watercourse.
- Vegetated Buffer (VB) of 10m wide for 3rd Order or greater streams,

- A First Order Watercourses requires a minimum CRZ width of 10 metres, “and where there is a defined channel where water flows intermittently” and no VB.

The width of a riparian zone as specified by NOW depends on the order of the watercourse / water body that fronts the site. Water courses can be ordered according to the Strahler method as first, second and third order and so on. NOW recommends core riparian zone (CRZ) widths for various order water courses, as classified by the Strahler system, in their document *Guidelines for controlled activities, Riparian corridors*, February 2008. The CRZs widths are:

- First order, 10 m;
- Second order, 20 m; and
- Third order, 20-40 m.

In order to assess the riparian corridors located on the subject site the following has been undertaken:

- Review of topographic mapping;
- Detailed site inspection; and
- Merit based assessment.

Interrogation of local mapping provides an initial assessment of the stream order of the watercourses located on the Project Site

Relevance to the current proposal: Any rezoning and subsequent subdivision may indirectly or directly alter creek/drainage lines through a change in permitted land use. Thus, the proposed works are a ‘controlled activity’ under the *Water Management Act 2000* (WMA). Any land within 40 m of these waterways is ‘Protected Land’ administered by the NSW NOW. Clause 39A(1) *Water Management (General) Regulations 2004*, provides for all public authorities (other than Landcom) to be exempt from the need to hold Controlled Activity Approval. This means that a Controlled Activity Approval must be obtained from the NSW NOW before commencing the controlled activity.

Due to the Strahler stream order of the ephemeral drainage lines a 10 m core riparian zone width is stipulated (instead of the larger 40 m). This means that any rezoning would need to take this 10 m CRZ width into account.

7.1.7 Threatened Species Conservation Act 1995 (TSC Act)

Items within the TSC Act relevant to the current proposal include

- threatened species, populations and ecological communities.
- Key threatening processes as listed in Schedule 3 of the TSC Act,

- Relevance to the current proposal: The proposal has the potential to exacerbate several key threatening processes including the clearing of native vegetation, removal of rocky habitat, removal of hollow bearing trees.
- The NSW planning and development system (the EP&A Act) and its relationship to threatened species, populations or ecological communities, or their habitats.

The potential impact of development in the Project Site on any threatened species, populations or communities would need to be assessed using a Seven Part Test under Section 5A of the EP&A Act. If the impacts as a result of land rezoning or subsequent subdivision are found to be 'significant', a Species Impact Statement would be required and referred to the Director General of OEH. A number of threatened species likely to be found in and around the Project Site as identified in **Table 13** would need to be considered.

Two endangered ecological communities (EECs) were identified within the Project Site, White Box – Yellow Box – Blakely's Red Gum Woodland and Native Vegetation on Cracking Clay Soils of the Liverpool Plains (referred to here as Liverpool Plains Native Vegetation EEC). Both of these communities are also listed under the EPBC Act (see above), however, with a slightly different description. Both descriptions include areas where the native canopy has been cleared and in various conditions. Degraded remnants that have few, if any, native species in the understorey is typical of Box-Gum Woodland where agricultural practices have been more intensive (e.g. pasture improvement over long periods). Under the TSC Act the community is defined as being dominated by either White Box (*Eucalyptus albens*), Yellow Box (*Eucalyptus melliodora*), Blakely's Red Gum (*Eucalyptus blakelyi*) or a combination in open woodland to forest formation with few shrubs. The understorey may be predominately composed of exotic species where there is an intact canopy layer; or in areas where the canopy has been cleared, the ground cover is predominately native and dominated by grasses or herbs.

Relevance to the current proposal: In relation to the Project Site, desktop and field investigations have occurred to identify if any threatened species, populations and ecological communities occur in the Project Site.

- Any rezoning or subdivision would not result in a change or increased intensity of agricultural practises, aside from those areas that have been identified as having 'Low' Constraints.
- A seven part-test would need to be prepared for any land parcel where an EEC has been identified as occurring. However, a significant impact can be avoided by utilising previously disturbed and cleared areas.

- Mitigate tree removal through identifying potential building envelopes within already cleared areas or 'low and moderate' constrained areas where achievable.

7.1.8 Threatened Species Conservation Amendment (Biodiversity Banking) Act 2006.

This project has not been assessed using the BioBanking scheme. However a Biodiversity Offset Plan for the Liverpool Plains Shire Council has been developed and is consistent with this scheme.

7.2 NATIONAL LEGISLATION

7.2.1 Environment Protection and Biodiversity Act 1999 (EPBC Act)

In the Statement of Effect on Threatened Flora and Fauna accompanying any future development application an assessment will be required to be undertaken to determine whether or not the proposal has, or is likely to have, a significant impact on a matter of National Environmental Significance shown in the Table below (**Table 15**)

Table 15: Matters of national environmental significance

Issue	Potential Impact
a) Any environmental impact on a World Heritage property	No
b) Any impacts on wetlands of international importance	No
c) Any environmental impact on Commonwealth listed threatened species or ecological communities	Yes
d) Any environmental impact on Commonwealth listed migratory species	Yes
e) Does the project affect any national heritage places	No
f) Does any part of the proposal involve a nuclear action?	No
g) Any environmental impact on Commonwealth marine area?	No
h) Any direct or indirect effect on Commonwealth land?	No

Nationally, the EPBC Act provides a documented framework or set of criteria that empirically measures values (remnant patch size as well as species composition) within a given Project Site such that eligibility for legislative protection can be determined. This criterion will inevitably only protect areas that are currently in moderate to good condition.

In order to be the listed ecological community, the following criteria are assessed:

- An understory patch, in the absence of overstorey trees, must have a high level of native

floral species diversity, but only needs to be 0.1 hectares or greater in size;

- A patch in which the perennial vegetation of the ground layer is dominated by native species, and which contains at least 12 native, non-grass understory species (such as forbs, shrubs, ferns and sedges) is considered to have a sufficiently high level of native diversity to be the listed ecological community. At least one understory species should be an important species (e.g. grazing-sensitive, regionally significant or uncommon species; such as Kangaroo Grass or orchids) in order to indicate a reasonable condition. In seasons other than spring, and in the absence of seasonal rains, many forbs may either be unrecognisable or exist only in the soil as bulbs or seeds;
- Areas with both an overstorey and understorey present are also considered of sufficiently good condition to be part of the listed ecological community if the understorey meets any of the conditions above, or if they have a predominantly native understorey, are two hectares or above in size, and have either natural regeneration of the overstorey species or 20 or more mature trees per hectare;

The condition criteria outlined above provide the minimum level at which patches are to be included as the listed ecological community. Such minimum conditions do not represent the ideal state of the ecological community. Further, the larger and more diverse a patch is, the more important it is. Additionally, patches that link remnants in the landscape, that occur in disparate areas, that contain rare, declining or threatened species and, that encompass the entire range of the ecological community, are important to the viability of the ecological community into the future. Such areas should accordingly be given priority in Australian within the Government Natural Resource Management investments.

As the vegetation in the majority of the Project Site is consistent with the EPBC description of '*White Box, Yellow Box, Blakely's Red Gum grassy woodland and derived native grasslands*', the following notes are pertinent.

- If the proposal is considered to have a significant impact to an EPBC listed community or species, then referral needs to occur following a specific format (see EPBC website <http://www.environment.gov.au/epbc/assessments/referral-form.html>);
- If a significant impact (as determined by DEWHA guidelines) can be avoided through mitigation measures i.e. avoidance of those values, items or species that are protected under the Act, then the referral will be considered within 20 business days and a determination is made on whether it is a controlled action (requires further environmental assessment). If it is not a controlled action then the proposal may proceed.

- If a significant impact is to occur, it is then known as a controlled action. As NSW and the Commonwealth do not have a bilateral agreement this process may take up to six months to gather the necessary information. DEWHA will advise the Proponent which one of the three different levels of assessments using DEWHA guidelines shall be undertaken so that approval can then be determined. The three levels of assessments are:
 - preliminary documentation (which may or may not include environmental impact assessments as supporting evidence undertaken on behalf of the state determining authority);
 - environmental impact assessment; and
 - public environmental review.
- if the Proponent states it will be a controlled action (it will have a significant impact) in the referral process, and they supply all of the necessary information to process the application, then the DSEWPaC will only take 10 working days to review once it is lodged.

8 DISCUSSION / MANAGEMENT

General management, mitigation measures and recommendations which are applicable to every land parcel in the Project Site have been provided below. Those measures which are specific to each land parcel in the Project Site have been listed in **Table 16**.

Rezoning

- There should be no impediment for the use of those land parcels identified as being in 'Low' condition for 'Large Lot Residential,' 'Village,' or 'Primary Production' zoning. Areas with "Low" constraints are suitable for more intensive land use practises or future subdivision and dwellings.
- Areas with with "Moderate" and "High" constraint may not suitable for future development/ dwellings on site.
- Those areas identified as being in Moderate – Good (Good) condition have high associated constraints and are recommended for rezoning as 'Environmental Management', particularly the EPBC listed Box-Gum Woodland which may be suitable with the following recommendations:
 - BioBanking agreement;
 - further investigations are undertaken to investigate the presence of threatened species;
 - Controlling provisions to minimise grazing on land identified as being in 'Moderate-Good' to Moderate-Good (Good) condition;
 - controlling provisions to retain all vegetation;
 - controlling provisions to prevent grazing and other high disturbance activities;
- Future residential use of those land parcels identified as having 'moderate constraints' may occur so long as:
 - strategic placement of any dwelling can utilise the previous cleared and disturbed portions of the block.
 - Scattered White Box can be avoided by strategic placement of any dwelling.
 - 'Maintain' or 'improve' outcome for biodiversity.
- A development is to be regarded as improving or maintaining biodiversity values if

1. (a) The development does not directly impact on biodiversity values in a red flag area on the development site. A 'red flag area' is an area of land as defined in the BioBanking Assessment Methodology (DECC 2009) as having high biodiversity conservation values, if it has been more than 70% cleared (detailed in Biometric descriptions), an EEC or CEEC (TSC or EPBC Acts) or a specific community listed that cannot withstand further loss.

Or

- (b) The development does directly impact on biodiversity values in a red flag area on the development site but the Director General of OEHS makes a determination that the development may be regarded as improving or maintaining biodiversity values according to the BioBanking Assessment Methodology.

And

2. The direct impacts of the development on biodiversity values on the development site are offset by the retirement of biodiversity credits determined in accordance with the offset rules in the BioBanking Assessment Methodology.

And

3. The Director General of OEHS determines that any indirect impacts of the development on on-site and off-site biodiversity values that cannot be mitigated through on-site measures are offset by the retirement of biodiversity credits determined in accordance with the offset rules in the BioBanking Assessment Methodology.

- The following properties are suitable to achieve a triple bottom line outcome (social, environmental and economic):
 - Lots 1-3 in DP255804;
 - Lots 11 & 12 in DP1130672;
 - Lot 12 in DP878120;
 - Lot 14 SecA in DP29984;

A BioBanking conservation agreement in perpetuity should cover the high value native remnants meeting the criterion for listed as the EPBC community such that development may still occur in the cleared areas whilst maintaining those areas with high conservation values.

Future subdivisions and dwellings

- Avoid large hollow bearing trees where possible and maintain connectivity between habitat on and off each individual land parcel;
- If a dwelling is to be erected on any newly zoned or subdivided land parcels, then the developer should be aware of any clearing requirements to implement fire protection zones. Land parcels in high risk bushfire zones can consider adherence to a stricter construction standard (per AS3959) to maintain the required fire protection zone whilst reducing clearing;
- Any rezoning and / or subdivision would need to take into account a 10 m core riparian zone (CRZ) from any 'Strahler 1' drainage line. No impacts or development is to occur in the CRZ area.
- Any development where possible would be located in the disturbed areas of that Lot;
- If land use is proposed to change post rezoning (i.e. grazing to cropping), identify whether land is 'Core Koala Habitat'. If dwellings are required these can easily avoid large hollow bearing trees. Methods of managing koala habitat within the rezoning process may include: zoning habitat areas for Environmental Conservation, Environmental Management.
- 'Maintain or Improve' any vegetation communities to be impacted as part of any future development or rezoning. Native vegetation replacement for vegetation removed for future development is a consideration. There are opportunities for the restoration / rehabilitation of vegetation at the Site on a number of levels which include (in order of scale):
 - Weed control within existing vegetation communities to be retained.
 - Stimulating natural regeneration within or adjacent to areas of retained vegetation/habitat/restoration plantings to expand or consolidate vegetation communities.
 - Restoration plantings to link areas of fauna habitat (eg. Koala habitat linkages).
- The following condition of consent for any future development would be considered by Council for any land parcel identified as having 'high' and 'moderate' constraints:
 - Avoid large hollow bearing trees and areas of bushrock to avoid contribution to NSW KTPs.
 - Removal of existing trees would be offset at a ratio of 1:50 using the same

species as those removed at the cost of the developer in areas identified by LPSC consistent with the LPSC Biodiversity Strategy (ELA2011).

- Land use intensity (i.e grazing) is not to change as a result of re-zoning unless it results in an improvement to the quality of the existing EEC.
- Removal of trees would result in 7-Part Tests (TSC Act) and/or Assessments of Significance (EPBC Act) for hollow dependant fauna and Box-Gum Woodland listed in **Table 17**.
- No development would occur within 10 m of a drainage line, acknowledging the Core Riparian Zone.

Table 16: Management of constraints associated with rezoning.

Corresponding number in figures	Project Site	Proposed Zoning under Draft LEP	Specific Management and Recommendations
1	Lot 316 in DP751009	Partial E4 (environmental living) /R5 (Large Lot residential). Land holder requests removal of part zoning E4 (environmental living) /R5 (Large Lot residential) to wholly R5.	The land parcel has been identified as is suitable for future residential or rural residential zoning as R5 which is consistent with the LPSC GMS 2011.
3	Lot 317 in DP751009	Partial E3/E4. Landholder requests change of part zoning of land from E3/E4 to wholly E4.	- Recommended to be zoned as partial E3 / E4 - Due to the 'High' constraint of a portion of the land, is not suitable to be wholly zoned as E4 of for future residential / rural residential purposes, without strict controls. ➤ Controlling provisions to minimise grazing. ➤ controlling provisions to retain all vegetation; ➤ controlling provisions to prevent grazing and other high disturbance activities; ➤ Weed management - This land parcel is only suitable for future residential or rural residential uses within the 'moderate' constraints area, provided that any new dwellings would be erected in the previously cleared and disturbed areas and that any development can be determined as having a 'low impact'. - Conditions of development approval would be required.
2, 4, 5	Lots 1 – 3 in DP255804	RU1 (Primary Production). Landholder requests zoning of land as R1 (General Residential)	- There are no constraints to rezoning these land parcels to RU5 so long as land use remains the same or improves the current condition of remnant vegetation. - Zoning as RU5 is suitable for the three land parcels, provided strict controls are implemented for any future development, including that any future dwellings occur in the 'low' constrained portion of the block. - Due to the 'moderate' and 'high' constraints on portions of the land it is not considered suitable for zoning as R1. - Conditions of development approval would be required.
6, 7	Lots 11 & 12 in DP1130672	RU1 (Primary Production). Land owner requests dwelling entitlements.	- The current land-use practises are consistent with the RU1 zoning. - There are no constraints to rezoning these land parcels to RU1 so long as land use remains the same or improves the current condition of remnant vegetation. - Scattered White Box or areas of 'moderate' constraint can be avoided by strategic placement of any dwelling. - Dwellings could be constructed within this zone consistent with the LPSC GMS 2011. ➤ Grazing areas could be fenced off from any potential dwellings to allow

Corresponding number in figures	Project Site	Proposed Zoning under Draft LEP	Specific Management and Recommendations
			grazing operations to continue. This should not affect the carrying capacity of stock that is currently run on the land. ➤ Due to domestic bore water tanks, stock troughs and dams, any proposed dwelling would not be reliant on the town water supply. ➤ Access to any subdivision post rezoning would occur from Spains Lane • Conditions of development approval would be required.
24	Lot 221 in DP1105151	RU1 (Primary Production). Residential investigation under the Draft LEP	• There is no impediment to the proposed RU1 zoning. • This land parcel is suitable for future residential or rural residential uses which is consistent with the LPSC GMS 2011.
9, 10	Lot 14 Sec A in DP29984	RU1 (Primary Production). Residential investigation under the Draft LEP	• Areas of 'high' constraint are not suitable for this zoning. It is recommended that land in this 'high' constraint area would be zoned as E3. • The 'high' constraint portion of this land parcel has been identified as an ideal candidate for a BioBanking Agreement under the BioBanking TSC Act. The BioBanking Scheme was established under Part 7A of the TSC Act. The BioBanking Agreement acknowledges the high quality Box-Gum Woodland EEC which can be tailored to current land use practises. The BioBanking Agreement would allow credits to be purchased by a developer that provide an ongoing financial gain for the farmer. • If land use (i.e. grazing) remains at the same intensity in the 'moderate' or 'low' constraint areas there would be no constraints to RU1 zoning. • Future residential or rural residential uses are only suitable in the 'moderate' or 'low' constraint areas suitable under strict controls. Only portions of this land parcel are suitable for future residential or rural residential uses if approved under this zoning which would be consistent with the LPSC GMS 2011. ➤ The lower footslopes of this lot adjacent to Wallabadah Road in cleared derived grassland is suitable for potential dwellings with strict controls. ➤ Due to the quality of EEC located on the slopes and hilltop, a change in land use or erection of dwellings is not advised for this area. • Conditions of development approval would be required.
8	Lot 1 in DP624133	RU1 (Primary Production). Residential investigation under the Draft LEP	• If land use (i.e. grazing) remains at the same intensity in the 'moderate' or 'low' constraint areas there would be no constraints to RU1 zoning. • This land parcel is suitable for future residential or rural residential uses which is consistent with the LPSC GMS 2011. • Conditions of development approval would be required.

Corresponding number in figures	Project Site	Proposed Zoning under Draft LEP	Specific Management and Recommendations
11	Lots 12 in DP878120	RU1 (Primary Production). Residential investigation under the Draft LEP.	• Areas of 'high' constraint are not suitable for this zoning. It is recommended that land in this 'high' constraint areas would be zoned as E3. • The 'high' constraint portion of this block with a high quality remnant Box-Gum Woodland would be suited for E3 zoning and a Biobanking Agreement. • This land parcel has been identified as an ideal candidate for a BioBanking Agreement under the BioBanking TSC Act. The BioBanking Scheme was established under Part 7A of the TSC Act. The BioBanking Agreement acknowledges the high quality Box-Gum Woodland EEC which can be tailored to current land use practises. The BioBanking Agreement would allow credits to be purchased by a developer that provide an ongoing financial gain for the farmer. • There is no impediment to zoning RU1 in the 'low' constraint areas. • No constraints to land zone change to RU1 (Primary Production) so long as land use / intensity remains the same in the 'moderate' constraint areas. • Residential investigations are only suitable on 'Low' constraint land. Subdivision and erection of dwellings, however is only suitable with strict controls. Suitable areas for dwellings could be located in already cleared / cropped areas ' low constraint' noted within the western, southern and north-eastern portion of the block • Conditions of development approval would be required.
12, 13	Lots 34 & 35 in DP875343	RU1 (Primary Production). Residential investigation under the Draft LEP.	• There is no impediment to the proposed RU1 zoning. • This land parcel is suitable for future residential or rural residential uses which is consistent with the LPSC GMS 2011.
14, 15	Lots 36 & 37 in DP875343	RU1 (Primary Production). Residential investigation under the Draft LEP.	• There is no impediment to the proposed RU1 zoning. • This land parcel is suitable for future residential or rural residential uses which is consistent with the LPSC GMS 2011.
18 17, 16, 19	Lots 1-4 in DP260891	RU1 (Primary Production). Residential investigation under the Draft LEP.	• Future residential or rural residential uses are only suitable in the 'moderate' or 'low' constraint areas suitable under strict controls. ➢ Controlling provisions to minimise grazing. ➢ controlling provisions to retain all vegetation; ➢ controlling provisions to prevent grazing and other high disturbance activities; ➢ Weed management • Only portions of this land parcel are suitable for future residential or rural residential uses if approved under this zoning which would be consistent with the LPSC GMS 2011 ➢ Any potential dwellings would be situated in the identified 'low' constrained

Corresponding number in figures	Project Site	Proposed Zoning under Draft LEP	Specific Management and Recommendations
			areas. ➤ Any potential dwelling would avoid remanant White Box along with any associated grassy understorey that forms part of the State EEC • Lot 3 and 4 identified as having 'low' constraints are suitable for future residential or rural residential uses which is consistent with the LPSC GMS 2011.
20	Lot 1 in DP112744	RU1 (Primary Production). Residential investigation under the Draft LEP.	• The current land-use practises are consistent with the RU1 zoning. • This land parcel is only suitable for future residential or rural residential uses within the 'low' constraints area, provided that any new dwellings would be erected in the previously cleared and disturbed areas and that any development can be determined as having a 'low impact'.
21	Lot 83 in DP751026	RU1 (Primary Production). Residential investigation under the Draft LEP.	• Areas of 'high' constraint are not suitable for this RU1. It is recommended that land in this 'high' constraint areas would be zoned as E3. • Areas of 'moderate' constraint are suitable for future residential or rural residential uses which is consistent with the LPSC GMS 2011 under strict controls including: ➤ Strategic placement of dwellings in cleared areas. ➤ Controlling provisions to minimise grazing. ➤ controlling provisions to retain all vegetation; ➤ controlling provisions to prevent grazing and other high disturbance activities; ➤ Weed management • Conditions of development approval would be required.
22	Pt Lot 2 in DP112744	RU1 (Primary Production). Residential investigation under the Draft LEP.	• There are no constraints to rezoning so long as land use remains the same or improves the current condition of remnant vegetation. • Land suitable for dwellings is noted adjacent to Wallabadah Road in cleared derived grassland • Conditions of development approval would be required.
23	Pt Lot 84 in DP751026	RU1 (Primary Production). Residential investigation under the Draft LEP.	• There are no constraints to rezoning so long as land use remains the same or improves the current condition of remnant vegetation. • Conditions of development approval would be required.

8.1.1 Assessments of Significance

The appropriate management of ecological items is usually determined on the basis of their assessed significance as well as the likely impacts of any Proposal. Significance of a species, population or community is determined by appointed NSW and National Scientific Committees, cultural and public significance are considerations within the significance determination process. Within the framework of an impact assessment impacts to listed significant item must be assessed at a State (under the TSC Act) or National (under the EPBC Act) level – even if it is the same species. The following sections identify State or Nationally listed threatened (significant) species then determines if impacts are ‘significant’.

If the proposed rezoning and subdivision would result in a change in land use, which may result in the removal of hollow bearing trees, the following threatened fauna would be considered affected by the proposal. Thus each would require a 7-Part Test and/ or Assessment of Significance to characterise the threat to them (**Table 17**).

If a 7-Part Test or Assessment of Significance for any threatened fauna, flora or EECs determine a significant impact then A Species Impact Statement and / or referral to the respective state and national Minister for the Environment would be required for the Project.

Table 17: Species requiring significance assessments under the TSC and EBC Act.

Scientific Name	Common Name	Type of Assessment Required
Box-Gum Woodland	Box-Gum Woodland	7-Part Test (TSC Act) Assessment of Significance (EPBC Act)
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	7-Part Test (TSC Act)
<i>Merops ornatus</i>	Rainbow Bee-eater	7-Part Test (TSC Act)
<i>Glossopsitta pusilla</i>	Little Lorikeet	7-Part Test (TSC Act)
<i>Vespadelus troungtoni</i>	Eastern Cave Bat/Little Forest Bat	7-Part Test (TSC Act)
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	7-Part Test (TSC Act) Assessment of Significance (EPBC Act)
<i>Falsistrellus tasmaniensis</i>	Eastern Falsistrelle	7-Part Test (TSC Act)
<i>Miniopterus schreibersii oceanensis</i>	Eastern Bentwing Bat	7-Part Test (TSC Act)
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	7-Part Test (TSC Act)
<i>Neophema pulchella</i>	Turquoise Parrot	7-Part Test (TSC Act)
<i>(Stagonopleura guttata</i>	Diamond Firetail	7-Part Test (TSC Act)
<i>Chthonicola sagittatus</i>	Speckled Warbler	7-Part Test (TSC Act)
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper	7-Part Test (TSC Act)
<i>Xanthomyza Phrygia</i>	Regent Honeyeater	7-Part Test (TSC Act)

<i>Phascolarctos cinereus</i>	Koala	7-Part Test (TSC Act)
<i>Melanodryas cucullata</i>	Hooded Robin	7-Part Test (TSC Act)
(<i>Neophema pulchella</i>)	Turquoise Parrot	7-Part Test (TSC Act)
<i>Tylophora linearis</i>	<i>Tylophora linearis</i>	7-Part Test (TSC Act) Assessment of Significance (EPBC)
<i>Thesium australe</i>	Austral Toadflax	7-Part Test (TSC Act) Assessment of Significance (EPBC)
<i>Dichanthium setosum</i>	Bluegrass	7-Part Test (TSC Act) Assessment of Significance (EPBC)
<i>Pterostylis cobarensis</i>	Cobar Greenhood Orchid	7-Part Test (TSC Act) Assessment of Significance (EPBC)
<i>Digitaria porrecta</i>	Finger Panic Grass	7-Part Test (TSC Act)
<i>Monotaxis macrophylla</i>	Large-leafed Monotaxis	7-Part Test (TSC Act)
<i>Persoonia nutans</i>	<i>Persoonia nutans</i>	7-Part Test (TSC Act)
<i>Pimelea spicata</i>	<i>Pimelea spicata</i>	7-Part Test (TSC Act)
<i>Pimelea curviflora</i> var. <i>curviflora</i>	<i>Pimelea curviflora</i> var. <i>curviflora</i>	7-Part Test (TSC Act)
<i>Pultenaea parviflora</i>	<i>Pultenaea parviflora</i>	7-Part Test (TSC Act) Assessment of Significance (EPBC)
<i>Euphrasia ruptura</i>	<i>Euphrasia ruptura</i>	7-Part Test (TSC Act) Assessment of Significance (EPBC)
<i>Chiloglottis platyptera</i>	Barrington Tops Ant Orchid	7-Part Test (TSC Act)
<i>Pterostylis gibbosa</i>	Illawarra Greenhood	7-Part Test (TSC Act) Assessment of Significance (EPBC)
<i>Thelymitra</i> sp. Kangaloon	Kangaloon Sun-orchid	7-Part Test (TSC Act)
<i>Pterostylis saxicola</i>	Sydney Plains Greenhood	7-Part Test (TSC Act) Assessment of Significance (EPBC)
<i>Caladenia tessellata</i>	Thick-lipped Spider-orchid	7-Part Test (TSC Act)
<i>Acacia pubescens</i>	Downy Wattle	7-Part Test (TSC Act)
<i>Euphrasia arguta</i>	<i>Euphrasia arguta</i>	7-Part Test (TSC Act) Assessment of Significance (EPBC)
<i>Syzygium paniculatum</i>	Magenta Lilly Pilly	7-Part Test (TSC Act) Assessment of Significance (EPBC)
<i>Philotheca ericifolia</i>	<i>Philotheca ericifolia</i>	7-Part Test (TSC Act) Assessment of Significance (EPBC)
<i>Pomaderris brunnea</i>	Rufous Pomaderris	7-Part Test (TSC Act)
<i>Cynanchum elegans</i>	White-flowered Wax Plant [12533]	7-Part Test (TSC Act) Assessment of Significance (EPBC)

9 CONCLUSION

In conclusion, based on the results of the fieldwork conducted to date, the Project Site is considered to have moderate conservation significance in regards to threatened ecological communities, threatened species and a number of ecological constraints as discussed within the report were identified. The desirability to retain as much vegetation as possible, whilst maintain land use have been addressed through this report as possible counters to the constraints.

In Summary,

- Any future development of these lands should take into consideration the following;
 - Endangered Ecological Communities, threatened flora, fauna or populations listed under the TSC or EPBC Act.
 - Clearing requirements under the *Bushfires Act* for Bush Fire Prone Land.
 - Core Riparian Zones around drainage lines (10 m).
 - Contribution to Key Threatened Processes. TSC Act KTPs relevant to the Project Site would include, 'Removal of Hollow Bearing Trees', 'Removal of Native Vegetation', 'Bushrock Removal' and 'invasion of perennial grasses' whilst 'clearing of native vegetation' would be relevant under the EPBC Act
 - Potential areas suited as Biobanking Offsets Areas for projects in Councils jurisdiction.
 - Be in line with the Liverpool Plains Growth Strategy, Biodiversity Strategy, and Council's *Regenisis* program.
 - Koala habitat SEPP 44.

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11 PLATES

	Plate 1: Pt Lot 2 in DP112744. View of land parcel from Callaghans Road.
	Plate 2: Pt Lot 2 in DP112744. View towards drainage line and rocky habitat.
	Plate 3: Lots 1-4 in DP260891. View onto wooded portion of Lots 1-3 from the road.

	Plate 4: Legless lizard in Lots 1-4 in DP260891
	Plate 5: Lot 83 in DP751026. View towards deeply incised drainage line and rocky habitat.
	Plate 6: Lot 1 in DP112744. View west towards group of White Box.

 A photograph showing a cleared paddock with tall, dry grass and some yellow wildflowers in the foreground. A wooden fence runs across the middle ground. In the background, there are several trees and a tall utility pole with power lines. The sky is overcast and grey.	Plate 7: Lot 1 in DP112744. View east across cleared paddock.
 A photograph of a large, flat paddock with a mix of green grass and bare, brownish soil. A wire fence is visible in the foreground. In the distance, there are some buildings and a range of hills under a cloudy sky.	Plate 8: Lots 34 and 35 in DP875343. View of lot showing grazed and cleared paddock.
 A photograph of a paddock with dry, brown grass. A wire fence runs along the right side. In the background, there are trees and hills under a heavy, grey sky.	Plate 9: 36 Lots 37 in DP875343. View of lot showing grazed and cleared paddock.

	Plate 10: Lots 1-3 in DP255804. View south from South Street.
	Plate 11: Lots 1-3 in DP255804. View of gully west onto property..
	Plate 12: Lots 1-3 in DP255804' Lizard found in rocky habitat.

	Plate 13: Lot 12 DP878120. View of cropped and cleared paddock (except for isolated White Box) from Bells Gate Road.
	Plate 14: Lots 11 and 12 DP1130672 View from hill towards Spains Lane on Lot 11.
	Plate 15: View onto Lot 221 DP1105151

	Plate 16: Lot 1 in DP29984
	Plate 17: Lot 1 in DP29984. Example of ground woody debris hollow bearing habitat.
	Plate 18: Lot 14 Sec A in DP29984. View from hillslope south east.

	Plate 19: Lot 14 Sec A in DP29984
	Plate 20: <i>Swainsona galegifolia</i> characteristic groundcover in Lot 14 Sec A in DP29984
	Plate 21: Lot 317 DP751009. View north onto property from the road.

APPENDIX 1: DATABASE SEARCH RESULTS

OEH Threatened Species. Peel CMA sub-region. Below is a list of the 70 threatened species found in the Peel sub-region.

Scientific Name	Common Name	Type of species	Level of Threat	Known or Predicted to occur
<i>Aepyprymnus rufescens</i>	Rufous Bettong	Animal > Marsupials	Vulnerable	Predicted
<i>Alectura lathamii</i> – endangered population	Australian Brush-turkey population in the Nandewar and Brigalow Belt South bioregions	Animal > Birds	Endangered Population	Known
<i>Anseranas semipalmata</i>	Magpie Goose	Animal > Birds	Vulnerable	Predicted
<i>Anthochaera phrygia</i>	Regent Honeyeater	Animal > Birds	Critically Endangered	Known
<i>Asterolasia</i> sp. “Dungowan Creek”	Dungowan Starbush	Plant > Shrubs	Endangered	Known
<i>Boronia ruppia</i>	Rupp’s Boronia	Plant > Shrubs	Endangered	Known
<i>Botaurus poiciloptilus</i>	Australasian Bittern	Animal > Birds	Endangered	Known
<i>Burhinus grallarius</i>	Bush Stone-curlew	Animal > Birds	Endangered	Predicted
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	Animal > Birds	Vulnerable	Known
<i>Calyptorhynchus lathamii</i>	Glossy Black-cockatoo	Animal > Birds	Vulnerable	Known
<i>Cercartetus nanus</i>	Eastern Pygmy-possum	Animal > Marsupials	Vulnerable	Predicted
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	Animal > Bats	Vulnerable	Known
<i>Chiloglottis platyptera</i>	Barrington Tops Ant Orchid	Plant > Orchids	Vulnerable	Predicted
<i>Circus assimilis</i>	Spotted Harrier	Animal > Birds	Vulnerable	Known
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (eastern subspecies)	Animal > Birds	Vulnerable	Known
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	Animal > Marsupials	Vulnerable	Known
<i>Dichanthium setosum</i>	Bluegrass	Plant > Herbs and Forbs	Vulnerable	Known
<i>Digitaria porrecta</i>	Finger Panic Grass	Plant > Herbs and Forbs	Endangered	Known
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	Animal > Birds	Endangered	Known
<i>Eucalyptus nicholii</i>	Narrow-leaved Black Peppermint	Plant > Trees	Vulnerable	Known
<i>Eucalyptus oresbia</i>	Small-fruited Mountain Gum	Plant > Trees	Vulnerable	Known
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	Animal > Bats	Vulnerable	Known
<i>Glossopsitta pusilla</i>	Little Lorikeet	Animal > Birds	Vulnerable	Predicted
<i>Grantiella picta</i>	Painted Honeyeater	Animal > Birds	Vulnerable	Known

<i>Grus rubicunda</i>	Brolga	Animal > Birds	Vulnerable	Predicted
<i>Hakea pulvinifera</i>	Lake Keepit Hakea	Plant > Shrubs	Endangered	Known
<i>Haloragis exalata</i> subsp. <i>Velutina</i>	Tall Velvet Sea-berry	Plant > Shrubs	Vulnerable	Known
<i>Hamirostra melanosternon</i>	Black-breasted Buzzard	Animal > Birds	Vulnerable	Predicted
<i>Hieraaetus morphnoides</i>	Little Eagle	Animal > Birds	Vulnerable	Known
<i>Hoplocephalus bitorquatus</i>	Pale-headed Snake	Animal > Reptiles	Vulnerable	Known
Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	Community > Threatened Ecological Communities	Endangered Ecological Community	Predicted
<i>Irediparra gallinacea</i>	Comb-crested Jacana	Animal > Birds	Vulnerable	Known
<i>Lathamus discolor</i>	Swift Parrot	Animal > Birds	Endangered	Known
<i>Limosa limosa</i>	Black-tailed Godwit	Animal > Birds	Vulnerable	Predicted
<i>Litoria booroolongensis</i>	Booroolong Frog	Animal > Amphibians	Endangered	Known
<i>Litoria daviesae</i>	Davies' Tree Frog	Animal > Amphibians	Vulnerable	Known
<i>Lophoictinia isura</i>	Square-tailed Kite	Animal > Birds	Vulnerable	Known
<i>Melanodryas cucullata cucullata</i>	Hooded Robin (south-eastern form)	Animal > Birds	Vulnerable	Known
<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater (eastern subspecies)	Animal > Birds	Vulnerable	Known
<i>Miniopterus schreibersii oceanensis</i>	Eastern Bentwing-bat	Animal > Bats	Vulnerable	Known
<i>Monotaxis macrophylla</i>	Large-leafed Monotaxis	Plant > Herbs and Forbs	Endangered	Known
Native Vegetation on Cracking Clay Soils of the Liverpool Plains	Native Vegetation on Cracking Clay Soils of the Liverpool Plains	Community > Threatened Ecological Communities	Endangered Ecological Community	Known
<i>Neophema pulchella</i>	Turquoise Parrot	Animal > Birds	Vulnerable	Known
<i>Ninox connivens</i>	Barking Owl	Animal > Birds	Vulnerable	Known
<i>Ninox strenua</i>	Powerful Owl	Animal > Birds	Vulnerable	Known
<i>Nyctophilus timoriensis</i> (South-eastern form)	Greater Long-eared Bat	Animal > Bats	Vulnerable	Known
<i>Oxyura australis</i>	Blue-billed Duck	Animal > Birds	Vulnerable	Known
<i>Pachycephala olivacea</i>	Olive Whistler	Animal > Birds	Vulnerable	Known
<i>Petaurus australis</i>	Yellow-bellied Glider	Animal > Marsupials	Vulnerable	Known
<i>Petaurus norfolcensis</i>	Squirrel Glider	Animal > Marsupials	Vulnerable	Known
<i>Petrogale penicillata</i>	Brush-tailed Rock-wallaby	Animal > Marsupials	Endangered	Known
<i>Petroica boodang</i>	Scarlet Robin	Animal > Birds	Vulnerable	Known

<i>Petroica phoenicea</i>	Flame Robin	Animal > Birds	Vulnerable	Known
<i>Phascogale tapoatafa</i>	Brush-tailed Phascogale	Animal > Marsupials	Vulnerable	Predicted
<i>Phascolarctos cinereus</i>	Koala	Animal > Marsupials	Vulnerable	Known
<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler (eastern subspecies)	Animal > Birds	Vulnerable	Known
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Animal > Bats	Vulnerable	Known
<i>Pyrrholaemus sagittatus</i>	Speckled Warbler	Animal > Birds	Vulnerable	Known
<i>Rostratula benghalensis australis</i>	Painted Snipe (Australian subspecies)	Animal > Birds	Endangered	Predicted
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	Animal > Bats	Vulnerable	Known
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	Animal > Bats	Vulnerable	Known
Semi-evergreen Vine Thicket in the Brigalow Belt South and Nandewar Bioregions	Semi-evergreen Vine Thicket in the Brigalow Belt South and Nandewar Bioregions	Community > Threatened Ecological Communities	Endangered Ecological Community	Known
<i>Stagonopleura guttata</i>	Diamond Firetail	Animal > Birds	Vulnerable	Known
<i>Stictonetta naevosa</i>	Freckled Duck	Animal > Birds	Vulnerable	Predicted
<i>Thesium australe</i>	Austral Toadflax	Plant > Herbs and Forbs	Vulnerable	Known
<i>Tylophora linearis</i>	<i>Tylophora linearis</i>	Plant > Epiphytes and climbers	Vulnerable	Known
<i>Tyto novaehollandiae</i>	Masked Owl	Animal > Birds	Vulnerable	Known
<i>Tyto tenebricosa</i>	Sooty Owl	Animal > Birds	Vulnerable	Known
<i>Underwoodisaurus sphyrurus</i>	Border Thick-tailed Gecko	Animal > Reptiles	Vulnerable	Known
White Box Yellow Box Blakely's Red Gum Woodland	White Box Yellow Box Blakely's Red Gum Woodland	Community > Threatened Ecological Communities	Endangered Ecological Community	Predicted



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

EPBC Act Protected Matters Report

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

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

Information about the EPBC Act including significance guidelines, forms and application process details can be found at <http://www.environment.gov.au/epbc/assessmentsapprovals/index.html>

LGA LIVERPOOL, NSW

Report created: 21/11/11 11:05:29

[Summary](#)

[Details](#)

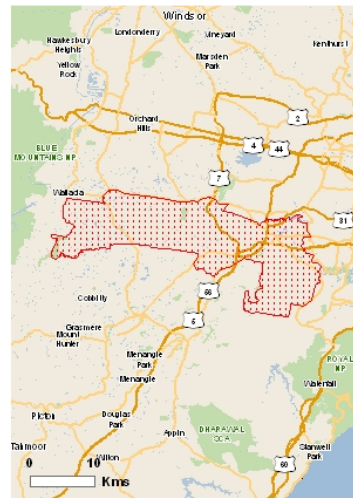
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

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Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance - see <http://www.environment.gov.au/epbc/assessmentsapprovals/guidelines/index.html>

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Areas:	None
Threatened Ecological Communities:	3
Threatened Species:	36
Migratory Species:	14

Other Matters Protected by the EPBC Act

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

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

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

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species. Information on EPBC Act permit requirements and application forms can be found at <http://www.environment.gov>.

Commonwealth Lands:	16
Commonwealth Heritage Places:	5
Listed Marine Species:	12
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves:	None

Extra Information

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

Place on the RNE:	23
State and Territory Reserves:	5
Regional Forest Agreements:	None
Invasive Species:	18
Nationally Important Wetlands:	1

Details

Matters of National Environmental Significance

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
Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest	Critically Endangered	Community likely to occur within area
Shale/Sandstone Transition Forest	Endangered	Community likely to occur within area

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
Turpentine-Ironbark Forest in the Sydney Basin Bioregion	Critically Endangered	Community likely to occur within area
Threatened Species		[Resource Information]
Name	Status	Type of Presence
BIRDS		
Anthochaera phrygia Regent Honeyeater [82338]	Endangered	Species or species habitat likely to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Endangered	Species or species habitat likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Vulnerable	Species or species habitat may occur within area
Sternula nereis nereis Fairy Tern (Australian) [82950]	Vulnerable	Species or species habitat may occur within area
FISH		
Macquaria australasica Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area
Prototroctes maraena Australian Grayling [26179]	Vulnerable	Species or species habitat may occur within area
FROGS		
Heleioporus australiacus Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat likely to occur within area
Litoria aurea Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat likely to occur within area
Litoria littlejohni Littlejohn's Tree Frog, Heath Frog [64733]	Vulnerable	Species or species habitat may occur within area
Litoria raniformis Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog [1828]	Vulnerable	Species or species habitat may occur within area
Mixophyes balbus Stuttering Frog, Southern Barred Frog (in Victoria) [1942]	Vulnerable	Species or species habitat likely to occur within area
Mixophyes iteratus Giant Barred Frog, Southern Barred Frog [1944]	Endangered	Species or species habitat likely to occur within area
MAMMALS		
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat may occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat may occur within area

Name	Status	Type of Presence
<u>Isodon obesulus obesulus</u> Southern Brown Bandicoot [68050]	Endangered	Species or species habitat may occur within area
<u>Petrogale penicillata</u> Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area
<u>Potorous tridactylus tridactylus</u> Long-nosed Potoroo (SE mainland) [66645]	Vulnerable	Species or species habitat may occur within area
<u>Pseudomys novaehollandiae</u> New Holland Mouse [96]	Vulnerable	Species or species habitat likely to occur within area
<u>Pteropus poliocephalus</u> Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area
PLANTS		
<u>Acacia pubescens</u> Downy Wattle, Hairy Stemmed Wattle [18800]	Vulnerable	Species or species habitat likely to occur within area
<u>Caladenia tessellata</u> Thick-lipped Spider-orchid, Daddy Long-legs [2119]	Vulnerable	Species or species habitat likely to occur within area
<u>Cynanchum elegans</u> White-flowered Wax Plant [12533]	Endangered	Species or species habitat likely to occur within area
<u>Eucalyptus benthamii</u> Camden White Gum, Nepean River Gum [2821]	Vulnerable	Species or species habitat likely to occur within area
<u>Grevillea parviflora subsp. parviflora</u> Small-flower Grevillea [64910]	Vulnerable	Species or species habitat likely to occur within area
<u>Melaleuca biconvexa</u> Biconvex Paperbark [5583]	Vulnerable	Species or species habitat may occur within area
<u>Melaleuca deanei</u> Deane's Melaleuca [5818]	Vulnerable	Species or species habitat likely to occur within area
<u>Persoonia nutans</u> [18119]	Endangered	Species or species habitat likely to occur within area
<u>Pimelea curviflora var. curviflora</u> [4182]	Vulnerable	Species or species habitat likely to occur within area
<u>Pimelea spicata</u> [20834]	Endangered	Species or species habitat may occur within area
<u>Pomaderris brunnea</u> Rufous Pomaderris [16845]	Vulnerable	Species or species habitat likely to occur within area
<u>Pterostylis gibbosa</u> Illawarra Greenhood, Rufa Greenhood, Pouched Greenhood [4562]	Endangered	Species or species habitat known to occur within area
<u>Pterostylis saxicola</u> Sydney Plains Greenhood [64537]	Endangered	Species or species habitat known to occur within area
<u>Pultenaea parviflora</u> [19380]	Vulnerable	Species or species

Name	Status	Type of Presence
Thelymitra sp. Kangaloon (D.L. Jones 18108) Kangaloon Sun-orchid [81971]	Critically Endangered	habitat likely to occur within area Species or species habitat may occur within area
REPTILES		
Hoplocephalus bungaroides Broad-headed Snake [1182]	Vulnerable	Species or species habitat likely to occur within area
Migratory Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened		Species list.
Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat may occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Migratory Terrestrial Species		
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Breeding may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Breeding likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Breeding may occur within area
Xanthomyza phrygia Regent Honeyeater [430]	Endangered*	Species or species habitat likely to occur within area
Migratory Wetlands Species		
Ardea alba Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Rostratula benghalensis s. lat. Painted Snipe [889]	Vulnerable*	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands	[Resource Information]
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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

Commonwealth Land -
Commonwealth Land - Australian Telecommunications Commission
Commonwealth Land - Australian Telecommunications Corporation
Commonwealth Land - Commonwealth Trading Bank of Australia
Commonwealth Land - Defence Housing Authority
Commonwealth Land - Defence Service Homes Corporation
Commonwealth Land - Director of War Service Homes
Commonwealth Land - Overseas Telecommunications Commission (Australia)
Commonwealth Land - Telstra Corporation Limited
Defence - BRINGELLY RADIO RECEIVING STATION
Defence - CAMP SAPPER-EAST HILLS (Lot 2) : CAMP SAPPER TRAINING AREA (Lot 1)
Defence - EAST HILLS BARRACKS - OP SAFE HAVEN
Defence - INGLEBURN AREA (Bardia Barracks)
Defence - MOOREBANK AREA INC SME
Defence - Suite 8, Library Plaza
Defence - WET BRIDGING SITE - CASULA

Commonwealth Heritage Places	[Resource Information]
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Name	State	Status
Indigenous		
Cubbitch Barta National Estate Area	NSW	Listed place
Historic		
Defence National Storage and Distribution Centre	NSW	Listed place
Ingleburn Army Camp	NSW	Listed place
Old Army / Internment Camp Group Holsworthy	NSW	Listed place
Prefabricated Cottages Ingleburn Village	NSW	Listed place

Listed Marine Species	[Resource Information]
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* 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 may occur within area
Ardea alba		
Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster		
White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundapus caudacutus		
White-throated Needletail [682]		Species or species habitat may occur within area
Lathamus discolor		
Swift Parrot [744]	Endangered	Species or species habitat likely to occur within area
Merops ornatus		
Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis		
Black-faced Monarch [609]		Breeding may occur

Name	Threatened	Type of Presence
Myiagra cyanoleuca		within area
Satin Flycatcher [612]		Breeding likely to occur within area
Rhipidura rufifrons		
Rufous Fantail [592]		Breeding may occur within area
Rostratula benghalensis s. lat.		
Painted Snipe [889]	Vulnerable*	Species or species habitat may occur within area

Extra Information

Places on the RNE [Resource Information]

Note that not all Indigenous sites may be listed.

Name	State	Status
Natural		
Bents Basin State Recreation Area and Adjacent Areas	NSW	Registered
Kemps Creek Natural Area	NSW	Registered
Voyager Point	NSW	Registered
Indigenous		
Cubbitch Barta National Estate Area	NSW	Registered
Historic		
Bringelly Radio Receiving Station Complex	NSW	Indicative Place
Liverpool Fire Station	NSW	Indicative Place
Defence National Storage and Distribution Centre	NSW	Interim List
Bernera including Site and Knoll	NSW	Registered
Church of the Holy Innocents	NSW	Registered
Collingwood	NSW	Registered
Denham Court and St Marys Anglican Chapel	NSW	Registered
Glenfield Farm	NSW	Registered
Horningsea Park	NSW	Registered
Hoxton Park Airport	NSW	Registered
Ingleburn Army Camp	NSW	Registered
Kelvin, Outbuildings and Curtilage	NSW	Registered
Kitchener House	NSW	Registered
Liverpool Courthouse (former)	NSW	Registered
Liverpool Dam	NSW	Registered
Liverpool Hospital (former)	NSW	Registered
Old Army / Internment Camp Group Holsworthy	NSW	Registered
Prefabricated Cottages Ingleburn Village	NSW	Registered
St Lukes Anglican Church	NSW	Registered

State and Territory Reserves [Resource Information]

Name	State
Bents Basin	NSW
Georges River	NSW
Gulguer	NSW
Kemps Creek	NSW
Leacock	NSW

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit,

Name	Status	Type of Presence
Frogs		

Name	Status	Type of Presence
Bufo marinus Cane Toad [1772]		Species or species habitat likely to occur within area
Mammals		
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Alternanthera philoxeroides Alligator Weed [11620]		Species or species habitat likely to occur within area
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat may occur within area
Nassella neesiana Chilean Needle grass [67699]		Species or species habitat likely to occur within area
Nassella trichotoma Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtjii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Ulex europaeus Gorse, Furze [7693]		Species or species habitat likely to occur

Name	Status	Type of Presence
		within area
Nationally Important Wetlands		[Resource Information]
Name		State
Liverpool Military Training Area		NSW

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World Heritage and Register of National Estate properties, Wetlands of International Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other

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

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Acknowledgements

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

- [Department of Environment, Climate Change and Water, New South Wales](#)
- [Department of Sustainability and Environment, Victoria](#)
- [Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [Department of Environment and Natural Resources, South Australia](#)
- [Parks and Wildlife Service NT, NT Dept of Natural Resources, Environment and the Arts](#)
- [Environmental and Resource Management, Queensland](#)
- [Department of Environment and Conservation, Western Australia](#)
- [Department of the Environment, Climate Change, Energy and Water](#)
- [Birds Australia](#)
- [Australian Bird and Bat Banding Scheme](#)
- [Australian National Wildlife Collection](#)
- [Natural history museums of Australia](#)
- [Museum Victoria](#)
- [Australian Museum](#)
- [SA Museum](#)
- [Queensland Museum](#)
- [Online Zoological Collections of Australian Museums](#)
- [Queensland Herbarium](#)
- [National Herbarium of NSW](#)

- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Atherton and Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [-State Forests of NSW](#)
- Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us page](#).

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APPENDIX 2: FLORA SPECIES LIST

Scientific Name	Common Name	Legal Status	Lot 316 DP 751009	Lot 317 DP 751009	Lots 1-3 DP 255804	Lots 11 & 12 DP 1130672	Lot 221 DP 1105151	Lot 14 Sec A in DP 29984	Lot 1 in DP 624133	Lot 12 DP 878120	Lots 34-35 DP 875543	Lots 36-37 DP 875543	Lot 1-4 DP 260891	Lot 1 DP 112744	Lot 83 DP 751026	Pt Lot 2 DP 112744	Pt Lot 84 DP 751026
<i>Adiantum aethiopicum</i>	Common Maidenhair														x		
<i>Adiantum atroviride</i>								x									
<i>Cheilanthes distans</i>	Bristly Cloak Fern							x							x		x
<i>Cheilanthes sieberi</i>	Rock Fern																x
<i>Cheilanthes sieberi subsp. Sieberi</i>	Rock Fern				x												
<i>Glinus lotoides</i>	Hairy Carpet-weed																
<i>Tetragonia tetragonioides</i>	New Zealand Spinach							x									
<i>Gomphrena celosioides</i>	Gomphrena Weed	*															
<i>Schinus areira</i>	Pepper Tree	*					x										x
<i>Caesia parviflora</i>	Pale Grass Lily							x									
<i>Caesia parviflora var. parviflora</i>	Pale Grass-lily							x									
<i>Dichopogon fimbriatus</i>	Nodding Chocolate Lily							x									
<i>Ammi majus</i>	Bishop's Weed	*						x			x	x				x	x
<i>Foeniculum vulgare</i>	Fennel	*					x	x		x			x				x
<i>Hydrocotyle bonariensis</i>		*															
<i>Hydrocotyle laxiflora</i>	Stinking Pennywort							x									
<i>Hydrocotyle sibthorpioides</i>																	
<i>Hydrocotyle spp.</i>		*															
<i>Hydrocotyle tripartita</i>	Pennywort							x									
<i>Platysace ericoides</i>	Heath Platyseae						x	x		x							
<i>Torilis nodosa</i>	Knotted Hedge-parsley	*			x			x									
<i>Gomphocarpus fruticosus</i>	Narrow-leaved Cotton Bush	*			x		x	x									
<i>Gomphocarpus spp.</i>		*															
<i>Asplenium flabellifolium</i>	Necklace Fern				x										x		
<i>Pleurosorus rutifolius</i>	Bristly Cloak Fern														x		
<i>Bidens pilosa</i>	Cobbler's Pegs	*			x	x											
<i>Calotis cuneifolia</i>	Purple Burr-Daisy			x				x		x							

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<i>Calotis hispidula</i>	Bogan Flea							x									
<i>Calotis lappulacea</i>	Yellow Burr-daisy						x	x	x					x	x	x	x
<i>Carthamus lanatus</i>	Saffron Thistle	*			x		x		x					x		x	
<i>Centaurea calcitrapa</i>	Star Thistle	*			x				x			x		x			x
<i>Centaurea melitensis</i>	Maltese Cockspur	*			x												
<i>Centaurea solstitialis</i>	St Barnabys Thistle	*						x	x				x		x	x	x
<i>Chondrilla juncea</i>	Skeleton Weed	*										x					
<i>Chrysocephalum apiculatum</i>	Common Everlasting						x										
<i>Cichorium intybus</i>	Chicory	*							x					x			x
<i>Cirsium vulgare</i>	Spear Thistle	*					x		x					x	x	x	
<i>Conyza bonariensis</i>	Flaxleaf Fleabane	*			x												
<i>Conyza sumatrensis</i>		*	x		x	x	x	x	x	x							
<i>Craspedia variabilis</i>	Common Billy-buttons			x	x			x		x			x			x	
<i>Euchiton gymnocephalus</i>	Creeping Cudweed																
<i>Euchiton involucratus</i>	Star Cudweed																
<i>Euchiton sphaericus</i>	Star Cudweed																
<i>Euchiton spp.</i>	A Cudweed																
<i>Gamochaeta americana</i>	Cudweed	*															
<i>Glossocardia bidens</i>	Cobbler's Tack																
<i>Hedypnois rhagadioloides subsp. Cretica</i>	Cretan Weed	*															
<i>Hedypnois rhagadioloides subsp. Rhagadioloides</i>		*															
<i>Hypochaeris glabra</i>	Smooth Catsear	*															
<i>Hypochaeris microcephala var. albiflora</i>	White Flatweed	*															
<i>Hypochaeris radicata</i>	Catsear	*			x	x							x				
<i>Lactuca spp.</i>		*															x
<i>Olearia elliptica</i>	Sticky Daisy-bush							x									

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<i>Onopordum acanthium</i> subsp. <i>Acanthium</i>	Scotch Thistle	*							x					x			
<i>Podolepis muelleri</i>	Small Copper-wire Daisy							x									
<i>Senecio quadridentatus</i>	Cotton Fireweed		x								x		x				
<i>Sigesbeckia australiensis</i>								x									
<i>Sigesbeckia orientalis</i> subsp. <i>Orientalis</i>	Indian Weed				x												
<i>Vittadinia cuneata</i>	A Fuzzweed				x			x	x				x	x		x	
<i>Vittadinia cuneata</i> var. <i>cuneata</i>	A Fuzzweed				x				x					x		x	
<i>Vittadinia dissecta</i> var. <i>hirta</i>							x										
<i>Vittadinia muelleri</i>	A Fuzzweed				x				x					x		x	
<i>Vittadinia</i> spp.	Fuzzweed		x	x	x	x	x										
<i>Pandorea pandorana</i>	Wonga Wonga Vine							x									
<i>Blechnum cartilagineum</i>	Gristle Fern		x			x											
<i>Heliotropium amplexicaule</i>	Blue Heliotrope	*															
<i>Heliotropium europaeum</i>	Potato Weed	*															
<i>Brassica tournefortii</i>	Mediterranean Turnip	*			x												x
<i>Harmsiodoxa blennodioides</i>																	
<i>Hirschfeldia incana</i>	Buchan Weed	*															
<i>Lepidium africanum</i>	Common Peppergrass	*			x		x	x	x				x	x	x	x	x
<i>Lepidium bonariense</i>	Argentine Peppergrass	*						x	x				x	x		x	
<i>Rapistrum rugosum</i>	Turnip Weed	*			x												
<i>Harrisia tortuosa</i>	Harrisia Cactus	*															
<i>Opuntia stricta</i> var. <i>stricta</i>	Common Prickly Pear	*			x	x		x						x			
<i>Wahlenbergia communis</i>	Tufted Bluebell			x	x		x	x	x				x	x		x	
<i>Wahlenbergia luteola</i>	Bluebell			x			x	x	x				x	x		x	
<i>Wahlenbergia stricta</i> subsp. <i>stricta</i>	Tall Bluebell						x						x				
<i>Gypsophila tubulosa</i>	Annual Chalkwort																

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<i>Petrorhagia nanteuilii</i>	Proliferous Pink	*		x	x		x	x	x				x			x	x
<i>Atriplex semibaccata</i>	Creeping Saltbush				x												
<i>Einadia nutans</i>	Climbing Saltbush							x									x
<i>Einadia nutans nutans</i>	Climbing saltbush				x											x	
<i>Einadia polygonoides</i>	Knotweed Goosefoot															x	x
<i>Einadia polygonoides</i>	Saltbush							x					x		x	x	
<i>Enchylaena tomentosa</i>	Ruby Saltbush																
<i>Maireana microphylla</i>	Small-leaf Bluebush				x				x					x	x	x	
<i>Sclerolaena muricata</i>	Black Rolypoly				x			x									
<i>Hypericum gramineum</i>	Small St John's Wort			x	x		x	x									
<i>Hypericum perforatum</i>	St. Johns Wort	*															
<i>Hypericum spp.</i>		*															
<i>Dichondra repens</i>	Kidney Weed				x			x	x	x			x	x	x	x	x
<i>Dichondra sp. A</i>	Kidney Weed																x
<i>Evolvulus alsinoides var. decumbens</i>																	
<i>Evolvulus alsinoides var. villosicalyx</i>	Bindweed																
<i>Callitris glaucophylla</i>	White Cypress Pine				x												x
<i>Cyperus gracilis</i>	Slender Flat-sedge				x												
<i>Fimbristylis dichotoma</i>	Common Fringe-sedge																
<i>Gahnia aspera</i>	Rough Saw-sedge																
<i>Hibbertia acicularis</i>																	
<i>Hibbertia linearis</i>																	
<i>Hibbertia obtusifolia</i>	Hoary Guinea Flower																
<i>Hibbertia scandens</i>	Climbing Guinea Flower																
<i>Beyeria viscosa</i>	Sticky Wallaby Bush																
<i>Chamaesyce drummondii</i>	Caustic Weed			x		x		x									
<i>Euphorbia eremophila</i>	Desert Spurge				x												

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<i>Euphorbia lathyris</i>	Caper Spurge	*															
<i>Euphorbia peplus</i>	Petty Spurge	*															
<i>Eupomatia laurina</i>	Bolwarra																
<i>Acacia implexa</i>	Mountain hickory							x									
<i>Cullen tenax</i>	Emu Foot		x				x		x					x			
<i>Desmodium rhytidophyllum</i>	rusty tick-trefoil			x	x			x		x							
<i>Trifolium repens</i>	Clover		x				x										
<i>Gleditsia triacanthos</i>	Honey Locust	*															
<i>Senna form taxon 'zygophylla'</i>				x													
<i>Cullen tenax</i>	Emu-foot							x									
<i>Desmodium brachypodum</i>	Large Tick-trefoil			x	x			x									
<i>Desmodium gunnii</i>	Slender Tick-trefoil							x									
<i>Desmodium varians</i>	Slender Tick-trefoil							x							x	x	x
<i>Galactia tenuiflora var. lucida</i>																	
<i>Glycine canescens</i>	Silky Glycine																
<i>Glycine clandestina</i>	Twining glycine				x		x	x		x							
<i>Glycine latifolia</i>																	
<i>Glycine microphylla</i>	Small-leaf Glycine																
<i>Glycine spp.</i>																	
<i>Glycine stenophita</i>																	
<i>Glycine tabacina</i>	Variable Glycine												x				x
<i>Glycine tomentella</i>	Woolly Glycine																
<i>Hardenbergia violacea</i>	False Sarsaparilla																
<i>Hovea apiculata</i>																	
<i>Hovea lanceolata</i>																	
<i>Medicago polymorpha</i>	Burr Medic	*									x						
<i>Medicago sativa</i>	Lucerne	*					x					x					

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<i>Medicago spp.</i>	A Medic	*													x		
<i>Swainsona galegifolia</i>	Smooth Darling Pea							x									
<i>Trifolium angustifolium</i>	Narrow-leaved Clover	*			x								x				
<i>Trifolium arvense</i>	Haresfoot Clover	*			x		x	x				x	x		x	x	
<i>Trifolium campestre</i>	Hop Clover	*							x					x		x	
<i>Acacia salicina</i>	Cooba					x		x									
<i>Fumaria bastardii</i>	Bastards Fumitory	*															
<i>Fumaria muralis subsp. Muralis</i>	Wall Fumitory	*															
<i>Fumaria spp.</i>	Fumitory	*						x									
<i>Centaureum tenuiflorum</i>	Branched Centaury, Slender centaury	*						x									
<i>Erodium cicutarium</i>	Common Crowfoot	*					x										x
<i>Erodium crinitum</i>	Blue Crowfoot						x										
<i>Geranium molle subsp. Molle</i>	Cranesbill Geranium	*						x									
<i>Geranium neglectum</i>																	
<i>Geranium potentilloides</i>																	
<i>Geranium retrorsum</i>	Cranesbill Geranium																
<i>Geranium solanderi</i>	Native Geranium				x												x
<i>Geranium solanderi var. grande</i>																	
<i>Geranium solanderi var. solanderi</i>					x			x								x	x
<i>Geranium sp. A</i>																	
<i>Geranium spp.</i>		*															
<i>Goodenia bellidifolia subsp. Bellidifolia</i>																	
<i>Goodenia fascicularis</i>	Mallee Goodenia						x	x									
<i>Goodenia glabra</i>	Smooth Goodenia																
<i>Goodenia hederacea</i>	Ivy Goodenia																
<i>Goodenia hederacea subsp. Hederacea</i>																	

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<i>Goodenia heteromera</i>																	
<i>Goodenia macbarronii</i>	Narrow Goodenia																
<i>Goodenia paniculata</i>																	
<i>Goodenia pinnatifida</i>	Scrambles Eggs						x						x				
<i>Gonocarpus elatus</i>	A Raspwort																
<i>Gonocarpus humilis</i>																	
<i>Gonocarpus tetragynus</i>	Poverty Raspwort																
<i>Haloragis aspera</i>	Rough Raspwort																
<i>Haloragis heterophylla</i>	Variable Raspwort																
<i>Haloragis serra</i>																	
<i>Marrubium vulgare</i>	White Horehound	*						x					x		x	x	
<i>Mentha satuireioides</i>	Native Pennyroyal			x						x			x				
<i>Salvia reflexa</i>	Mintweed	*								x							
<i>Salvia verbenaca</i>	Wild Sage	*			x		x	x	x						x	x	x
<i>Lomandra filiformis</i>	Wattle Matt-rush							x									
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush				x			x									x
<i>Lomandra multiflora subsp. Multiflora</i>	Many-flowered Mat-rush							x									x
<i>Eustrephus latifolius</i>	Wombat Berry																
<i>Geitonoplesium cymosum</i>	Scrambling Lily																
<i>Abutilon oxycarpum</i>	Straggly Lantern-bush				x			x									
<i>Abutilon tubulosum</i>					x			x									
<i>Hibiscus sturtii</i>	Hill Hibiscus																
<i>Hibiscus sturtii var. sturtii</i>	Hill Hibiscus																
<i>Hibiscus trionum</i>	Flower-of-an-hour																
<i>Sida corrugata</i>	Corrugated Sida				x			x	x				x			x	x
<i>Sida rhombifolia</i>	Paddy's Lucerne	*				x											
<i>Melia azedarach</i>	White Cedar														x	x	x

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<i>Ficus evolut</i> var. <i>obliqua</i>																	
<i>Ficus rubiginosa</i>	Port Jackson Fig																
<i>Ficus rubiginosa</i> f. <i>rubiginosa</i>		*															
<i>Eremophila debilis</i>	Amulla																
<i>Eremophila deserti</i>	Turkeybush																
<i>Angophora floribunda</i>	Rough-barked Apple														x		x
<i>Eucalyptus albens</i>	White Box		x	x	x		x	x	x				x	x	x	x	x
<i>Eucalyptus blakelyi</i>	Blakely's Red Gum														x		
<i>Eucalyptus cladocalyx</i>	Sugar Gum													x			
<i>Eucalyptus melliodora</i>	Yellow Box												x		x		
<i>Homoranthus flavescens</i>																	
<i>Boerhavia dominii</i>	Tarvine				x		x	x		X			x			x	
<i>Jasminum suavisissimum</i>															x		x
<i>Ligustrum lucidum</i>	Large-leaved Privet	*													x		X
<i>Notelaea microcarpa</i>	Native Olive							x									
<i>Notelaea microcarpa</i> var. <i>microcarpa</i>	Mock Olive							x							x	x	x
<i>Epilobium billardierianum</i>																	
<i>Epilobium billardierianum</i> subsp. <i>Cinereum</i>																	
<i>Epilobium billardierianum</i> subsp. <i>Hydrophilum</i>																	
<i>Epilobium hirtigerum</i>																	
<i>Epilobium</i> spp.																	
<i>Oxalis perennans</i>	Oxalis		x				x	x									
<i>Oxalis exilis</i>					x												
<i>Oxalis perennans</i>					x											x	
<i>Dianella caerulea</i> var. <i>cinerascens</i>																	x
<i>Dianella revoluta</i>	Blueberry Lily																x

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<i>Dianella evolute</i> var. <i>revoluta</i>	A Blue Flax Lily							x									
<i>Bursaria spinosa</i>	Native Blackthorn							x									
<i>Hymenosporum flavum</i>	Native Frangipani																
<i>Pittosporum undulatum</i>	Sweet Pittosporum							x									
<i>Plantago cunninghamii</i>	Sago-weed				x			x									
<i>Plantago debilis</i>	Shade Plantain				x											x	
<i>Plantago lanceolata</i>	Lamb's Tongues	*			x	x	x	x	x	X		x	x	x	x	x	x
<i>Plantago myosuroides</i> subsp. <i>Myosuroides</i>	Mouse Tails	*											x				
<i>Plantago</i> spp.	Plantain		x	x	x	x	x	x	x	X	x	x	x	x	x	x	x
<i>Aristida leptopoda</i>	White Speargrass									x						x	
<i>Aristida personata</i>								x							x	X	
<i>Aristida ramosa</i>	Purple Wiregrass		x				x	x	x					x		x	
<i>Austrodanthonia bipartita</i>	Wallaby Grass				x											x	
<i>Austrodanthonia fulva</i>	Wallaby Grass						x		x					x		x	
<i>Austrodanthonia penicillata</i>	Slender Wallaby Grass																
<i>Austrodanthonia racemosa</i> var. <i>racemosa</i>	A Wallaby Grass				x		x	x	x	X	x	x	x	x	x	x	
<i>Austrostipa aristiglumis</i>	Plains Grass		x	x	x		x	x	x	X		x	x	x	X	x	x
<i>Austrostipa bigeniculata</i>	Yangabil			x	x		x	x	x	X			x	x	x	x	x
<i>Austrostipa scabra</i> subsp. <i>Scabra</i>	Rough Speargrass				x		x	x	x				x	x	x	x	x
<i>Austrostipa verticillata</i>	Slender Bamboo Grass							x									
<i>Austrostipa ramosissima</i>	Stout Baboo Grass				x			x					x				
<i>Avena fatua</i>	Wild Oats	*	x		x		x	x	x			x	x	x	x	x	
<i>Bothriochloa macra</i>	Red Grass						x	x									x
<i>Bothriochloa biloba</i>	Lobed Blue Grass	EPBC															
<i>Bromus molliformis</i>	Soft Brome	*			x		x	x									
<i>Catapodium rigidum</i>	Rigid Fescue	*								X							

Scientific Name	Common Name	Legal Status	Lot 316 DP 751009	Lot 317 DP751009	Lots 1-3 DP255804	Lots 11 & 12 DP1130672	Lot 221 DP1105151	Lot 14 Sec A in DP29984	Lot 1 in DP624133	Lot 12 DP 878120	Lots 34-35 DP875543	Lots 36-37 DP875543	Lot 1-4 DP260891	Lot 1 DP112744	Lot 83 DP751026	Pt Lot 2 DP112744	Pt Lot 84 DP751026
<i>Chloris divaricata</i> var. <i>divaricata</i>	Slender Chloris						x			x							
<i>Chloris truncata</i>	Windmill Grass						x										
<i>Chloris virgata</i>	Feathertop Rhodes Grass	*					x										
<i>Cymbopogon refractus</i>	Barbed Wire Grass							x									
<i>Cynodon dactylon</i>	Common Couch				x			x									
<i>Dichanthium sericeum</i>	Queensland Bluegrass		x	x	x	x	x	x	x	x	x	x	x	x	x	x	
<i>Dichelachne micrantha</i>	Shorthair Plumegrass			x	x		x	x									
<i>Digitaria divaricatissima</i>	Umbrella Grass							x									
<i>Elymus scaber</i>	Common Wheatgrass		x		x	x									x		x
<i>Elymus scaber</i> var. <i>scaber</i>	Common Wheatgrass																
<i>Enneapogon gracilis</i>	Slender Nineawn		x														
<i>Enneapogon nigricans</i>	Niggerheads																
<i>Enneapogon truncatus</i>	Bottlewashers																
<i>Enneapogon virens</i>																	
<i>Enteropogon acicularis</i>	Curly Windmill Grass																
<i>Entolasia stricta</i>	Wiry Panic																
<i>Eragrostis benthamii</i>																	
<i>Eragrostis brownii</i>	Brown's Lovegrass																
<i>Eragrostis cilianensis</i>	Stinkgrass	*															
<i>Eragrostis curvula</i>	African Lovegrass	*			x												
<i>Eragrostis elongata</i>	Clustered Lovegrass																
<i>Eragrostis lacunaria</i>	Purple Lovegrass							x									
<i>Eragrostis leptocarpa</i>	Drooping Lovegrass																
<i>Eragrostis leptostachya</i>	Paddock Lovegrass																
<i>Eragrostis megalosperma</i>																	
<i>Eragrostis parviflora</i>	Weeping Lovegrass																
<i>Eragrostis</i> spp.	A Lovegrass	*															

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<i>Eriachne helmsii</i>	Woollybutt Wanderrie Grass																
<i>Eriochloa australiensis</i>	Australian Cupgrass																
<i>Eriochloa pseudoacrotricha</i>	Early Spring Grass																
<i>Eulalia aurea</i>	Silky Browntop																
<i>Festuca pratensis</i>	Meadow Fescue	*															
<i>Hordeum glaucum</i>	Northern Barley Grass	*															
<i>Hordeum leporinum</i>	Barley Grass	*					x	x		x			x			x	x
<i>Hordeum spp.</i>	A Barley Grass	*															
<i>Hyparrhenia hirta</i>	Coolatai Grass	*															
<i>Hyparrhenia rufa subsp. altissima</i>		*															
<i>Lolium perenne</i>	Perennial Ryegrass	*					x			x		x			x		
<i>Microlaena stipoides var. stipoides</i>	Weeping Grass				x												
<i>Notodanthonia longifolia</i>	Long-leaved Wallaby Grass							x									
<i>Paspalidium gracile</i>	Slender Panic							x									
<i>Pennisetum clandestinum</i>	Kikuyu Grass	*			x												
<i>Sorghum halepense</i>	Johnson Grass	*	x														x
<i>Sporobolus creber</i>	Slender Rat's Tail Grass						x	x									
<i>Themeda australis</i>	Kangaroo Grass							x									
<i>Fallopia convolvulus</i>	Black Bindweed	*															
<i>Rumex brownii</i>	Swamp Dock				x			x	x					x			
<i>Grevillea floribunda subsp. floribunda</i>	Seven Dwarfs Grevillea																
<i>Grevillea robusta</i>	Silky Oak																
<i>Acaena spp.</i>	Sheep's Burr							x									
<i>Asperula conferta</i>	Common Woodruff															x	
<i>Galium aparine</i>	Goosegrass	*					x	x									x
<i>Galium ciliare</i>																	

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<i>Galium gaudichaudii</i>	Rough Bedstraw																
<i>Galium migrans</i>																	x
<i>Galium propinquum</i>	Maori Bedstraw																
<i>Galium spp.</i>		*															
<i>Pomax umbellata</i>	Pomax				x												
<i>Geijera parviflora</i>	Wilga																
<i>Exocarpos cupressiformis</i>	Cherry Ballart																
<i>Verbascum virgatum</i>	Twiggy Mullein	*						x		x				x	x	x	x
<i>Senecio runcinifolius</i>	Tall groundsel							x									
<i>Lycium ferocissimum</i>	African Boxthorn	*			x		x	x					x		x	x	
<i>Solanum campanulatum</i>					x												
<i>Solanum nigrum</i>	Black-berry Nightshade	*			x							x					
<i>linnaeanum</i>	Apple of Sodon							x									
<i>Brachychiton populneus</i>	Kurrajong							x	x					x			x
<i>Pimelea curviflora</i> var. <i>divergens</i>					x			x									
<i>Pimelea curviflora</i> var. <i>sericea</i>								x									
<i>Pimelea micrantha</i>	Silky Rice-flower							x									
<i>Pimelea neo-anglica</i>	Poison Pimelea							x									
<i>Urtica incisa</i>	Stinging Nettle				x		x									x	
<i>Verbena bonariensis</i>	Purpletop	*	x											x			
<i>Verbena gaudichaudii</i>	Verbena							x									
<i>Hybanthus monopetalus</i>	Slender Violet-bush			x	x					x				x			
<i>Viola hederacea</i>	Ivy-leaved Violet						x	x					x				x
<i>Tribulus terrestris</i>	Cat-head	*			x												

Legend for Legal Status

* = Exotic species

EPBC = EPBC Act

APPENDIX 3: FAUNA SPECIES LIST

Scientific Name	Common Name	Legal Status	Lot 316 DP 751009	Lot 317 DP751009	Lots 1-3 DP255804	Lots 11&12 DP1130672	Lot 221 DP1105151	Lot 14 Sec A in DP29984	Lot 1 in DP624133	Lot 12 DP 878120	Lots 34-35 DP875543	Lots 36-37 DP875543	Lot 1-4 DP260891	Lot 1 DP112744	Lot 83 DP751026	Pt Lot 2 DP112744	Pt Lot 84 DP751026
<i>Litoria caerulea</i>	Green Tree Frog		x					x									
<i>Litoria nasuta</i>	Rocket Frog							x	x								
<i>Litoria peronii</i>	Peron's Tree Frog		x			x		x									
<i>Crinia signifera</i>	Common Eastern Froglet		x		x	x		x						x			
<i>Limnodynastes tasmaniensis</i>	Spotted Grass Frog		x		x	x		x									
<i>Acanthiza apicalis</i>	Inland Thornbill					x		x									
<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill					x		x		x						x	
<i>Acanthiza lineata</i>	Striated Thornbill							x		x						x	
<i>Acanthiza nana</i>	Yellow Thornbill							x								x	
<i>Acanthiza pusilla</i>	Brown Thornbill							x								x	
<i>Acanthiza reguloides</i>	Buff-rumped Thornbill					x		x		x						x	
<i>Gerygone albogularis</i>	White-throated Gerygone					x		x		x						x	
<i>Sericornis frontalis</i>	White-browed Scrubwren					x		x									
<i>Smicronis brevirostris</i>	Weebill					x		x								x	
<i>Elanus axillaris</i>	Black-shouldered Kite		x													x	
<i>Haliastur sphenurus</i>	Whistling Kite		x														
<i>Dacelo novaeguineae</i>	Laughing Kookaburra					x		x								x	
<i>Todiramphus sanctus</i>	Sacred Kingfisher							x					x				
<i>Anas superciliosa</i>	Pacific Black Duck		x	x													
<i>Chenonetta jubata</i>	Australian Wood Duck		x	x													
<i>Egretta novaehollandiae</i>	White-faced Heron		x														
<i>Artamus cinereus</i>	Black-faced Woodswallow							x									
<i>Cracticus nigrogularis</i>	Pied Butcherbird					x		x									
<i>Cracticus tibicen</i>	Australian Magpie		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Cracticus torquatus</i>	Grey Butcherbird							x									

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<i>Strepera graculina</i>	Pied Currawong							x									
<i>Cacatua galerita</i>	Sulphur-crested Cockatoo			x	x	x	x	x	x	x			x	x	x	x	x
<i>Cacatua sanguinea</i>	Little Corella									x							
<i>Eolophus roseicapillus</i>	Galah		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike							x								x	
<i>Coracina papuensis</i>	White-bellied Cuckoo-shrike							x									
<i>Vanellus miles</i>	Masked Lapwing			x		x			x		x	x	x	x			x
<i>Geopelia striata</i>	Peaceful Dove							x									
<i>Ocyphaps lophotes</i>	Crested Pigeon		x			x		x		x				x		x	x
<i>Phaps chalcoptera</i>	Common Bronzewing			x				x						x			
<i>Eurystomus orientalis</i>	Dollarbird					x		x									
<i>Corcorax melanorhamphos</i>	White-winged Chough							x									
<i>Cacomantis flabelliformis</i>	Fan-tailed Cuckoo							x									
<i>Cacomantis variolosus</i>	Brush Cuckoo							x									
<i>Eudynamys orientalis</i>	Eastern Koel							x									
<i>Neochmia temporalis</i>	Red-browed Finch							x									
<i>Taeniopygia bichenovii</i>	Double-barred Finch							x									
<i>Falco berigora</i>	Brown Falcon		x														
<i>Falco cenchroides</i>	Nankeen Kestrel		x					x									
<i>Petrochelidon ariel</i>	Fairy Martin		x	x	x	x	x	x	x	x			x	x	x	x	x
<i>Malurus cyaneus</i>	Superb Fairy-wren					x		x			x		x			x	
<i>Malurus lamberti</i>	Variegated Fairy-wren							x									
<i>Megalurus gramineus</i>	Little Grassbird							x									
<i>Acanthagenys rufogularis</i>	Spiny-cheeked Honeyeater																
<i>Acanthorhynchus tenuirostris</i>	Eastern Spinebill							x									
<i>Anthochaera carunculata</i>	Red Wattlebird		x			x		x		x			x	x			

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Lichenostomus chrysops	Yellow-faced Honeyeater							x					x				
Lichenostomus leucotis	White-eared Honeyeater					x		x					x				
Lichenostomus penicillatus	White-plumed Honeyeater							x									
Manorina flavigula	Yellow-throated Miner					x							x				
Manorina melanocephala	Noisy Miner		x			x	x					x		x			
Melithreptus lunatus	White-naped Honeyeater							x									
Philemon corniculatus	Noisy Friarbird				x	x		x									
Merops ornatus	Rainbow Bee-eater	EPBC Act						1									
Grallina cyanoleuca	Magpie-lark		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Colluricincla harmonica	Grey Shrike-thrush							x									
Pachycephala pectoralis	Golden Whistler							x		x			x				
Pachycephala rufiventris	Rufous Whistler							x									
Pardalotus punctatus	Spotted Pardalote					x		x									
Pardalotus striatus	Striated Pardalote					x		x		x							
Microeca fascinans	Jacky Winter				x			x									
Phalacrocorax varius	Pied Cormorant		x		x												
Coturnix pectoralis	Stubble Quail					x		x									
Alisterus scapularis	Australian King-Parrot							x									
Glossopsitta concinna	Musk Lorikeet												x				
Glossopsitta pusilla	Little Lorikeet	V TSC Act											4			10	
Platycercus elegans	Crimson Rosella					x							x			x	
Platycercus eximius	Eastern Rosella		x			x		x		x			x		x		
Psephotus haematonotus	Red-rumped Parrot		x	x	x	x		x	x	x			x	x	x	x	x
Rhipidura albiscapa	Grey Fantail							x									
Rhipidura leucophrys	Willie Wagtail		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Rhipidura rufifrons	Rufous Fantail							x									

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<i>Sturnus tristis</i>	Common Myna		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Ninox connivens</i>	Barking Owl							x									
<i>Cisticola exilis</i>	Golden-headed Citicola		x					x									
<i>Threskiornis molucca</i>	Australian White Ibis		x	x	x												
<i>Zosterops lateralis</i>	Silvereye							x									
<i>Vulpes vulpes</i>	Fox		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V TSC Act						x									
<i>Oryctolagus cuniculus</i>	Rabbit							x									
<i>Macropus giganteus</i>	Eastern Grey Kangaroo				x			x									
<i>Macropus robustus</i>	Common Wallaroo				x			x									
<i>Macropus rufogriseus</i>	Red-necked Wallaby							x									
<i>Wallabia bicolor</i>	Swamp Wallaby				x			x									
<i>Austronomus australis</i>	White-striped Freetail Bat					x		x		x			x				
<i>Mormopterus</i> "Species 4" (big penis)	Southern Freetail Bat					x		x		x			x				
<i>Mormopterus beccarii</i>	Beccari's Freetail-bat					x		x		x			x				
<i>Mormopterus</i> sp.	Freetail Bat					x		x		x			x				
<i>Tadarida australis</i>	White-striped Freetail-bat					x		x		x			x				
<i>Trichosurus vulpecula</i>	Common Brushtail Possum							x					x				
<i>Pseudocheirus peregrinus</i>	Common Ringtail Possum							x									
<i>Tachyglossus aculeatus</i>	Short-beaked Echidna							x					x				
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V TSC Act V EPBC Act				x		x		x			x				
<i>Chalinolobus morio</i>	Chocolate Wattled Bat					x		x		x			x				
<i>Falsistrellus tasmaniensis</i>	Eastern Falsistrelle	V TSC Act				x		x		x			x				

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Nyctophilus species	Long-eared Bat					x		x		x			x				
Scotorepens species / greyii	Central-eastern Broad-nosed					x		x		x			x				
Vespadelus darlingtoni	Large Forest Bat					x		x		x			x				
Chalinolobus gouldii	Gould's Wattled Bat					x		x		x			x				
Miniopterus (schreibersii) orianae oceanensis	Eastern Bentwing Bat	V TSC Act				x		x		x			x				
Scoteanax rueppellii	Greater Broad-nosed Bat	V TSC Act				x		x		x			x				
Scotorepens balstoni	Inland Broad-nosed Bat					x		x		x			x				
Scotorepens greyii	Little Broad-nosed Bat					x		x		x			x				
Vespadelus regulus	Southern Forest Bat					x		x		x			x				
Vespadelus troungtoni/vulturnus	Eastern Cave Bat/Little Forest Bat	V TSC Act				x		x		x			x				
Vespadelus vulturnus	Little Forest Bat					x		x		x			x				
Pygopus lepidopodus	Common scaly-foot							x									
Anomalopus leuckartii	Legless lizard							x									
Ctenotus robustus	Robust Ctenotus							x									
Egernia cunninghami	Cunningham's Skink							x									
Egernia striolata	Tree Skink				x			x								x	
Morethia boulengeri	South-eastern Morethia Skink				x		x		x	x			x	x	x	x	

APPENDIX 4: LANDHOLDER CONSULTATION



Reference: RVK:da 12/001

Contact: Donna Ausling

3 January 2011

Dear Sir/Madam

Re: Liverpool Plains Shire Council Ecological Constraints Assessment Report

Reference is made to Council's correspondence dated 9 November 2011 and subsequent site visit by consultants OzArkEHM, in relation to the abovementioned project.

Please be advised that at its December 2011 Ordinary Council Meeting, Council ratified the *Draft Ecological Constraints and Values Assessment Report* which was prepared following the requisite fieldwork. At this meeting, Council also resolved to undertake further consultation with participating landholders prior to the finalisation of this Report.

In conducting these consultations, it is recognised and acknowledged that landholders have an intimate and comprehensive knowledge of their properties and thus can provide a valuable contribution to the process. To assist you in this regard, key extracts of the Draft Report are attached for your consideration and review which provide a concise summary of the primary report recommendations. Due to the size of the draft report, Council has not elected to print full copies of the documentation in this instance. However, a hard copy of the report is available for viewing at Council's Administration Centre. Alternatively, an electronic copy of the documentation can be forwarded upon request by emailing donna.ausling@lpsc.nsw.gov.au with: "Request for copy of LPSC Assessment Report 2011", in the subject line header.

If you have specific feedback to provide in relation to the report recommendations, you are invited to do so, in writing, by close of business on 16 January 2012. To enable associated strategic planning initiatives surrounding the matter to be expedited, it is requested that feedback be provided no later than this date. If Council does not hear from you within this timeframe, it will automatically be assumed that you have no comment to make in this regard.

Once landholder feedback is received, Council staff will arrange for this information to be collated and distributed to OzArkEHM for further review. Upon completion of the final review process, the Report will be finalised and electronic copies made available to interested participating landholders. Council will endeavour to keep you regularly informed as to progress of the project throughout the latter stages.

Council trusts that the above provides assistance and should you require any additional information or clarification in relation to this matter you are invited to contact the undersigned on (02) 6746 1755 or email lpsc@lpsc.nsw.gov.au.

Yours faithfully

Donna Ausling

A / DIRECTOR - ENVIRONMENTAL SERVICES

LIVERPOOL PLAINS SHIRE COUNCIL

60 Station Street PO Box 152 QUIRINDI NSW 2843 TEL 02 6746 1755 FAX 02 6746 8255
EMAIL lpsc@lpsc.nsw.gov.au WEBSITE www.lpsc.nsw.gov.au AEN 97 810 717 370

Ms Donna Ausling
A/Director – Environmental Services
Liverpool Plains Shire Council
PO Box 152
Quirindi NSW 2343

Dear Donna

Re: Liverpool Plains Shire Council Ecological Constraints Assessment Report

Thank you for your letter of 3 January 2012 and the enclosed copies of pages from the Ecological Constraints Assessment Report, prepared by OzArkEHM.

I wish to clarify the 2 lots I have submitted to Council for inclusion in the Planning Proposal are:

- Lot 11 DP1130672
- Lot 221 DP1105151

Lot 12 DP1130672 already has a dwelling constructed and is where I reside with my family.

As discussed with you by telephone and subsequent email, I wish to advise that on page 75 and 93 of the report it states Lots 11 **and 12** of DP1130672.

I note Section 8 - Discussion/Management beginning on page 89 of the Assessment. On page 90 it also makes mention of Lots 11 **and** 12 in DP1130672.

I am not requesting for the Planning Proposal to include Lot 12 of DP1130672 but recognise that Lot 12 was possibly included in the Ecological Constraints Assessment Report to identify/show I carry out our cattle grazing operation together over both Lots 11 and 12 in DP1130672.

Lot 11 DP1130672

I note from the Report Lot 11 is identified as a "Moderate" constraint.

I agree with there being no constraints to rezoning this land parcel to RU1 zoning so long as land use remains the same or improves. I reside on Lot 12 in DP1130672 and can confirm the land use on this lot for cattle grazing has remained the same or has improved since I took up residence in our home. I carry the same number of cattle on Lots 11 and 12 as we previously did prior to there being a dwelling on Lot 12. We have fenced off our garden and would also do so with any future potential dwelling on Lot 11. I also note and agree there would be no reliance on town water supply for a dwelling on Lot 11 as there is a domestic bore water tank. This domestic water tank also serves a cattle trough. There is also a stock dam on Lot 11. I agree that access to any subdivision post rezoning should occur from Spains Lane and can confirm Lot 11 and access to the lot is not affected by flood waters.

1

Lot 221 DP1105151

On page 76 and 94 I wish to advise Lot 221 DP1105151 is our parcel of land. The pages mentioning details of Lot 221 DP1105151 had been crossed out on my copy of the report. I acknowledge from you this was an unintentional error.

I note from the Report this lot is identified as "Low Constraint".

I agree this parcel would be suitable for future residential or rural residential which is consistent with the LPSC GMS 2011 and there are no constraints to rezoning this land parcel to RU1. This lot is currently a farming paddock. A dwelling would not affect the overall operation of farming to this paddock. The farming could continue around the fenced dwelling area.

This lot also has a water bore easement from the Colly Plains Creek. With rain water tanks and a domestic bore, this block would not be reliant on town water supply.

Lot 221 or access to the lot from Spains Lane is not affected by flood waters.

We thank you for including our 2 lots in the Ecological Constraints Assessment Report prepared by OzArk, to be part of the Planning Proposal.

If you have any queries, please do not hesitate to contact me.

Yours sincerely



Christine (Tina) Pursehouse
The Craig & Pursehouse Family Trust

16th January 2012

Ms Donna Ausling
Acting Director – Environmental Services
Liverpool Plains Shire Council
PO Box 152
Quirindi NSW 2343

Liverpool Plains Shire Council			
Date Received 17/1/12			
Item No	Item Description	Item Status	Item Action
1	DP	✓	
2	SA	✓	
3	SH	✓	

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Dear Ms Ausling

OzArk EHM Pty Ltd Report Lots 1-3 DP255804

In response to the report on the ecological study prepared by OzArk EHM Pty Ltd, we offer the following comments.

- The area deemed "moderate constraint" by OzArk has absolute frontage to South Street Quirindi. We have previously been informed by Council that we are permitted to "mirror image" existing residential development along South Street, ie house size blocks matching those existing on the opposite (northern) frontage to South Street. We assume this still applies.
- We confirm our request to have the balance of the property rezoned for "Large Lot" residential, ie say .5 to 2.0 acres (negotiable). In reality, a large part of the area deemed "moderate constraint" by OzArk is no different to parts of the area deemed "low constraint". Careful planning could allow for the "high constraint" area and specific sections of the "moderate constraint" area to remain protected.
- The table on page 141 of the report lists the presence of Eastern Grey Kangaroos, Common Wallaroos and Swamp Wallabies. Hingejoint and netting fences have been in existence for many years, hence our land is not used as a regular habitat or corridor for these species. Primary production land behind our property provides ample habitat and corridor.
- The entire area of Lots 1-3 DP255804 is 24.32 hectares. Of that, only 1.93 ha was classed as White Box Grassy Woodland (Condition A) by Eco-Logical Australia. 1.93 ha is approximately .0025% of the total 77,000 hectares of White Box Grassy Woodland in the Liverpool Plains LGA. The fact that the land borders Quirindi township further validates the argument in favour of development.
- Should Quirindi's growth materialise, there will be a demand for gently sloping Lots of varying size, larger than the usual town block but smaller than rural residential blocks. Councillors have verbally agreed that our land, adjacent to an existing wide street with multi-directional access and connection to water, sewerage, phone and electricity, with elevation and excellent soils for building, is well suited to a "Large Lot" residential development of that type.

Yours faithfully,



Clive & Robin Pursehouse

Hey Phil. Here is my response to the two submissions. I dont see myself having to change anything in the report. Apart from that two submissions were received and put them in the appendix to the

Responses from OzArk:

'Verona' Spains Lane- Tina

Essentially this is an ecological report and although we spoke with Tina and she made us very aware of the management style of her block and other values /resources, the assessed constraint of her block as 'moderate' reflects the ecological flora / fauna values only. Fencing, access, electricity, bore and tank water availability form part of Council's strategic planning for assessing the suitability aspect of each block for future subdivision.

Yes we did group Lot 11 and 12 together, however these were provided by Council as our assessment area. We are aware that lot 12 has a new dwelling on it.

I don't really think Tina has an issue per say, I think she is just reiterating the suitability of her block for subdivision and the management and mitigation measures she would take to ensure the values of biodiversity are maintained or improved.

17 South Street Quirindi- Clive and Robin Pursehouse.

Dot point one response: Yes. The report provides recommendations for rezoning in addition to management if subdivision and rezoning goes ahead. Development would be better suited to the low constrained land with access through the already constructed driveway. The ecological constraints to develop on this land parcel are moderate and thus impact to the endangered ecological community and threatened species (*Bothriocloa biloba* etcetera) would need to be characterised through an Assessments of Significance / 7-Part tests as per the TSC and EPBC Act in addition to potential Koala habitat being considered prior to any impact. Having said this there are ways to minimise impact by not building in treed areas.

Dot point two response: The general division between moderate and low constrained land is based on ecological factors including the health, composition, diversity of the Box Gum Woodland and that a threatened plant has been previously recorded in the moderate constrained section.

Dot point three response: Native grazing marsupials, birds, reptiles and small marsupials have the potential to utilise habitat in these lots. Given the extent of suitable habitat in the Quirindi area it is unlikely that they would solely rely on these land parcels.

Dot point four response: Species compositions change and flux in response to climatic conditions. All White Box Yellow Box Blakely's Red Gum Woodland (TSC Act) and White Box Yellow Box Blakely's Red Gum Woodland and derived native grassland (EPBC Act) are protected. This doesn't necessarily prevent development, it just means an Assessments of Significance / 7-Part tests as per the TSC and EPBC Act for the EEC and threatened species would need to be prepared considered prior to any impact. It also means that management would include avoiding impact to the EEC first, if that is not possible then mitigation measures to protect remnants, or offsetting. I.E planting out areas adjacent to the high constraint areas with species listed to occur in Box-Gum Grassy Woodland.

Dot point five response: LPSC strategic planning would determine.