



Jupiter Wind Farm Development

Request for Director General's Requirements

EPYC Pty Ltd

2 December 2013

0223522

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Environmental Resources Management Australia Pty Ltd Quality System

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ACROYMNS AND ABBREVIATIONS

Abbreviation	Acronym
AHIMS	Aboriginal Heritage Information Management System
AUD	Australian Dollar
JWF	Jupiter Wind Farm
CASA	Civil Aviation Safety Authority
dB(A)	Decibel
DCP	Development Control Plan
DGRs	Director General Requirements
DP&I	NSW Department of Planning and Infrastructure
DSEWPaC	Department of Sustainability Environment Water Population and Communities
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EMF	Electromagnetic Field
EMI	Electromagnetic Interference
EP&A Act	<i>Environmental Planning and Assessment Act, 1979</i>
EPA	Environmental Protection Authority
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act, 1999</i>
ERM	Environmental Resources Management Australia Pty Ltd
ha	Hectare
km	Kilometre
LEP	Local Environment Plan
LGA	Local Government Area
MNES	Matters of National Environmental Significance
MP	Member of Parliament
NSW	New South Wales
OEH	NSW Office of Environment and Heritage
PA	Project Area
RET	Renewable Energy Target
RFS	Rural Fire Service
SEPP	State Environmental Planning Policy
SIS	Species Impact Statement
SSD	State Significant Development
TSC Act	<i>Threatened Species Conservation Act 1995</i>
WTG	Wind Turbine Generator

1.1**GENERAL**

EPYC Pty Ltd (EPYC) is proposing to construct the Jupiter Wind Farm (JWF) comprising up to 100 wind turbine generators (WTGs), transmission lines, an electricity substation and ancillary infrastructure, approximately 5 km southeast of the township of Tarago in the Southern Tablelands region of New South Wales (NSW) (the Project).

Given that the capital investment value will exceed \$30 Million AUD, the Project will be assessed as a State Significant Development (SSD) in accordance with clause 20 of schedule 1 the *State Environmental Planning Policy (State and Regional Development) 2011* and will be assessed under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). EPYC is requesting Director General Requirements (DGRs) for the preparation of an Environmental Impact Statement (EIS) to accompany the SSD application for submission to the NSW Department of Planning and Infrastructure (DP&I).

EPYC are currently developing a wind farm layout for the placement of WTG's and associated infrastructure on the site. Given the size of the proposed wind farm and the extent of properties involved, this is likely to take several months, whilst at the same time ongoing land owner consultation will be occurring, with both directly affected properties and the broader local community.

1.2**PURPOSE OF THE DOCUMENT**

Environmental Resources Management Australia Pty Ltd (ERM) has been commissioned by EPYC to prepare this request for DGRs to commence the EIS and development application process.

Specifically, this report has been prepared to:

- describe the key components of the Project;
- identify the planning provisions that apply to the Project Area;
- identify the potential environmental, social and economic implications associated with the Project;
- provide sufficient information for the relevant agencies to make an informed decision on the items to be addressed in the EIS; and
- obtain the DGRs to proceed with the development application process.

1.3

JUSTIFICATION

Currently, wind energy is the most cost effective large scale renewable energy technology and is seen as a driving force in:

- supporting the NSW Governments objective to achieve 20% mix of renewable energy by 2020 under the Renewable Energy Target (RET) Scheme;
- contributing the current energy mix to meet growing energy demand across NSW; and
- reducing greenhouse gas emissions.

EPYC have undertaken wind monitoring assessments which identify the suitability of the site as a wind resource. Together with the close proximity of the project to an existing transmission line network, which traverses the middle of the site, the project thus far has demonstrated it is viable as a wind farm site.

Other factors which have been considered in identifying the site as a candidate site for a wind farm include the largely cleared paddocks, relatively easy access to the site, accessibility to the regional and state road network and the gentle undulating topography of the site which aids construction. The project will also generate economic activity within the region both during construction and operation, with opportunities for locally sourced jobs, with an expected capital investment value of \$400 million.

1.4

APPLICANT BACKGROUND

EPYC Pty Ltd is an Australian/Spanish joint venture specialising in Wind Farm development and is currently based in North Sydney. The company was established specifically to invest, develop and, construct and operate large scale wind farms in Australia. Its shareholders, Directors, Engineers and managers, have significant experience in the wind sector, in the development and construction of large scale projects in Australia and abroad. Applicant contact details are outlined below.

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This report is structured as follows:

Chapter 1 Introduction - Provides background information about the Project, the proponent and this report;

Chapter 2 Project Description - Describes the activities for which approval is sought;

Chapter 3 Statutory Considerations - Describes the planning context, including the approvals required;

Chapter 4 Environmental Issues and Management – Identifies potential risks the Project may impose on the environment and key stakeholders;

Chapter 5 Summary of Proposed Survey and Assessments – Outlines the proposed technical studies and surveys to effectively management potential environmental and social impacts;

Chapter 6 Stakeholder Engagement - Outlines the proposed stakeholder and community engagement strategy having regard to relevant guidelines; and

Chapter 7 Conclusion - provides concluding statements with respect to the preliminary assessment outcomes.

This Chapter provides an overview of the proposed wind farm components, site location and the anticipated timeframe of the Project. This information has been provided to assist in the assessment of potential impacts associated with the Project.

2.1**PROJECT OVERVIEW**

The Project would involve the construction; operation and maintenance of up to 100 WTGs within the defined Project Area (PA) (refer *Section 2.3*). The PA represents the study area for the purpose of the DGR request. It is anticipated the Project will have a total capacity of up to 350 Megawatts (MW) and generate approximately 1000 Gigawatt hours (GWH) of electricity per year.

The Project was initiated in 2010 with site selection and wind resource mapping. Three monitoring masts have been installed in the PA with the first in August 2012 and the last in April 2013 with the Project having now reached feasibility.

Broadly the Project will involve:

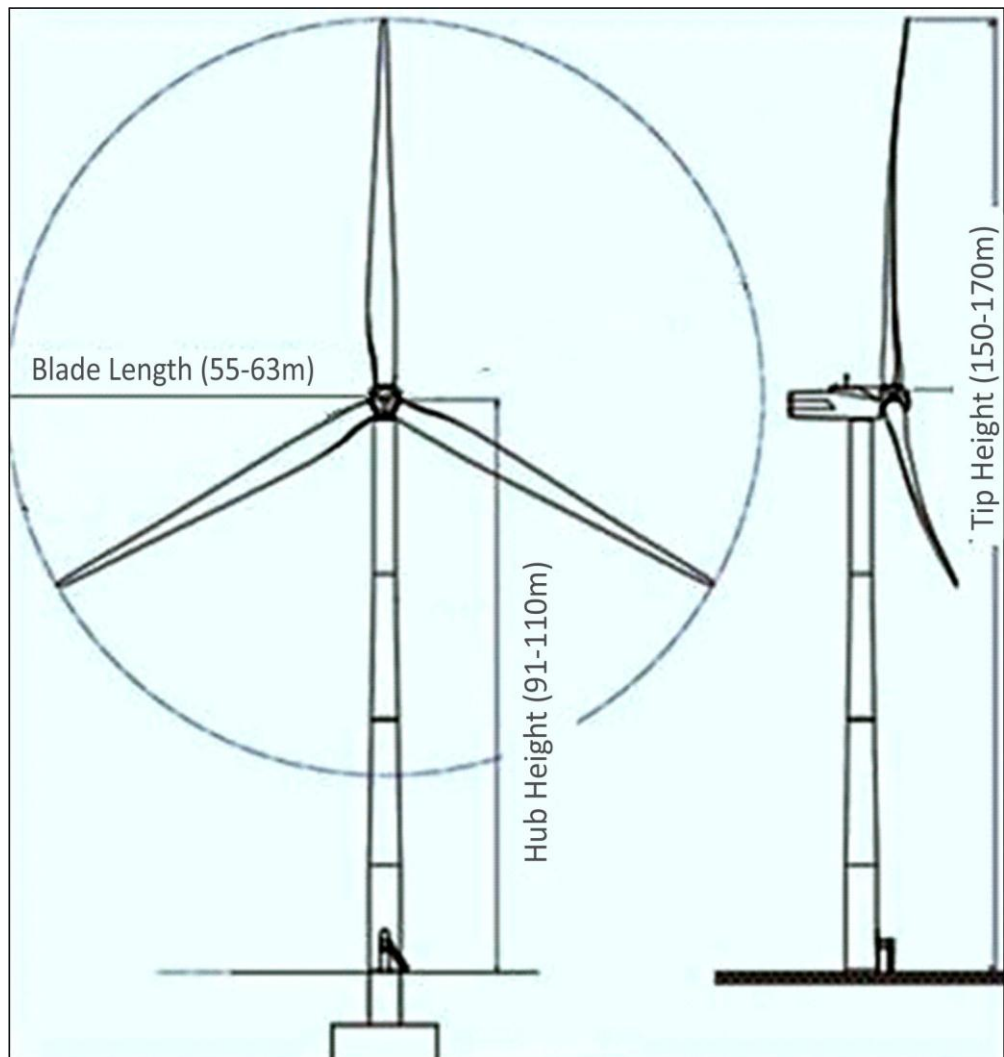
- construction of up to 100 WTGs;
- construction of a substation and transmission line connection to an existing TransGrid 330 kV transmission network, which passes through the PA;
- electrical connections between wind turbines and the onsite substation via a predominantly underground 33kV cable network;
- construction of onsite control buildings and equipment storage facilities;
- construction of temporary onsite office and storage facilities;
- establishment of temporary concrete batching facilities to supply concrete for turbine footings and substation construction works;
- construction of access tracks for each turbine and other onsite structures and upgrades to existing roads/tracks as required; and
- construction of monitoring masts for wind speed verification and monitoring during operation.

EPYC are developing an initial wind farm layout, which will identify the likely host areas within the PA for WTGs. It is anticipated that there may be WTGs within 2 km of non-involved properties with dwellings, however this will be subject to further wind turbine location modelling, constraint mapping and on-going consultation with land owners.

Each WTG will consist of a tubular steel or concrete hybrid tower at a height of up to 110 m. Three rotor blades are attached to the hub, which connects to the nacelle. The nacelle houses the gear box and generator.

Each rotor blade will have a length of up to 63 m. The overall tip height of the structure from the ground to the rotor tip will be up to 170 m pending final turbine selection (refer to *Table 2.1*). Each WTG will have an approximate maximum generating capacity of up to 4.5 Megawatts (MW). An indicative WTG design schematic is shown in *Figure 2.1*

Figure 2.1 WTG Schematic Change Blade length (55-63)



2.2.1

WTG Selection

There are a wide range of WTG types established by manufacturers around the world, with rapidly improving and emerging models entering the market. The key WTGs that EPYC are currently considering for the JWF are outlined in *Table 2.1*.

Table 2.1 *WTG's Currently under Consideration*

Manufacturer	Model	Capacity (MW)	Blade Length (m)	Rotor Diameter (m)	Tower Height (m)	Overall Tip Height (m)
Vestas	V117	3.3	58	117	91.5	150
REpower	M114	3.2	56	114	93	150
Gamesa	G114	2.5	56	114	93	150
Gamesa	G128	4.5	63	128	95	159
Siemens	SWT-113	2.3	55	113	100	156
Alstom	ECO 122	2.7	60	122	89	150
Nordex	N117	3.0	57	117	91	150
GE Energy	2.5-120	2.5	59	120	110	170
Acciona	AW-116	3.0	57	116	92	150

2.3

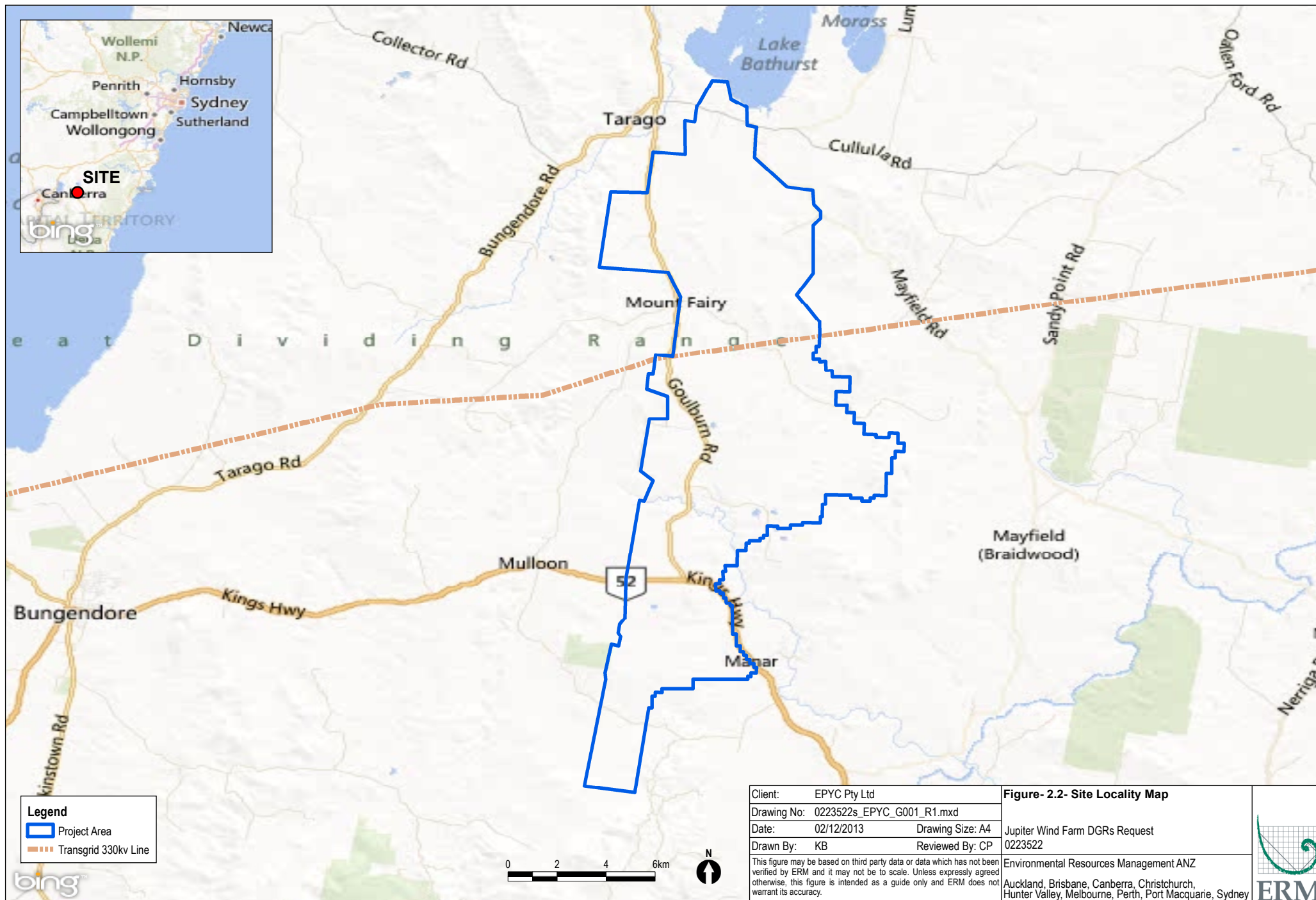
SITE LOCATION AND ENVIRONMENTAL SETTING

The PA is located approximately 5 km southeast of the township of Tarago and extends south to approximately 9 km past the intersection of Goulburn Road and Kings Highway (*Figure 2.2*). The Project covers a total area of approximately 12,000 hectares (ha) extending over both the Goulburn Mulwaree and Palerang Local Government Areas (LGA). The major township of Goulburn is located approximately 35 km to the North of the PA.

At this stage, 25 Project involved landowners will host WTGs and ancillary infrastructure within the PA.

There are no major developments within or immediately adjacent to the proposed PA. Six small townships/localities are located in the broader region, which include Lake Bathurst, Tarago, Mayfield, Boro, Mount Fairy and Manar. These townships have a combined population of less than 5,000 persons.

The PA and broader region consists of extensively cleared farm land with distant hills. The farm land is predominantly used for grazing with some small isolated lots used for personal cropping. The hill formations consist of both cleared and light density tree coverage. Several ephemeral creeks extend through the PA, however Reedy Creek experiences constant flows and connects to the Shoalhaven River.



2.3.1 *Topography And Landforms*

The PA is dominated by a gently undulating landscape to the north, forming steep slopes to the south and west with valleys and ridges that are dissected by various permanent and ephemeral water courses. Based on a review of topographic maps and aerial imagery, landforms present within the study area include drainage depressions, gentle to steeply inclining basal, mid and upper slopes, and upper flat ridges.

2.3.2 *Hydrology*

Numerous watercourses run through the study area including Millendale and Boro Creeks to the north, Kings Creek, Reedy Creek and Manar Creek to the south. These creeks are generally first or second order water courses and tributaries of the Shoalhaven River. The Shoalhaven River is located 9km to the south-east of the study area and is the nearest permanent source of water.

2.3.3 *Flora And Fauna*

Various types of flora and fauna occur across the region. Historic parish maps and current aerial imagery indicates that a large portion of the study area has been cleared and utilised for farming and other agricultural activities since the 19th century. There also appear to be several large pockets of potential remnant vegetation scattered across the southern and central portions of the PA. Biodiversity considerations in respect to the Project are addressed in further detail within *Section 3.3* of this report.

2.3.4 *Land Use Zoning*

As defined under the relevant Local Environment Plans (LEP) (refer *Section 0*), the PA extends across four land use zones, within both Goulburn Mulwaree and Palerang Council, with the majority of the site being located within Palerang LGA. The relevant land uses zones applicable to the PA include:

Goulburn Mulwaree LGA (Goulburn Mulwaree LEP)

- RU1- Primary production;
- RU2- Rural Landscape; and
- E3- Environmental Management.

Palerang LGA (Tallaganda LEP)

- 1a- General Rural;

Draft Palerang LEP

- RU 1 Primary Production

The land use zoning map is provided in *Figure 2.3*. Section 3.3 provides further discussion on the local planning controls (including draft LEP) and their application to the Project. A small portion of the PA, that is located within Palerang LGA (under Tallaganda LEP), is affected by an environmentally sensitive land classification, which is shown cross hatched in the zoning *figure 2.3*. The environmental sensitive land classification, whilst not being a land use zone, identifies certain activities within clause 28 of the Tallaganda LEP, which cannot be carried out within this affected area of the LEP.

2.3.5 *Wind Farm Developments in the Region*

Three wind farms and one solar farm are located within 8 to 15 kilometres of the PA and are outlined in *Table 2.2*.

Table 2.2 *Renewable Developments in the Vicinity*

Wind Farm Development	Operator	Location	Description	Status
Woodlawn Wind Farm	Infigen Energy	Approximately 8 km west of the PA	23 WTGs	Operational
Capital Wind Farm I	Infigen Energy	Approximately 15 km west of the PA	67 WTGs	Operational
Capital Wind Farm II	Infigen Energy	Approximately 15 km west of the PA	41 WTGs	Approved
Capital Solar Farm	Infigen Energy	Approximately 15 km west of the PA	Operating capacity of up to 50 MW	Approved

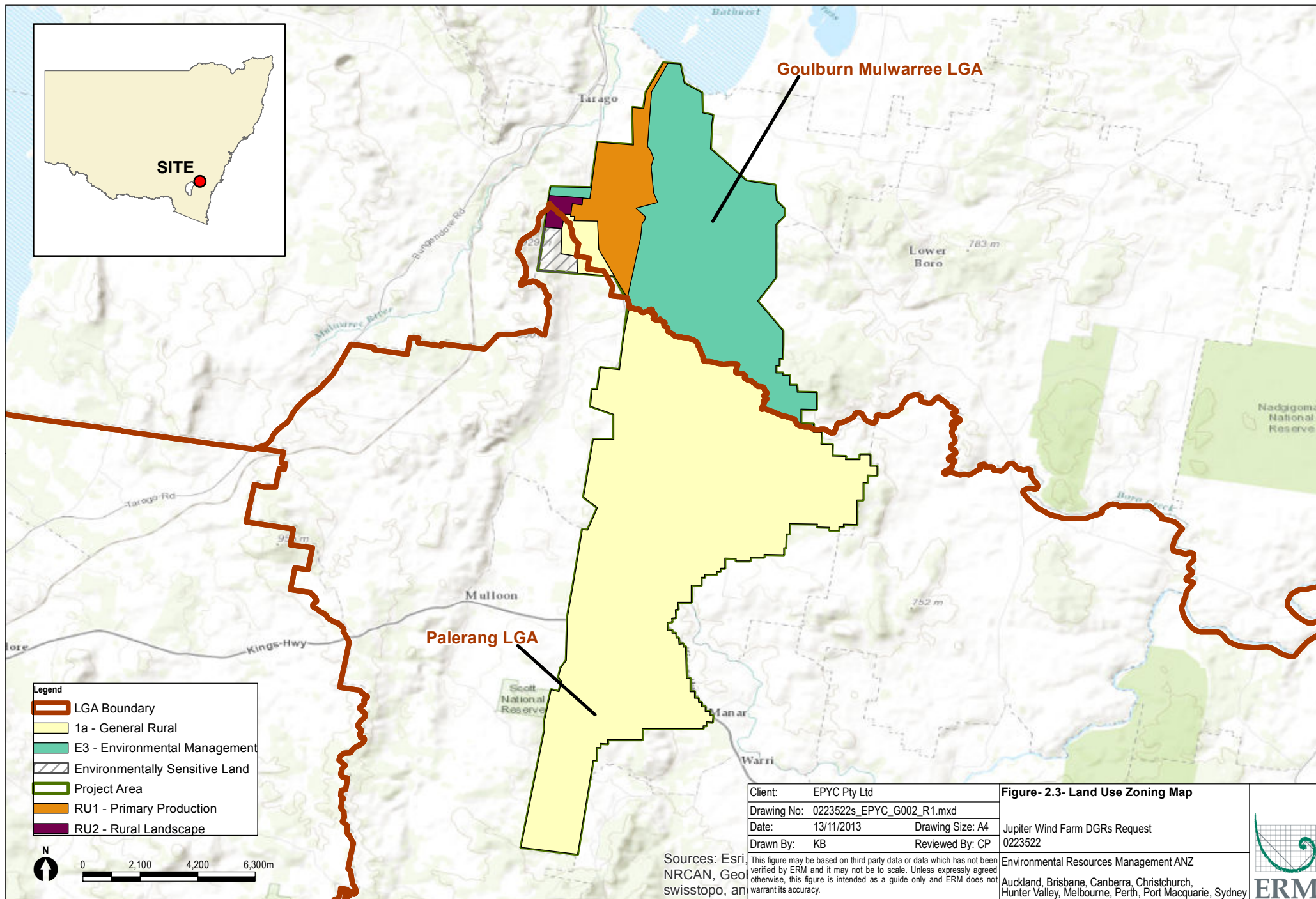
As part of the preparation of the EIS, an environmental risk assessment will be undertaken. The environmental risk assessment will specifically address the potential cumulative impacts due to other development in the vicinity of the PA, including those wind farms or other significant development that is proposed, but not yet constructed.

2.4 *PROJECT TIMEFRAME*

The anticipated timeframe for the Project is outlined in *Table 2.3*.

Table 2.3 *Anticipated Project Timeframe*

Project Phase	Duration	Anticipated Completion
DGRs issued	1 month	January/February 2014
Preparation and submission of the EIS (development application)	6-9 months	Third quarter of 2014
Consent authority review and approval	4-6 months	First quarter of 2015
Pre-construction approvals and management plans	6-9 months	End of 2015
Construction and commissioning Phase	12-15 months	End of 2016
Operation	20-25 years	Between 2017 and 2036 to 2041
Decommissioning or Project Renewal	12 months	Between 2036 & 2041



3 STATUTORY CONSIDERATIONS

3.1 STATE LEGISLATION

3.1.1 *Environmental Planning and Assessment Act 1979*

The relevant State planning legislation for major projects in NSW is the *Environmental Planning and Assessment Act 1979* (EP&A Act). The EP&A Act instituted a system of environmental planning and assessment in NSW and is administered by the DP&I.

Approval for the Project is sought under the State Significant Development provisions (Division 4.1) of Part 4 of the EP&A Act. SSD projects are identified either in:

- State Environmental Planning Policy (State and Regional Development) 2011; or
- an order by the Minister for Planning and Infrastructure published in the NSW Government Gazette.

The proposal is a use that is defined in State Environmental Planning Policy (State and Regional Development) 2011 as SSD (refer *Section 3.1.2*).

3.1.2 *State Environmental Planning Policy (State and Regional Development) 2011*

Clause 8 of *State Environmental Planning Policy (SEPP) (State and Regional Development) 2011* provides that the development is declared to be a SSD for the purposes of the Act if:

- the development on the land concerned is, by the operation of an environmental planning instrument, not permissible without development consent under Part 4 of the Act; and
- the development is specified in Schedule 1 or 2.

Schedule 1, Clause 20 of the SEPP (State and Regional Development) identifies facilities for the generation of electricity and heat development with a capital investment value of more than \$30 million as being a SSD. The estimated capital value of the JWF is \$400 million, which exceeds the \$30 million threshold, therefore the State and Regional Development SEPP is applicable and the Project is to be assessed as SSD under Part 4 of the EP&A Act.

3.1.3

State Environmental Planning Policy (Infrastructure) 2007

State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) aims to streamline the approval process for infrastructure projects in NSW. In addition to this, it also provides for consultation with relevant public authorities about certain development during the assessment process or prior to development commencing.

Part 3 Division 4 of ISEPP relates to electricity generating works. Clause 34(1) states:

Development for the purpose of electricity generating works may be carried out by any person with consent on land in a prescribed zone.

‘Electricity generating works’ are defined in the Standard Instrument as “...a building or place used for the purpose of making or generating electricity”.

Whilst wind farm developments are not a specifically defined land use in the ISEPP, the Project will generate electricity, thus it is considered that the proposed wind farm can be classified as ‘electricity generating works.’

Clause 33 of ISEPP defines prescribed rural, industrial or special use zone as:

“.....any of the following land use zones or a land use zone that is equivalent to any of those zones:

- (a) RU1 Primary Production,*
- (b) RU2 Rural Landscape,*
- (c) RU3 Forestry,*
- (d) RU4 Rural Small Holdings,.....”*

Under Clause 34(1) of the ISEPP, electricity generating works are permitted with consent on any land in a prescribed rural, industrial or special use zone.

Implications for the Project

As outlined above, the proposed wind farm is classified as ‘electricity generating works’. Under Clause 34(1) of the ISEPP, electricity generating works are permitted with consent under the RU1- Primary Production and RU2 - Rural Landscape land use zoning, which comprise the majority of the PA. The 1 (a) General Rural zone under TLEP, is a deemed RU1 Primary Production zone under the NSW Standard Instrument LEP, and therefore would also fall within the prescribed zones under the ISEPP, notwithstanding that the wind farm is already a permissible use within the 1(a) General Rural Zone.

The northern portion of the PA (Goulburn Mulwaree Council) contains land zoned E3-Environmental Management, which prohibits wind farms (or electricity generating works), which is also not a prescribed land use under the ISEPP and therefore the SEPP does not apply. This is dealt with further in *Section 3.3* of this report, with the proponent relying upon the 'not wholly prohibited' Clause 89E (3) of the EP&A Act, given that wind farms are a prohibited land use activity within the E3 Environmental Management zone (see *Section 3.3*).

3.1.4 *Threatened Species Conservation Act*

The *Threatened Species Conservation Act 1995* (TSC Act) lists threatened species, populations and ecological communities of animals and plants. It provides a framework for the assessment of any action that may impact on threatened species.

Desktop ecological investigations (refer *Section 4.1*) undertaken as part of the preliminary environmental assessment and further ecological investigations will assess the implications of the TSC Act and in particular the need for targeted surveys for particular species.

3.1.5 *Roads Act 1993*

Permits may be required under Section 138 of the *Roads Act 1993* for underground cabling that could pass under the neighbouring roads and also upgrades to both State and local roads for the transport of construction materials and WTG components. Advice will be sought with respect to the associated road authority.

3.1.6 *National Parks and Wildlife Act 1974*

The *National Parks and Wildlife Act 1974* (NP&W Act) defines the powers, duties and functions of the Office of Environment and Heritage relating to all areas reserved as National Parks, historic sites, nature reserves, Aboriginal areas, state recreation parks and regional parks.

Projects being assessed under State Significant Development provisions (Division 4.1) of Part 4 of the EP&A Act are not required to obtain an Aboriginal heritage permit under Section 90 of the NP&W Act. Further, as the Project is not located in a National Park or other conservation area listed under the NP&W Act, the provisions of the NP&W Act are not considered further.

3.2 COMMONWEALTH LEGISLATION

3.2.1 *Environmental Protection and Biodiversity Conservation Act 1999*

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the primary Commonwealth environmental legislation of relevance to the approval status of the Project.

Under the EPBC Act any action that has, or is likely to have, a significant impact on a Matter of National Environmental Significance (MNES) requires approval from the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities. The EPBC Act also requires Commonwealth approval for certain actions on Commonwealth land.

Initial desktop ecological investigations (refer *Section 4.1*) indicate two Threatened Ecological Communities (TECs) listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) have the potential to occur in the PA, as identified in the PMST:

- Natural Temperate Grassland of the Southern Tablelands of New South Wales (NSW) and the Australian Capital Territory (ACT) (endangered); and
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (critically endangered) (Box Gum Woodland).

Further field ecological investigations will assist in informing if potential impacts to MNES are triggered. If timing permits, a request will be made to consider any referral under the bi-lateral agreement between the State and Commonwealth.

3.2.2 *Radio Communications Act 1992*

Part 4.1 of the *Radio Communications Act 1992* establishes the legislative framework for the regulation of equipment that uses or is affected by radio emissions. Given wind turbines and associated infrastructure produce electromagnetic fields, the Project has the potential to impact radio communications in the region. An assessment of the potential for the Project to interfere with telecommunications signals will be undertaken as part of the EIS (refer *Section 4.10*).

3.2.3 *Civil Aviation Safety Regulations 1998*

The *Civil Aviation Safety Regulations 1998* (made under the Civil Aviation Act 1988) require that Civil Aviation Safety Authority (CASA) must be informed of proposals to build a structure greater than 110 metres above Australian Datum. This is required to allow assessment of whether the structure may represent a hazard to aircraft, and to provide any associated mitigation measures including any requirements for markings or lighting.

Detailed discussions will be held with CASA during the next stage of the planning process, and consideration given to any revisions to CASA Guidelines, as part of the specialist investigations informing the EIS. The EIS will include an Aviation Impact Statement (AIS) to be prepared by an aeronautical consultant.

3.3 LOCAL STATUTORY CONTEXT

As discussed, the Project extends across both the Goulburn Mulwaree and Palerang LGA's. The majority of the PA is located within the Palerang LGA, which was proclaimed in 2004 after an amalgamation of four other surrounding LGAs.

Palerang Council has prepared and placed on public exhibition a draft LEP for the LGA, which proposes to consolidate the existing six LEPs which control land use within the LGA. The Draft Palerang LEP is currently on public exhibition, which commenced on 27 November 2013 and will finish on 10 January 2014.

The current Environmental Planning Instrument (EPI) applicable to the area of the PA within Palerang Council is the Tallaganda LEP (TLEP). Depending on the timing of the implementation of the Draft Palerang LEP, the EIS will have regard to the draft Palerang LEP controls.

The local planning context covering Goulburn Mulwaree and Palerang LGA's is outlined in the subsequent sections below.

3.3.1 Goulburn Mulwaree Local Environment Plan 2009

The *Goulburn Mulwaree Local Environment Plan 2009* (the GMLEP) is the principal environmental planning instrument which regulates land use in the portion of the PA within the Goulburn Mulwaree LGA. The aims of the GMLEP are to:

- *promote and co-ordinate the orderly and economic use and development of land in the area;*
- *provide a framework for the Council to carry out its responsibility for environmental planning provisions and facilitate the achievement of the objectives of this Plan;*
- *encourage the sustainable management, development and conservation of natural resources;*
- *promote the use of rural resources for agriculture and primary production and related processing service and value adding industries;*
- *protect and conserve the environmental and cultural heritage of Goulburn Mulwaree;*

- *enhance and provide a range of housing opportunities in, and the residential and service functions of, the main towns and villages in Goulburn Mulwaree;*
- *establish a framework for the timing and staging of development on certain land in Goulburn and Marulan;*
- *provide a range of housing opportunities, including large lot residential development in the vicinity of the villages;*
- *allow development only if it occurs in a manner that minimises risks due to environmental hazards, and minimises risks to important elements of the physical environment, including water quality;*
- *provide direction and guidance as to the manner in which growth and change are to be managed in Goulburn Mulwaree; and*
- *protect and enhance watercourses, riparian habitats, wetlands and water quality within the Goulburn Mulwaree and Sydney drinking water catchments so as to enable the achievement of the water quality objectives.*

The GMLEP defines electricity generating works, as:

***Electricity generating works** means a building or place used for the purposes of making electricity.*

The proposed wind farm meets this definition. The structure of the land use zoning table for the RU 1 Primary Production zone under GMLEP is such, that any development identified as not being prohibited or permitted without consent in the zone is permissible with consent. Therefore a wind farm is a permissible land use within the RU 1 Primary Production zoning (under the GMLEP) as it meets the definition of electricity generating works.

As mentioned previously, the development for the purpose of a wind farm is also permitted with consent pursuant to the provisions of ISEPP relating to SSD, however only within prescribed zones. The Rural RU1 Primary Production zone is a prescribed zone under the ISEPP and is therefore permissible with consent, however the E3 Environment Management zone, is not a prescribed zone and wind farms are not identified as a permissible land use within this zone under the ISEPP. The structure of the land use table for the E3 Environmental Management zone under GMLEP, is such that a land use not identified as being permitted with or without consent is prohibited. Wind farms, or electricity generating works, are not identified as being permitted without or without consent and are therefore prohibited development under the GMLEP.

Part 7 of the GMLEP provides the statutory framework focused towards management of local issues, through provisions relating to:

- flood planning;
- biodiversity;
- Restrictions on development adjoining mineral resource areas; and
- Earthworks.

The local provisions outlined in the GMLEP will be addressed in the EIS prepared for the Project.

Implications for the Project

Wind farm developments are defined as electricity generating works under Part 2 of the GMLEP, and are permitted with consent in the RU1 Primary Production zone, in accordance with the provisions of the GMLEP and the ISEPP, given that they are within a prescribed zone and are not listed as a prohibited land use within the RU 1 Primary Production zone. Wind Farms are, however prohibited in land use zone E3 Environmental Management, under the GMLEP. Given that the E3 Environmental Management zone is not a prescribed zone under the ISEPP, they are not identified as being permissible under this plan. Therefore the proponent will be relying upon Clause 89E (3) of the EP&A Act, which states the following :

“Development consent (for State Significant Developments) may be granted despite the development being partly prohibited by an environmental planning instrument.”

Given the above, and that the Project is not wholly prohibited, it is permissible with consent.

3.3.2 Goulburn Mulwaree Development Control Plan 2009

Section 6.3 of the Goulburn Mulwaree Development Control Plan 2009 (the GMDCP) relates to Wind Farms. The objective of the Wind Farm is to:

- *minimise the impacts of wind farm development on the environment of the Goulburn Mulwaree local government area.*

The Wind Farm provisions and the specific controls outlined in the DCP will be addressed in the EIS prepared for the Project. Whilst the controls and objectives of the DCP will be considered and where applicable addressed as part of the EIS, under the provisions of the EP&A Act, strict compliance is not required.

3.3.3

Tallaganda Local Environment Plan 1991

The *Tallaganda Local Environment Plan 1991* (the TLEP) is the principal environmental planning instrument which regulates land use in the portion of the PA within the Palerang LGA . The central aims of the TLEP are:

- (a) to encourage the proper management, development and conservation of natural and man-made resources within the Shire of Tallaganda ;*
- (b) to replace the existing planning controls with a single local environmental plan to help facilitate growth and development of the Shire of Tallaganda ; and*
- (c) to afford protection to the environmental heritage within the Shire of Tallaganda by.*

The Project is subject to the 1a – General Rural land use zoning, which covers the portion of the PA within the Palerang LGA.

As defined in Part 2 of the TLEP, the objectives of land zoned 1a – General Rural are:

- to protect, enhance and conserve:*
- agricultural land, particularly prime crop and pasture land, in a manner which sustains its efficient and effective agricultural production potential,*
- soil stability by controlling and locating development in accordance with soil capability, as identified by the Soil Conservation Service,*
- forests of existing and potential commercial value for timber production,*
- valuable deposits of minerals, coal, petroleum and extractive materials by controlling the location of development for other purposes in order to ensure the efficient extraction of those deposits,*
- trees and other vegetation on environmentally sensitive land and in any place where the conservation of the vegetation is significant to the protection of scenic amenity or natural wildlife habitat or is likely to control or contribute to the control of land degradation,*
- water resources and water catchment areas for use in the public interest,*
- localities of significance for nature conservation, including localities with rare plants, wetlands, permanent watercourses and significant wildlife habitat, and*
- places and buildings of archaeological or heritage significance, including aboriginal relics and places.*
- facilitate farm adjustments;*

- *minimising the cost to the community of:*
 - *fragmented and isolated development of rural land, and*
 - *providing, extending and maintaining public amenities and services, and*
- *provide land for future urban development, for rural residential development and for development for other non-agricultural purposes, in accordance with the need for that development, and subject to the capability of the land and its importance in terms of the other provisions of this clause.*

The structure of the land use zoning table for the 1 (a) General Rural zone under the TLEP is such that any development identified as not being prohibited or permitted without consent in the zone is permissible with consent. Therefore a wind farm is a permissible land use within the 1 (a) General Rural zone (under the TLEP) as it is defined as 'generating works'. The TLEP adopts the Model Provisions 1980, which defines generating works as follows:

generating works means a building or placed used for the purpose of making or generating gas, electricity or other forms of energy

As mentioned previously, the development for the purpose of a wind farm is also permitted with consent pursuant to the provisions of ISEPP relating to SSD, as the 1(a) General Rural zoning is a deemed RU1 Primary zone under the ISEPP.

Part of the land, as identified in Figure 2.3, is affected by an environmentally sensitive land classification, which has the effect of limiting certain land uses within land affected by this classification. The clause includes the following:

"28 Environmentally sensitive land

(1) In this clause:

Clearing means the removal of trees and other vegetation, including the killing of trees by chemicals or other means, but does not include the clearing of regrowth being trees or shrubs that are less than four metres in height and are on land previously cleared for agricultural use, eradication of noxious plants or the cutting down of individual trees for farm purposes such as fencing, which may be carried out without the consent of the Council.

Draining means the mechanical disturbance or removal of soil having the effect of accelerating or otherwise modifying surface or sub-surface waterflow and includes the construction of dams.

(2) A person shall not carry out development on environmentally sensitive land for the purposes of:

- (a) intensive livestock keeping,*
- (b) junk yards,*

- (c) liquid fuel depots,
- (d) offensive or hazardous industries,
- (e) sawmills, or
- (f) commercial stockholding yards.
- (3) A person must not carry out forestry works on environmentally sensitive land, except with the consent of the Council.
- (4) A person shall not clear or drain environmentally sensitive land for any purpose, except with the consent of the Council.
- (5) The Council may not grant consent to the clearing or draining of land unless:
 - (a) in the opinion of the Council, the clearing or draining will be carried out in a manner which minimises:
 - (i) the risk of soil erosion or other land degradation,
 - (ii) the loss of scenic amenity, and
 - (iii) the destruction of significant vegetation systems and natural wildlife (including aquatic) habitats, and
 - (b) the area to be cleared or drained does not exceed 1 hectare or does not exceed 5% of the area of environmentally sensitive land within an existing holding (whichever is less) and is not within 30 metres of a watercourse."

Implications for the Project

Whilst wind farm developments are not a defined land use under Part 2 of the TLEP, they are permitted with consent in accordance with the provisions of the land use Zone 1a, which covers the portion of the PA within the Palerang LGA. The proposed wind farm will have regard to clause 28 of TLEP, with particular reference to the provisions relating to the clearing of land for any purpose under this clause.

3.3.4 Draft Palerang LEP

The area of PA affected by the draft Palerang LEP, is proposed to be zoned RU 1 Primary Production. The land use table for the RU 1 Primary Production zone contained within the draft Palerang LEP, is such that a land use not nominated as either permissible without or with consent, is prohibited. On the basis that electricity generating works, including wind farms, are not a nominated land use within the Draft LEP, the proposed wind farm would be a prohibited land use under the Draft LEP. Notwithstanding this, the RU 1 Primary Production zone is a prescribed land use under the ISEPP, thereby having the effect of making the project permissible with consent.

3.3.5 Tallaganda Development Control Plan

No specific development controls relating to wind farm developments are outlined in the *Development Control Plan No. 4 for Rural 1 (A) Zoning 1996*.

3.3.6

Goulburn Mulwaree Section 94A Development Contributions Plan 2009

There are two Section 94 Contribution Plans within the Goulburn Mulwaree LGA, being the Goulburn Mulwaree Section 94 Plan Amendment No. 2 and a separate Section 94A Contribution Plan. Based on our review and in accordance with Section 94A(2) of the EP&A Act, 1979, only one Contribution Plan can apply to a SSD. For the purposes of this project, we have considered the Section 94A Contributions Plan as being the more relevant Contributions Plan applicable to the SSD.

Goulburn Mulwaree Section 94A applies to all land within the LGA and imposes a percentage levy on new development based on the capital cost of development. Whilst the controls and objectives of the Section 94A Development Contribution Plan will be considered and where applicable addressed as part of the EIS, under the provisions of the EP&A Act strict compliance is not required.

At this stage it is envisaged that EPYC would enter into further discussions with both Goulburn Mulwaree and Palerang Councils regarding establishing a Voluntary Planning Agreement (VPA), which might include the upgrade of local roads and/or the contribution to other community infrastructure where a direct nexus can be demonstrated between the project and such works.

3.3.7

Tallaganda Development Contributions Plan 2003

The Tallaganda Development Contributions Plan 2003 Amendment no. 3 Roadworks and Amendment No. 4 Bush Fire Control and Suppression, applies to the site, and generally requires the payment of levies through development consent conditions for new development where there is a demonstrated nexus between the Project and additional or upgraded community infrastructure, in particular local roads and bush fire services and facilities. Wind Farm developments are not identified in the Tallaganda Development Contributions Plan 2003, with the core focus of the Plan centred on new residential and/or commercial development. Notwithstanding that, the Section 94 Plan does identify development contributions for traffic generating development, such as new mines or quarries. The nature of a wind farm projects is that there will be additional heavy vehicle movements during the construction of the project, however once constructed and operational, the number of vehicle movements would be limited, given vehicle movements are only associated with routine maintenance and repair.

Whilst the controls and objectives of the Section 94 Development Contribution Plans will be considered and where applicable addressed as part of the EIS, under the provisions of the EP&A Act strict compliance is not required. At this stage it is envisaged that EPYC would enter into further discussions with both Goulburn Mulwaree and Palerang Councils regarding establishing a VPA, which might include the upgrade of local roads and/or the contribution to other community infrastructure where a direct nexus can be demonstrated between the project and such works.

3.4 OTHER POLICES AND GUIDELINES

3.4.1 Draft NSW Planning Guidelines: Wind Farms 2011

In 2011, the NSW Government released the *Draft NSW Planning Guidelines: Wind Farms, December 2011* (the Draft Guidelines).

The Draft Guidelines were developed to provide a 'clear and consistent regulatory framework for the assessment and determination of wind farm proposals.' Table 3.1 summarises the key matters to be addressed in the assessment process as specified at Section 1.3 of the Draft Guidelines.

Table 3.1 *Key Matters Identified in the Draft NSW Planning Guidelines: Wind Farms, December 2011*

Key Matter	Description	Comment
Proximity of turbines to existing residential dwellings	If a wind farm proposal seeks to place turbines within 2km of existing residences, whether they are proposed hosts of the turbines or non-host residences, an additional upfront assessment requirement applies.	The wind farm layout and design is being developed and may include turbines that are within 2km of neighbouring properties. Ongoing discussions and consultation will continue with adjoining properties to seek landowners consent where practicable.
Community consultation	The guidelines require that proponents must undertake a comprehensive and genuine community consultation and engagement process.	The Applicant has initiated and will continue a comprehensive program of community consultation as part of the preparation of the EIS. Refer to <i>Section 6</i> for more detail.
Visual amenity	The assessment of wind farm proposals will typically require a comprehensive assessment of the impact of proposed wind farm on the landscape character, landscape values, visual amenity and any scenic or significant vistas to be undertaken.	An assessment of potential impacts to visual amenity will be prepared as part of the EIS having consideration for the Draft Guidelines.
Noise	The guidelines provide the NSW Wind Farm Noise Guidelines to measure and assess environmental noise impacts generated from wind farms.	A noise assessment will be prepared as part of the EIS having consideration for the <i>Draft NSW Planning Guidelines: Wind Farms, December 2011</i> or if not adopted, the South Australian Environment Protection Authority <i>Wind Farms_ Environmental Noise Guidelines</i> (2003).

Key Matter	Description	Comment
Health	To appropriately consider health issues associated with the operation of the wind farm through excessive noise and/or exposure to electromagnets field from operating WTGs.	The health issues associated with the operation of the wind farm will be considered as part of the EIS.
Decommissioning	The development of a Decommissioning and Rehabilitation Plan for inclusion in the EIS.	A Decommissioning and Rehabilitation Plan will be prepared as part of the EIS.
Auditing and compliance	If the development application is granted consent, conditions will be specified as part of the consent requiring proponents to undertake compliance monitoring and auditing.	The Applicant is committed to undertake compliance monitoring as part of conditions of consent and any environmental licensing requirements.

3.4.2 *Other Policies, Plans and Guidelines for Consideration*

The Goulburn Mulwaree Strategy Plan-2020 demonstrates relevance to the Project and will be addressed in the EIS.

Environmental issues associated with wind farm developments in NSW are well defined and documented. This Chapter aims to identify potential environmental issues specific to the Project by drawing on other wind farm developments in NSW and the *Draft NSW Planning Guidelines for Wind Farms-December 2011*.

4.1 ECOLOGY

4.1.1 Study Area Overview

The South Eastern Highlands Interim Biogeographic Regionalisation for Australia (IBRA) bioregion covers the dissected ranges and plateau of the Great Dividing Range. It extends to the Great Escarpment in the east, to the western slopes of the inland drainage basins and extends south in Victoria. Of the ten sub-regions described by OEH (2011), the following three are mapped within the PA:

- Monaro (Part A) IBRA subregion covers the northern portion;
- Monaro (Part B) IBRA subregion covers the majority of the PA; and
- Bungonia IBRA subregion is located within the south eastern corner of the PA.

The PA also falls within the Southern Rivers Catchment Management Authority (CMA) and the Hawkesbury Nepean CMA area.

Broadscale information related to the Monaro and Bungonia IBRA subregions was obtained from OEH (OEH 2011) and is provided in *Table 4.1*.

Table 4.1 *IBRA Subregion Overview*

Geology	Characteristic Landforms	Typical Soils	Vegetation
Monaro			
Block faulted ranges and closed lake basins in Silurian and Devonian acid fine grained sedimentary and metamorphic rocks with some granites. Extensive areas of thin Tertiary basalt flows over lake and river sediments.	Sloping plateau rising from 600 to 1300m north to south. Structural ridges of more resistant rock. Stepped plains on basalt with intervening low areas of granite or sedimentary rocks. Numerous shallow lakes and swamps, a few permanent many are closed basins and	Harsh yellow texture contrast soils in general. Shallow red brown to black stony loams on basalt.	Snow gum, ribbon gum, candle-bark gum, broad-leaved peppermint and mountain gum open woodlands with Kangaroo grass understorey. White gum, mottled gum on hills. Brown barrel and black ash forests in east with west facing patches of dwarf casuarina heathland. Extensive grasslands of snow grass, spear grass and wallaby

Geology	Characteristic Landforms	Typical Soils	Vegetation
	periodically dry. Area is in rainshadow with rainfall 450-700mm.		grass on the driest plains with clumps of snow gum amongst rocky outcrops.
Bungonia			
Primarily fine-grained Palaeozoic sedimentary and meta-sedimentary rocks, with minor areas of acid volcanics and limestone. Areas of Tertiary river terrestrial sediments and low sandsheets in the south with very limited basalt.	Distinct plateau with very steep, deep margins on the Great Escarpment dropping into the Shoalhaven River. Strong linear ridges on resistant sandstones and volcanics, wide valleys with some cold air drainage and inverted tree lines.	Mostly yellow texture contrast soils some with harsh clay subsoils. Shallow structured organic loams on limestone and basalt, deep siliceous sands and clayey sands on Tertiary sediments.	Mottled Gum, Broad-leaved Peppermint, White Gum, Red Stringybark and Black Ash forests and woodlands. Snow Gum and Snow Grass in cold pockets. Black she-oak common as understorey and in regeneration areas. Limited distribution of Argyle Apple.

4.2 FLORA

4.2.1 Vegetation Communities

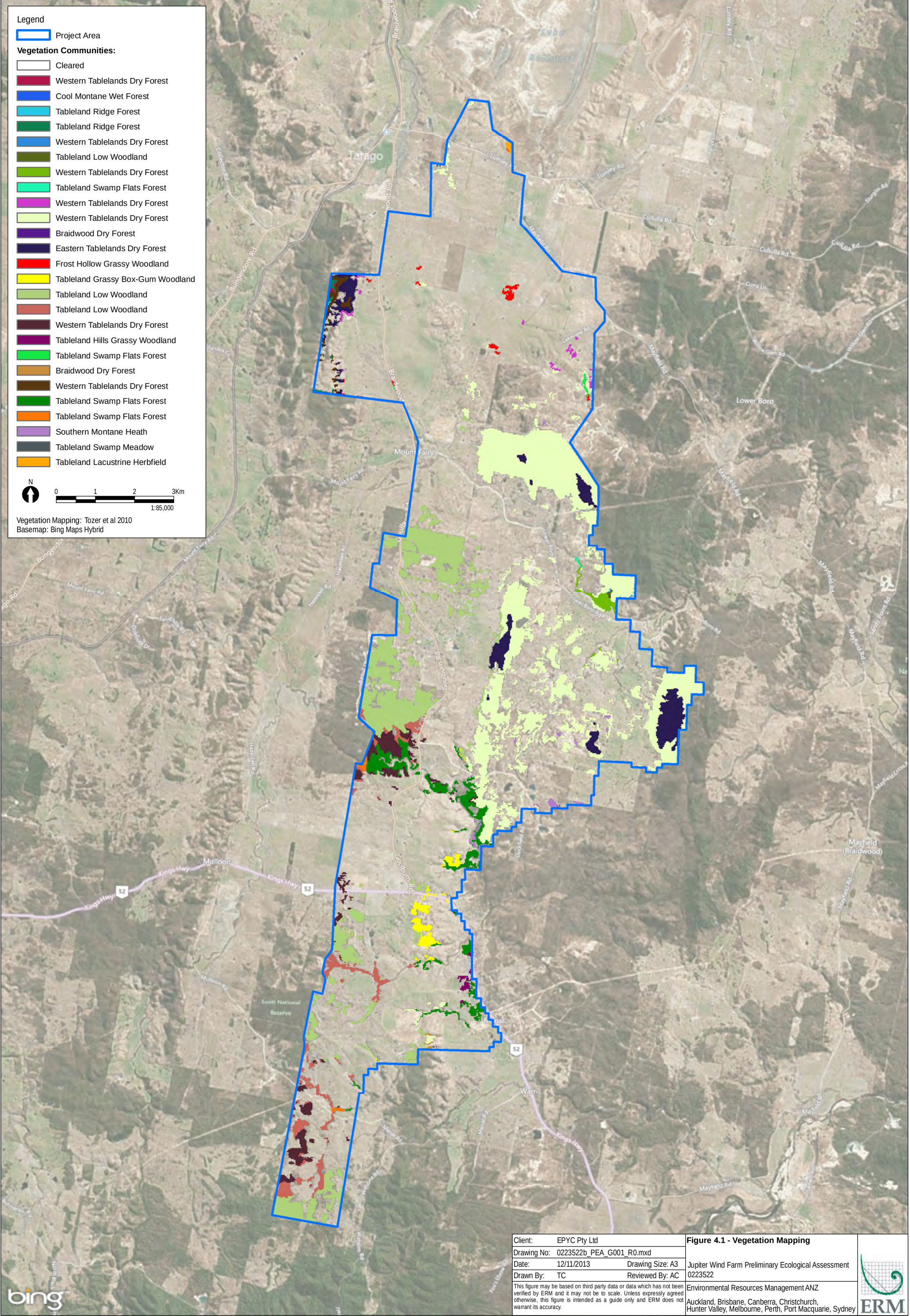
A number of previous vegetation mapping projects have been undertaken over an area that included the PA, with the most recent being the *Native vegetation of southeast NSW: a revised classification and map for the coast and eastern tablelands* (Tozer et al 2010). This mapping project incorporates the results of a number of regional vegetation mapping projects and provides an updated vegetation map for Southeast NSW.

A review of this vegetation mapping and aerial photographs show that the majority of the PA has been cleared, however, patches of native remnant vegetation occur scattered throughout. The following vegetation communities were identified within the PA based on the *Native Vegetation of Southeast NSW* vegetation mapping project (Tozer et al 2010):

- Eastern Tablelands Dry Forest;
- Western Tablelands Dry Forest;
- Tableland Ridge Forest;
- Frost Hollow Grassy Woodland;
- Tableland Lacustrine Herbfield;
- Tableland Low Woodland;
- Southern Montane Heath;

- Tableland Grassy Box Gum Woodland;
- Tableland Hills Grassy Woodland; and
- Braidwood Dry Forest.

Descriptions of the above vegetation communities are provided in *Annexure A* and their distribution is shown in *Figure 4.1*.



Two Threatened Ecological Communities (TECs) listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) have the potential to occur in the PA, as identified in the PMST:

- Natural Temperate Grassland of the Southern Tablelands of New South Wales (NSW) and the Australian Capital Territory (ACT) (endangered); and
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (critically endangered) (Box Gum Woodland).

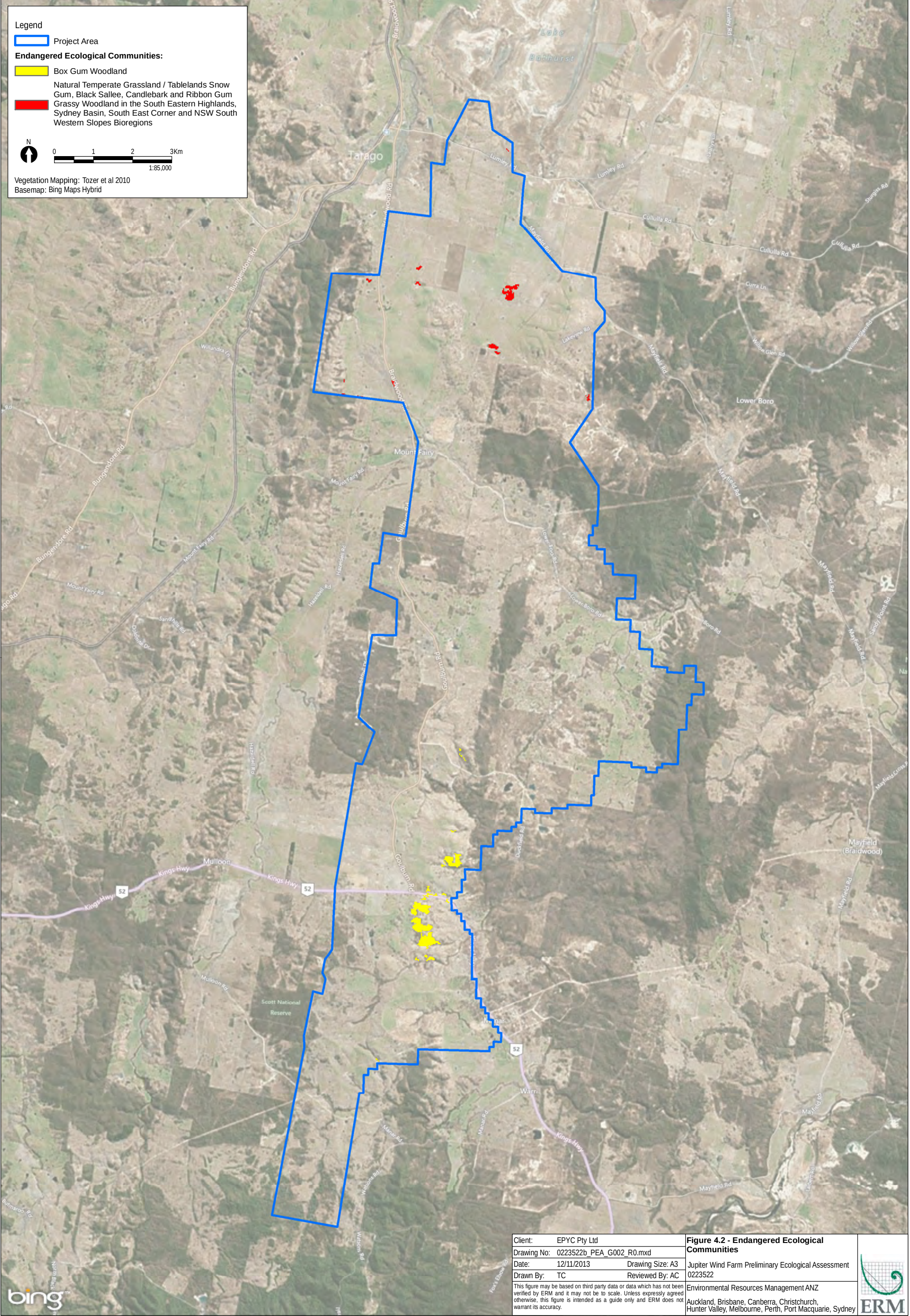
The following Endangered Ecological Communities (EECs) listed under the *Threatened Species Conservation Act 1995* (TSC Act) occur in the Monaro (Parts A and B) and Bungonia CMA sub-regions and therefore, also have the potential to occur in the PA:

- White Box Yellow Box Blakelys Red Gum Woodland (endangered) (Box Gum Woodland) (differs slightly from the Australian Government listing shown above);
- Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland in the South Eastern Highlands, Sydney Basin, South East Corner and NSW South Western Slopes Bioregions;
- Tableland Basalt Forest in the Sydney Basin and South Eastern Highlands Bioregions; and
- Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps Bioregions.

Tozer et al (2010) indicate that the vegetation communities mapped are consistent with TECs and EECs as follows:

- Tableland Grassy Box Gum Woodland comprises Box Gum Woodland; and
- parts of the areas mapped as Frost Hollow Grassy Woodland comprise Natural Temperate Grassland.

An analysis of the description of Frost Hollow Grassy Woodland provided by Tozer et al (2010) also indicates that parts of this community are consistent with Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland in the South Eastern Highlands, Sydney Basin, South East Corner and NSW South Western Slopes Bioregions. These areas are shown on *Figure 4.2*.



Detailed ground truthing will be undertaken to confirm the vegetation communities present within the PA, as well as to identify their overall condition including structural and species diversity, weed invasion, ability to regenerate and conservation status.

4.2.3 *Threatened Flora*

A total of 19 threatened flora species have been recorded within the search area (10 km around the PA) (see *Figure 4.3*). One species is known to occur within the PA: Buttercup Doubletail (*Diuris aequalis*). This species is listed as Vulnerable under the EPBC Act and Endangered under the TSC Act 1995. A further 16 species are considered to have the potential to occur as it is likely that suitable habitat is present in the PA. Two of the species are considered unlikely to occur in the PA due to their restricted distribution or specialised habitat requirements (refer to *Annex B*).

4.3 *FAUNA*

4.3.1 *Fauna Habitat Features*

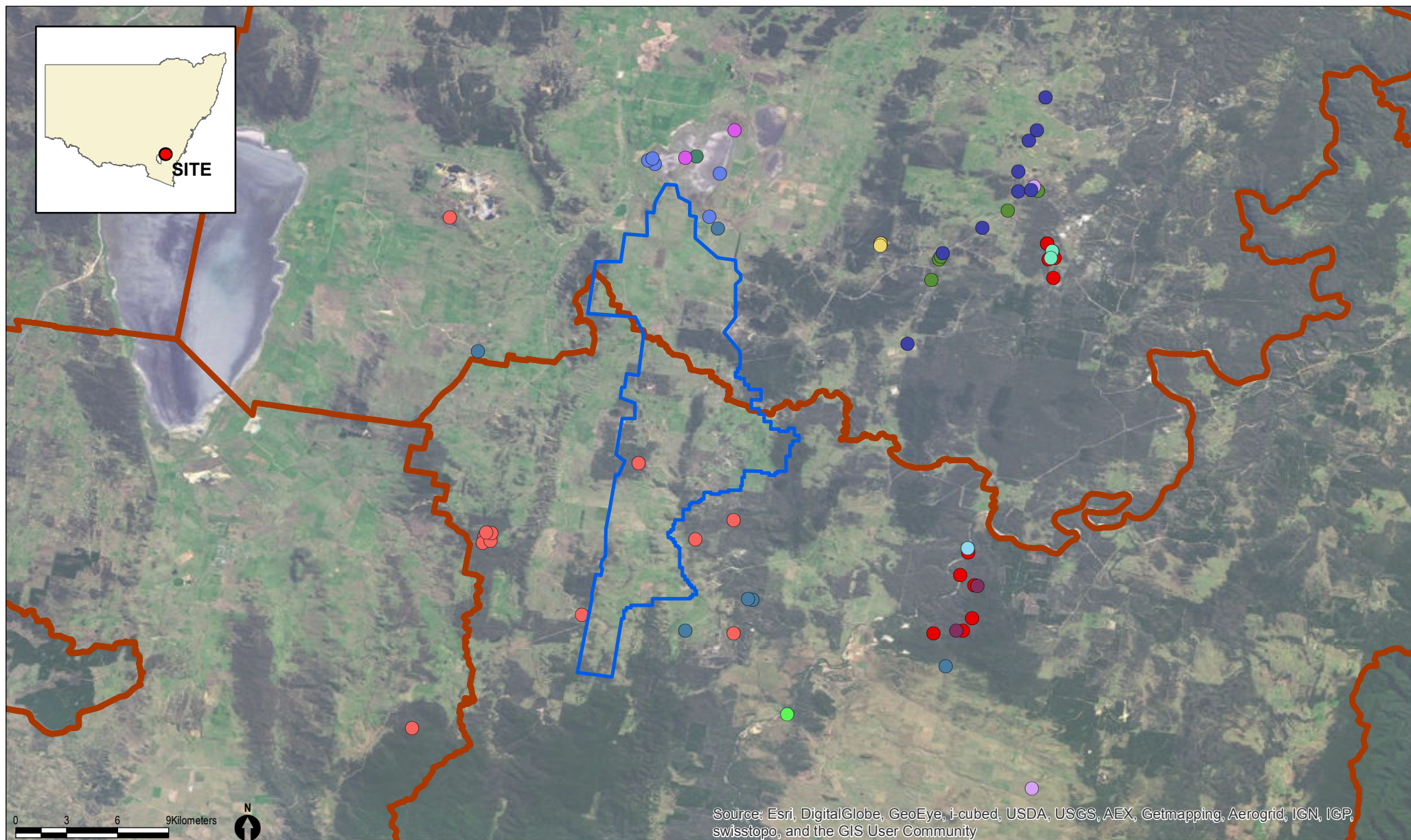
The vegetation mapping and aerial photographs show that the majority of the PA has been cleared, however, remnant patches of native vegetation occur scattered throughout and these are likely to provide habitat for a variety of fauna.

Fauna habitat types in the PA are likely to comprise native woodlands & forests, native grasslands, exotic grasslands, wetlands and aquatic habitats. Within these habitat types, a variety of fauna habitat features are likely to occur, including hollow bearing trees, paddock trees, tussock grasslands, farms dams and creek lines.

Native Woodlands and Forests

Within the PA, the vegetated habitats are variable with areas of scattered trees, open woodland and forested habitats. The sizes of the forested areas are also highly variable ranging from small patches to large remnants which are well connected to forests outside of the project footprint. Highest connectivity of forests occurs at the extreme eastern and southern edges of the site.

The forested habitats are likely to include foraging, breeding and shelter resources for a variety of fauna, including a variety of nectar and/or seed producing native species, hollow bearing trees, fallen logs and leaf litter.



Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

The Common Species Name

- | | | |
|------------------------|-----------------------|-------------------------|
| ● Black Gum | ● Delicate Pomaderris | ● Michelago Parrot-pea |
| ● Bombay Bossiaea | ● Few-seeded Bossiaea | ● Mongarlowe Mallee |
| ● Buttercup Doubletail | ● Hoary Sunray | ● Omeo Storksbill |
| ● Creeping Hop-bush | ● Kydra Dampiera | ● Pale Pomaderris |
| | ● Matted Bush-pea | ● Round-leafed Wilsonia |

● LGA Boundary

● Project Area

Client: EPYC Pty Ltd

Drawing No: 0223522s_EPYC_G003_R0.mxd

Date: 12/11/2013

Drawing Size: A4

Drawn By: KB

Reviewed By: ED

This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

Figure 4.3 – Threatened Flora Recorded within the Locality

Jupiter Wind Farm DGRs Request
0223522

Environmental Resources Management ANZ

Auckland, Brisbane, Canberra, Christchurch,
Hunter Valley, Melbourne, Perth, Port Macquarie, Sydney



ERM

Based on the results of the database searches and the assessment of preferred habitat requirements (refer to *Annex B*), the habitats available with the PA are likely to be utilised by a number of threatened bird species including Speckled Warbler (*Chthonicola sagittata*), Powerful Owl (*Ninox strenua*), Barking Owl (*Ninox connivens*) Glossy Black Cockatoo (*Calyptrorhynchus lathami*) and Gang-gang Cockatoo (*Callocephalon fimbriatum*). Threatened mammals with the potential to occur include Spotted-tailed Quoll (*Dasyurus maculatus*) and Koala (*Phascolarctos cinereus*). Microchiropteran bats are also likely to occur. Of particular note is Mount Fairy Cave, near Braidwood which is a known dispersal cave used by *Miniopterus schreibersii oceanensis* (Eastern Bentwing-bat) during the dispersal period (February to September).

The abundance of hollow bearing trees is a strong determinant of habitat value providing important roosting habitat for arboreal mammals such as Possums and Gliders, as well as insectivorous bats, parrots, and large forest owls. Target surveys and mapping of critical habitat features within the development footprint will be undertaken to inform any future impact assessment.

Montane Heath

There is the potential for Southern Montane Heath to occur within the project footprint. These shrublands occur on escarpment ranges and several threatened species are associated with this community, which include the Scarlet Robin (*Petroica boodang*).

Wetland Habitats

The northern edge of the PA is adjacent to Lake Bathurst, providing habitat for a variety of waterfowl and wading species including Freckled Duck (*Stictonetta naevosa*) and Magpie Goose (*Anseranas semipalmata*) which have been previously recorded at the Lake. Habitat for the threatened White-fronted Chat (*Epthianura albifrons*) is also likely to be present.

Lake George is an ephemeral lake, approximately 15 km west of the PA. Lake George can support significant numbers of migratory and threatened waders and waterfowl when the conditions are favourable and the potential exist for species to fly over the PA when transiting to and from the lake.

Grasslands

Grassland covers a large portion of the PA, however the condition and type of grassland within the PA is largely undetermined and will need to be confirmed during field survey. It is likely that some natural grassland and derived native grassland will occur.

Native grassland habitats, with a high proportion of native grasses and some native herbs providing foraging resources for a range of species. Features of grassland which can enhance the habitat value includes the presence of tussock forming grasses, the presence of scattered trees, fallen logs and areas of exposed rock. The Little Whip Snake (*Suta flagellum*) is a threatened species which may occur within native grasslands and grassy woodlands.

Exotic grasslands, and improved grassland are also likely to be present and may provide some habitat for common species.

Farm Dams

Several farm dams have been identified from aerial imagery. They are likely to provide habitat for frogs and water bird species including the Eurasian Coot (*Fulica atra*), Grey Teal (*Anas gracilis*) and Australasian Grebe (*Tachybaptus novaehollandiae*), and are a drinking water source for a variety of native species.

Creek Lines

Several creeklines exist within the PA which flow eastward into the Shoalhaven River. These creeks and the associated adjacent riparian vegetation may important habitat for a range of terrestrial and aquatic species. The Shoalhaven River provides habitat for the threatened Macquarie Perch (*Macquaria australasica*) and there is potential for the species to occur within the tributaries within the PA. Detailed aquatic ecology surveys are unlikely to be required provided that the windfarm development and associated access tracks do not require any impacts to the creeklines. If the creeklines are required to be crossed for access, then consideration of fish passage will be undertaken, in accordance with the Policy and Guidelines for Fish Friendly Waterway Crossings (DPI). The requirement for subsequent detailed aquatic assessments depends on the class of watercourse, if there is likely to be a significant impact or if critical habitat is identified.

4.3.2 Threatened Fauna

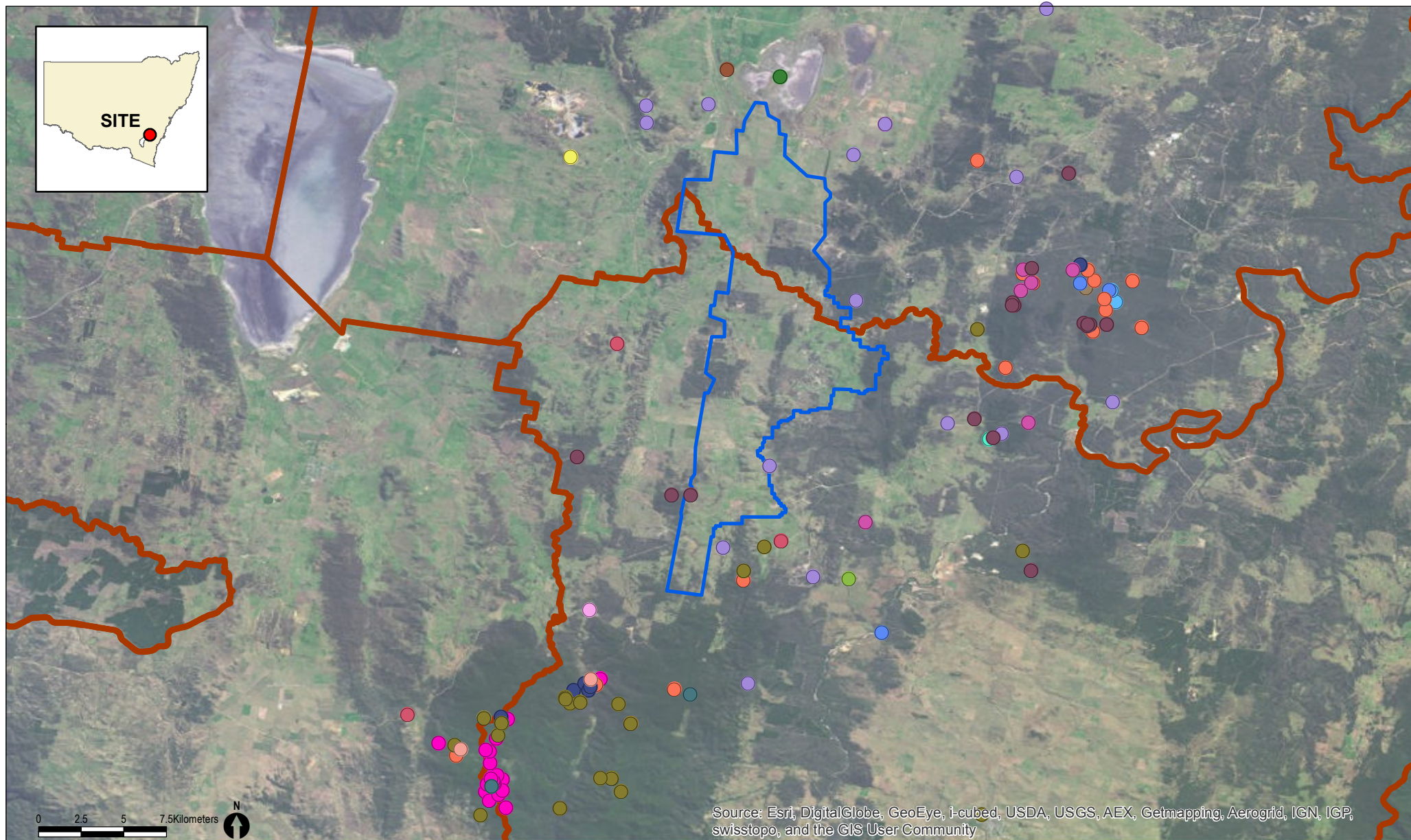
The results of the database searches indicate that a total of 43 threatened fauna species have been recorded, or have potential habitat, within 10 km of the PA including:

- one invertebrate;
- two fish;
- five amphibians;
- 25 birds; and
- 10 mammals.

A list of the species is provided in *Annex B*, along with an assessment of the species' likelihood of occurrence. Species records are shown in *Figure 4.4*. The results of the likelihood of occurrence assessment indicate that two species are known to occur in the PA: Glossy Black Cockatoo (*Calyptorhynchus lathami*) and the Koala (*Phascolarctos cinereus*). Seven species are likely to occur in the PA and 25 species have the potential to occur due to the presence of suitable habitat resources and/or nearby records. Nine species are considered unlikely to occur as there are no records of these species within 10 km of the PA.

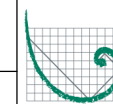
4.3.3 *Migratory Species*

The PMST identified 23 migratory bird species listed under the EPBC Act that may occur within 10 km of the PA. These species have generalist habitat requirements and are unlikely to be dependent on the resources available within the PA. However, as these species may occur within the locality during their seasonal migration, and have the potential to be impacted by blade strike, and will be further assessed within the detailed ecological impact assessment.



Legend				
● Barking Owl	● Diamond Firetail	● Gang-gang Cockatoo	● Long-nosed Potoroo	● Speckled Warbler
● Black Falcon	● Eastern Bentwing-bat	● Glossy Black-Cockatoo	● Magpie Goose	● Spotted-tailed Quoll
● Blue-billed Duck	● Eastern False Pipistrelle	● Green and Golden Bell Frog	● Powerful Owl	● Swift Parrot
● Brown Treecreeper (eastern subspecies)	● Flame Robin	● Koala	● Scarlet Robin	● Varied Sittella
● Curlew Sandpiper	● Freckled Duck	● Little Whip Snake	● Southern Myotis	● White-fronted Chat
				— LGA Boundary
				— Project Area

Client: EPYC Pty Ltd		Figure 4.4 - Threatened Fauna Recorded within the Locality Jupiter Wind Farm DGRs Request 0223522 Environmental Resources Management ANZ Auckland, Brisbane, Canberra, Christchurch, Hunter Valley, Melbourne, Perth, Port Macquarie, Sydney
Drawing No:	0223522s_EPYC_G004_R0.mxd	
Date:	12/11/2013	
Drawn By:	KB	
Reviewed By: ED		
This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.		



ERM

Habitat corridors provide essential pathways for the movement of native flora and fauna. They play an important role in ensuring the long term genetic viability of species and populations. For fauna, the degree of short term impacts would depend on the ability, or inability of individuals to migrate to alternative suitable local habitats during the construction phase of the project.

Vegetation corridors in the region have been mapped in the *Hawkesbury Nepean Catchment Action Plan 2007 – 2016* (Hawkesbury Nepean CMA 2007) and the *Southern Rivers CMA Catchment Action Plan 2013 – 2023* (Southern Rivers CMA 2013). However, the vegetation in the PA does not form part of these recognised biodiversity corridors.

The vegetation in the PA is linked to large areas of native vegetation to the east and south. The vegetation in the eastern section of the PA is linked to a large tract of native vegetation that includes a series of connected National Parks as follows:

- Morton National Park;
- Budawang National Park;
- Monga National Park; and
- Deua National Park.

Vegetation at the southern end of the PA is also linked to a large tract of native vegetation that includes Tallaganda National Park. These corridors are likely to provide important habitat resources and the design of the wind farm will seek to avoid areas of native vegetation being further fragmented or isolated.

The proposed wind farm has the potential to impact on a number of threatened species and ecological communities through direct and indirect impacts during the construction and operational phases. However, the habitat values are unlikely to be spread evenly across the PA and areas of high potential value can be avoided during the initial design phase of the Project. Areas of ecological constraint will be identified and refined during field survey. Preliminary ecological constraints identified through this desktop assessment include:

- areas that are likely to comprise TECs or EECs (refer to *Figure 4.2*);
- forested areas, especially those which are continuous with larger tracts of forest are likely to provide habitat for several threatened mammals and bird species;

- the potential presence of bird and bat species that fly within the rotor swept area and are vulnerable to rotor strike such as raptors and the Eastern Bent-wing Bat and Eastern False Pipistrelle (*Falsistrellus tasmaniensis*);
- Lake Bathurst may support threatened waterfowl, waders and migratory species, which may be vulnerable to rotor strike;
- creeklines within the site are likely to support diverse fauna assemblages and potential habitat for the Macquarie Perch; and
- native grasslands, which support a higher diversity of fauna than areas of improved grassland.

4.4.1 *Conclusions and Further Assessment*

The wind turbine generators and associated infrastructure, including access roads, will be sited to avoid areas of high habitat value such as remnant woodland vegetation and watercourses.

Targeted ecological surveys will be conducted to further inform micro-siting of turbines and infrastructure to take into account site-specific environmental issues and minimise on-ground ecological impacts. Seasonal survey requirements and species considered likely to utilise the resources present have been identified in *Annex B*. Factors that will be considered include:

- areas of native vegetation, particularly those that are in good condition and/or meet the description of an EEC or CEEC;
- habitat features for native fauna, including hollow bearing trees, exposed rock and native tussock grassland;
- wildlife corridors; and
- potential flight paths of bird and bat species that fly within the rotor swept area.

4.5 *HERITAGE*

4.5.1 *Indigenous Heritage*

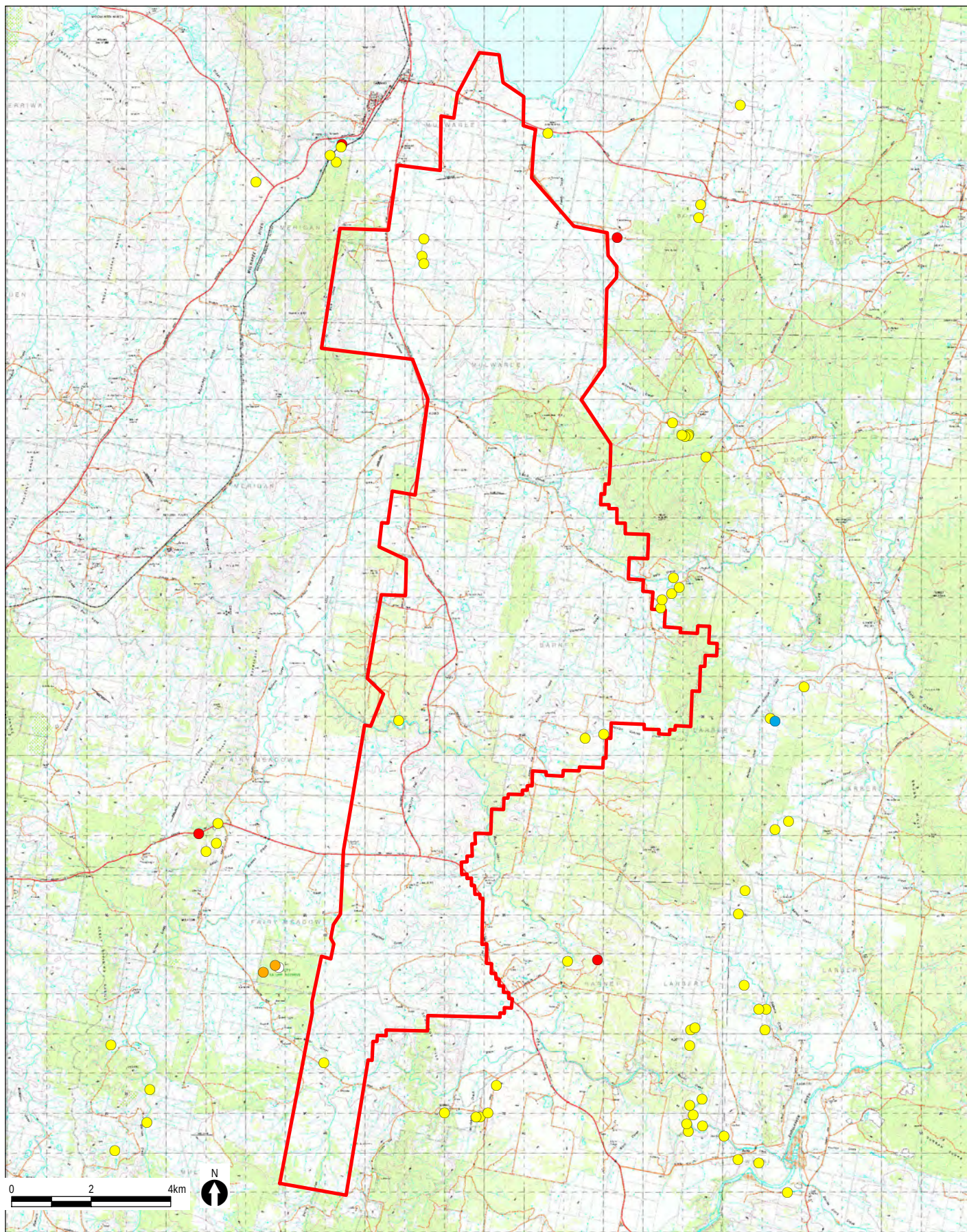
The study area is situated within the South Eastern Highlands Bioregion which is characterised by the dissected ranges and plateau of the Great Dividing Range. The region generally has a temperate climate with warm summers and no dry season. Soils within the region vary from mottled red and yellow texture contrast soils on Palaeozoic slates, sandstones and volcanics to shallow red earths on ridges and yellow texture contrast soils on slopes overlying granites and deep coarse sands within alluvial deposits.

Various types of flora and fauna occur across the region and would have provided subsistence resources and shelter to hunter gatherers during prehistoric times (NSW NPWS 2003).

A search of the Aboriginal Heritage Information Management Systems (AHIMS) database was undertaken by Janene May, ERM Archaeologist, on 4 November 2013. This search identified 70 Indigenous heritage sites located within an area of approximately 25km by 35km centred on the PA. These sites include 62 stone artefact scatters (89%), 4 isolated stone artefacts (6%), 3 culturally modified trees (scarred or carved) (4%) and 1 shelter with art and an archaeological deposit (1%).

Seven of the previously recorded AHIMS sites have been found within the study area. One site has been found on the boundary of the study area. These sites all consist of stone artefact scatters. These sites mostly occur within open paddocks and within 200m of a water course.

The majority of locally recorded stone artefact sites are on flat to gently sloping terrain or on elevated flat terrain or slopes situated within 400m of a watercourse. Several modified trees have also been recorded within the Scott Nature Reserve, which is located immediately to the west of the study area within elevated flat and sloping landforms.



Legend

- Isolated Find
- Modified Tree (Carved or Scarred)
- Open Camp Site
- Shelter with Art, Shelter with Deposit
- Other
- Boundary_poly

Client: Jupiter Wind Farm
 Drawing No: 0223522s_PEA_G001_R0.mxd
 Date: 06/11/2013 Drawing Size: A4
 Drawn By: DR Reviewed By: JM

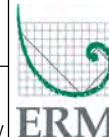
This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

Figure No. 4.5 - Previously Identified Aboriginal Heritage Sites

Jupiter Wind Farm PEA

Environmental Resources Management ANZ

Auckland, Brisbane, Canberra, Christchurch,
 Hunter Valley, Melbourne, Perth, Port Macquarie, Sydney



4.5.2

Conclusions and Further Assessment

Given the potential for the development to impact upon undiscovered Aboriginal objects or places, the following tasks should be undertaken as part of an Aboriginal Cultural Heritage Assessment:

- consultation with the local Aboriginal community in accordance with OEH 2010 Aboriginal Heritage Consultation Requirements for proponents 2010;
- targeted archaeological surveys to identify and record previously unrecorded sites which could be impacted by the development;
- significance and impact assessment of all identified sites within the study area to determine if any damage will occur as part of the proposed development; and
- development of mitigation and management recommendations to manage any potential impacts.

The Aboriginal Cultural Heritage Assessment and Archaeological Report will be prepared in accordance with the OEH 2010 *Code of Practice for the investigation of Aboriginal Objects in NSW* and OEH 2010 *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*.

4.5.3

Non-Indigenous Heritage

A search of the following heritage databases was undertaken on the 5 November 2013 to determine whether non-Indigenous heritage items have been recorded within the study area. The results are outlined below.

Commonwealth Heritage List

There are no heritage items in or in the immediate vicinity of the study area listed on the CHL.

State Heritage Register

Tarago Railway Station is located 1km to the west of the northern portion of study area and is listed as an item of State Heritage Significance (Item 5012238).

In the general region within the townships of Bungendore and Braidwood there are also several historic items reflecting early use of the region including early homesteads, outbuildings (stables etc.) and railway stations.

The northern portion of the PA falls within the jurisdiction of the GMLEP 2009. There are no heritage items occurring within the study area listed in the GMLEP 2009. Two heritage items identified in GMLEP are however located within the vicinity of the study area as listed below.

- Tarago Railway Station - located 1km to the west of the northern portion of study area (Item 335); and
- The Loaded Dog Hotel and Outbuildings - approximately 1km to the east of the northern portion of study area (Item 336).

Tarago Railway Station is also listed Searches of the historic heritage database above indicate that there are no previously recorded items of historic heritage significance within the PA. This may be the result of a lack of previous survey and assessment, rather than an accurate reflection of the archaeological record.

4.5.4 Conclusions and Further Assessment

A search of relevant databases for known non-Indigenous heritage items was undertaken on the 5 November 2013. No items were found to be located within the PA. The historical development of the study area and its surroundings indicates that there may be some evidence of early agricultural activities or structures and features associated with the Gold Rush in the region. Examination of aerial imagery and previous land disturbances associated with agricultural activities suggest that it is unlikely that previously unknown historic heritage items would be encountered during the construction of the Jupiter Wind Farm. However, the following will be undertaken as a precautionary measure to avoid potential impacts:

- a field inspection of areas that will be impacted by the development to confirm whether historic heritage values are present within the development footprint and to avoid potential impacts;
- preparation of a heritage impact statement as part of an EIS for the Jupiter wind farm, which considers the impact or otherwise of the Project on the nearby heritage items , including Tarago Railway Station and The Loaded Dog Hotel and Outbuildings; and
- proposed management measures in the event that non-Indigenous relics are encountered during works.

Noise generated from WTG rotation and the consequential amenity impacts to nearby receptors is a common issue associated with wind farm developments in populated areas.

Appendix B of the *Draft NSW Planning Guidelines: Wind Farms, December 2011* includes the NSW wind farm noise guidelines (the draft guidelines) with the objective to provide the guidance on how to measure and assess environmental noise impacts from wind farm developments. The guidelines closely follow the methodologies outlined in the South Australian Environment Protection Authority *Wind Farms_ Environmental Noise Guidelines (2003)*. (South Australian EPA Guidelines), which has been commonly used to assess wind farm noise throughout Australia. The principal noise criteria specified in the guidelines is that wind farm noise should not exceed 35dB(A) or the background noise¹ (L₉₀) by more than 5dB(A). An environmental noise impact assessment will be undertaken for the proposed JWF in accordance with South Australian guidelines 2003, if the draft NSW Wind Farm Guidelines are not finalised. The noise assessment will generally include the following:

- the identification of noise receptor locations (occupied residences) in proximity to the wind farm development;
- baseline noise monitoring at receptor locations;
- preliminary estimates of wind farm noise at receptor locations using specialised computer software; and
- the application of the noise criteria specified in the draft guidelines to establish compliance at each receptor location.

A traffic and transport assessment will be undertaken, taking into consideration environmental issues associated with transport of equipment to site, site construction vehicles and operational traffic impacts.

The assessment will also consider potential impacts on local and regional roads including the road network and intersection operations, road safety and structural pavement integrity of roads and bridges. The means of access to individual properties will also be. Requirements for dilapidation surveys for post-construction road network reinstatement and repairs will also be addressed.

¹ L₉₀, often referred to as the background noise level (dB(A)) is the noise level exceeded for 90% over a given measurement time.

The Project is located in a typical rural landscape with no large scale visual disturbance aside from agricultural clearing and cropping. There are potential visual impacts associated with the construction and operation of the wind farm through the alteration of the landscape.

A detailed visual assessment will be undertaken to assess potential visual impacts associated with the Project. The detailed visual assessment will include:

- defining the view shed and identifying publicly accessible locations to be assessed;
- preparation of photomontages;
- a detailed impact assessment including a zone of visual influence analysis and assessment of community attitudes; and
- assessment of potential cumulative visual impacts that wind farm infrastructure may impose.

A hydrological assessment will be prepared to assess baseline surface and groundwater conditions and determine potential impacts associated with the Project.

Surface water bodies are limited to small private dams with ephemeral surface water bodies extending throughout the PA. Steady flow rates have been previously observed in Reedy Creek, which passes through the PA.

Key risks associated with the Project are anticipated to be associated with erosion and sedimentation during the establishment of access trails for the construction and installation of each turbine. The extent of ground disturbance compared to the overall PA is relatively small and the placement of WTGs will be selected so as to minimise clearing of vegetation. Further, management measures will be clearly defined to adequately manage potential erosion and sedimentation impacts during construction.

An electromagnetic interference (EMI) assessment and an electromagnetic fields (EMF) assessment will be undertaken as part of the EIS.

It will involve preparation of a detailed desktop assessment of existing electromagnetic services within the project area and recommend methods to avoid and/or mitigate potential impacts to telecommunications services during the construction and operation of the wind farm.

4.11 HAZARDS AND RISK

4.11.1 Bushfire Risk

Although the risk of generation of bushfire from WTGs and other wind farm infrastructure is typically low, a desktop bushfire risk assessment will be undertaken to address the issues outlined in the *Draft NSW Planning Guidelines: Wind Farms, December 2011*. The bushfire risk assessment will be undertaken in accordance with the guidelines and will consider potential impacts of aerial fire fighting from WTG placement through consultation with the Rural Fire Service (RFS).

Whilst not specifically relevant to this Project, the overarching principals of *Planning for Bushfire Protection* (NSW Rural Fire Service, 2006) will be considered and applied to the bushfire assessment.

4.11.2 Aviation Safety

Wind farm developments have the potential to impact on aviation safety through:

- the placement of wind turbines in proximity aerial flight paths;
- proximity to airports, Department of Defence Facilities and private landing strips; and
- potential hindrance to the aerial application of agricultural spraying and crop dusting activities.

An aeronautical impact assessment and qualitative risk assessment will be undertaken in accordance with the standards specified by Airservices Australia in the circular *Airservices Aviation Assessments for Wind Farm Development-5 March 2012* and will address the requirements outlined in the *NSW Planning Guidelines: Wind Farms, December 2011*.

4.11.3 Blade Throw

An assessment of the potential risk of blade throw involving wind turbine blades breaking or dislodging during operation will be undertaken having regard to the considerations outlined in the *NSW Planning Guidelines: Wind Farms, December 2011*.

The Project will provide additional employment opportunities and demand for local goods and services throughout Goulburn Mulwaree and Palerang LGA's, particularly during the construction phase. Whilst it is difficult to quantify the monetary investment in the region, it is expected that local contracting and manufacturing services will be utilised during construction such as earthworks, electrical cabling, steel works and increased demand for accommodation for the construction work force.

An assessment of the social and economic issues will be undertaken and will address:

- potential impact on mining leases (if any) with the PA;
- impact on local property prices with particular focus on any dwellings within 2 km of any proposed WTG; and
- economic benefits to the local community.

Concerns about wind farm developments and their potential links to human health impacts generally focus on the following:

- audible and inaudible noise;
- shadow flicker;
- blade glint;
- night lighting (if required); and
- electro-magnetic fields.

The *NSW Draft Planning Guidelines: Wind Farms, December 2011* require that Proponents consider potential human health impacts, focusing on neighbours' houses within 2 km of proposed WTG locations.

Whilst much of the available literature suggests there is no direct link between wind farm developments and human health impacts, the EIS will consider the requirements outlined in the Draft Guidelines with reference to:

- up to date evidence-based research;

- the predicted level of impact from the wind farms including impacts from noise, shadow flicker, blade glint, night lighting, electric and magnetic fields; and
- consultation undertaken regarding health issues and concerns.

4.14

CUMULATIVE IMPACTS

An assessment of potential cumulative impacts will be undertaken and addressed in the EIS for the Project. Based on the current available literature this will likely include an assessment of potential cumulative:

- visual impacts resulting from additional built infrastructure including wind farm in the region;
- traffic impacts (particularly during construction)
- noise impacts; and
- ecological impacts particularly regarding avifauna including bat species.

The cumulative impact assessment will have a particular focus on the nearby Woodland and Capital Wind Farm's I and II and the Capital Solar Farm. Other permitted wind farms or other significant developments will also be considered as part of the cumulative assessment.

4.15

DECOMMISSIONING AND REHABILITATION

In accordance with the *NSW Draft Planning Guidelines: Wind Farms, December 2011*, a draft Decommissioning and Rehabilitation Plan will be prepared and included as an annexure to the EIS.

SUMMARY OF PROPOSED SURVEYS AND ASSESSMENTS

A summary of the proposed surveys and investigations to be undertaken as part of the development of the EIS is outlined in *Table 5.1*.

Table 5.1 *Summary of the Survey and Assessment Strategy*

Issue	Description
<i>Ecology</i>	Specialist report prepared by consultants drawing on the findings from the initial desktop ecological survey and additional surveys required to adequately assess the presence and potential impacts to threatened species. Consultation with the NSW OEH will also be undertaken to verify the adequacy of the survey methodology prior to field investigations being undertaken.
<i>Heritage (Indigenous and non-Indigenous)</i>	Specialist report prepared by consultants to include field surveys and consultation.
<i>Noise</i>	Specialist noise assessment undertaken by consultants in accordance with the South Australian Environment Protection Authority Wind Farms_ Environmental Noise Guidelines (2003).
<i>Landscape and Visual Assessment</i>	Specialist landscape and visual impact assessment to be undertaken by consultants. This will include photomontages of wind farm infrastructure from key receptor locations.
<i>Hydrology and Soils</i>	It is anticipated that a specialist consultant will be engaged to undertake a hydrological assessment of the PA.
<i>Telecommunications</i>	Specialist consultant will be engaged to prepare an assessment of potential impacts to telecommunication services within the vicinity of the Project.
<i>Blade Throw</i>	Potential risk of blade throw involving wind turbine blades breaking or dislodging during operation
<i>Aviation Safety</i>	Specialist consultant will be engaged to prepare an aeronautical impact assessment and qualitative risk assessment in accordance with the <i>Airservices Aviation Assessments for Wind Farm Development- 5 March 2012</i> .
<i>Bushfire Risk</i>	Desktop review and consultation will be undertaken.
<i>Social and Economic Issues</i>	Desktop review will be undertaken.
<i>Decommissioning and Rehabilitation Plan</i>	A preliminary plan will be prepared and included as an annexure to the EIS.
<i>Stakeholder Engagement and Community Consultation</i>	Initial community consultation for land owners within 2km and those within the broader locality have been consulted. Once a draft wind farm layout has been finalised, further consultation, by way of a number of methods, will be undertaken for the project, see <i>section 7 for further details</i> .

6.1 INTRODUCTION

EPYC is committed to engaging with the community and key stakeholders throughout the life of the Project, and in particular through the environmental assessment phase, to assist in developing a robust project design.

The objectives for the community and stakeholder consultation are to:

- ensure stakeholders are given the opportunity to raise any concerns and issues through a variety of accessible platforms and to have these concerns addressed and responded to by EPYC or an informed delegate; and
- ensure stakeholders are regularly updated on key Project information through a variety of accessible sources.

6.2 DRAFT NSW PLANNING GUIDELINES: WIND FARMS 2011

As mentioned previously, the NSW Government has released the *Draft NSW Planning Guidelines: Wind Farms, December 2011*. With regard to community consultation, the Draft Guidelines outline the following key requirements:

- for the applicant to form a Community Consultative Committee to provide for early input in the assessment process, during the application process and maintain effective communication throughout the construction and operation. In accordance with Draft Guidelines, the membership of the committee will comprise an independent chairperson; five to seven representatives of the local community and other stakeholders; one representative of the local council; and two representatives of the proponent;
- to demonstrate in the EIS that effective consultation has occurred prior to lodgement of the application and that issues raised as a result have been addressed in the assessment; and
- for the department to exhibit the development application for a minimum of 60 days instead of the minimum statutory period of 30 days.

EPYC is committed to establishing a comprehensive program of community consultation in accordance with the Draft Guidelines and will incorporate feedback from the community into the design of the Project wherever feasible.

The overarching aim for a successful consultative design is to ensure that stakeholder views, concerns and inputs are considered in the Project design phase and planning phase and throughout the Projects' implementation. A Stakeholder Consultation Framework is under preparation for the Project, which will guide the consultation process through its Project design, environmental assessment process.

6.3.1*Consultation with Government Agencies*

EPYC and the broader Project team will liaise closely with relevant State Agencies, and if appropriate, Federal government departments, to ensure that the EIS, specialist reports and Project design meets key agency and statutory requirements. This will predominantly include face-to-face meetings, telephone conversations, e-mail and written correspondence.

Key government agencies that will be routinely consulted throughout the Project will include but not limited to:

- NSW Office of Environment and Heritage;
- Palerang Council;
- Goulburn Mulwaree Council;
- Upper Shoalhaven Catchment Management Authority;
- NSW Rural Fire Service;
- NSW Department of Primary industries;
- NSW Department of Trade and Investment, Regional Infrastructure and Services;
- NSW Roads and Maritime Service;
- NSW Department of Health;
- NSW Work Cover;
- Department of Sustainability, Environment, Water Population and Communities (DSEWPaC);
- Civil Aviation Safety Authorities
- Airservices Australia;

- Department of Defence;
- Aerial agriculture society of Australia; and
- other state and federal agencies.

6.3.2 *Community Consultation*

As previously mentioned, a Stakeholder Consultation Framework is currently being developed to guide consultation throughout the EIS process. The Stakeholder Consultation Framework includes the consultative requirements outlined in the *Draft NSW Planning Guidelines: Wind Farms, December 2011*. The framework will address the procedure for the provision of open and transparent communication and ensure:

- the local community and other stakeholders have access to information about the Project and its potential impacts on their livelihood and the local environment;
- adequate mechanisms are provided for participation of stakeholders in the Project design and environmental assessment process and for ongoing communication and feedback; and
- stakeholder issues and concerns are identified and appropriately managed and responded to.

6.3.3 *Consultation undertaken to date*

The design of the wind farm and siting of WTGs is currently being prepared, based on the current PA, it is estimated that there are 38 dwellings within 2km of the PA. As part of the final design environmental impacts will be considered, with avoidance the first principle adopted with those properties within 2km, whilst it should be recognised that it is unlikely that WTGs will be sited on the boundary of the site, thereby likely to significantly reduce the actual number of properties that will be located within 2km of the actual WTGs. It is also EPYC's practice to attempt to incorporate properties within 2km into the project and PA, and where not feasible, provide alternative benefits to those land owners (dwellings).

As part of its commitment to community consultation, EPYC also distributed 184 project information packs to landowners within and in the vicinity of the site boundary, up to approximately 5km from the PA. As a consequence of the distribution of the information packs, 60 landowners have contacted the EPYC project office, and either registered for further information on the Project, or sought an interest in hosting WTGs. In addition to the distribution of information packs, EPYC conducted a number of one on one meetings with land owners, including where requested small group sessions with land owners.

At one of the resident group sessions, EPYC had 45 persons from properties within the vicinity of the site attend this meeting.

As a consequence of the direct consultation with land owners within 2km of the PA, follow up meetings and group sessions with land owners, the following response was received:

- 24% of residences within 2km of the PA declared an interest and support for the project, with further consultation, including some which have entered into lease agreements with EPYC to be included within the project;
- 5% owners have registered that they are not interested in the project or objected;
- 34% of the information packs were returned to sender due to address on title document not being a deliverable one; and
- 37% have received info packs but did not register their views on the project.

Of the 34% of the information packs that were distributed to properties within 2km, that were 'returned to sender', EPYC attempted to personally deliver remaining information packs as part of ongoing land surveys and consultation within the PA. As a number of the nearby properties do not have mailboxes or dwellings located on the land, it has been difficult to gain contact with these land owners. EPYC will seek contact details where possible with the Councils to see if they are able to provide such information to assist in contacting unoccupied properties.

As the turbine layout continues to be developed and where dwellings that are not involved in the project are clearly identified, those landowners within 2km of the PA will continue to be directly consulted through a combination of letter notifications and follow up one on one meetings with EPYC representatives. Ideally properties containing dwellings within 2km of WTGs will be included as involved dwellings for the purposes of the Project, alternatively EPYC will endeavour to secure a neighbour/Benefit sharing agreement with any landowner who has an existing dwelling/residence within 2km of a proposed turbine. As the project design evolves, EPYC will be able to identify potential impacts upon adjoining properties, and they have committed to actively mitigate any real or perceived environmental impacts in consultation with land owners.

EPYC have also attended the United Farmers Organisation monthly meeting in July 2012. During the meeting, EPYC gave a brief presentation of the Project and were available to answer questions raised by the attendees.

EPYC have also undertaken preliminary consultation by way of a Project overview with representatives of Palerang and Goulburn Mulwaree Councils. Discussions and briefings with Council staff and the elected Councillors will continue through the environmental assessment stage and during SSD assessment.

6.3.4 *Future Consultation*

EPYC are committed to undertaking a comprehensive and transparent community consultation program for the Project, with the initial step of identifying key stakeholders on the basis of the potential direct and indirect impacts they may experience as a result of the Project, as well as their level of interest in the Project. The consultation is envisaged to encompass four stages, as follows:

Stage 1 – (Completed) – preliminary consultation prior to submission of the Director General Request (DGR) for the Project to the DP&I;

Stage 2 – consultation that will occur during the preparation of the EIS;

Stage 3 – consultation that will occur during the exhibition of the SSD application for the Project; and

Stage 4 – consultation during the construction and delivery of the Project.

Community consultation tools to be used during Stage 2 will include:

- further briefings to Goulburn Mulwaree and Palerang Councils;
- distribution of newsletters to dwellings/businesses within 5-10km of the Project, providing information and inviting comment;
- development of a Project specific webpage, to provide Project information and a platform for enquires to be made and responded to; and
- a community drop in session in the first or second quarter of 2014 at a local venue, to provide an opportunity for local residents to gain information and discuss concerns with the project team.

A more intensive form of consultation will take place with any property (residence) which is likely to be located within 2km of a WTG. This will include further direct correspondence to those land owners, continued door knocking of those properties, to both include and identify such properties, but also to speak directly with land owners. This will recommence once EPYC will have a draft turbine layout, in which they will be able to confidently discuss the project implications with such land owners, whereas to date, such information has not been available to the project team.

A range of other tools and activities will be used for the broader community and stakeholder consultation and engagement during the remaining stages of the project, and may include a door knock of the area, additional community drop in sessions, targeted focus group sessions and ongoing distribution of project newsletters.

An overview of the timeframe for ongoing community and stakeholder consultation is provided in *Table 6.1* below.

Table 6.1 ***Summary of Initial and Proposed Community Consultation Activities***

Proposed Activity	Timeframe
Further direct consultation with any property (residence) within 2km of the PA – once an initial wind farm layout is prepared. Consultation to include direct letters with relevant project information and one on one meetings and door knocking with land owners where able to be carried out.	1 st quarter 2014
Further Project presentation to Goulburn Mulwaree and Palerang Councils.	1 st -2 nd quarter 2014
Project briefing/notification to State and Local Members of Parliament (MP’).	1 st -2 nd quarter 2014
Focus group meetings with relevant State and if appropriate, Federal Government Agencies.	Ongoing from January 2014
Distribution of the project newsletter.	1 st quarter 2014
Implementation of Project email address and webpage	January 2014
Initial Project information drop in session.	1 st -2 nd quarter 2014
Establish Community Consultative Committee	1 st -2 nd quarter 2014

CONCLUSION

EPYC is proposing to construct the Jupiter Wind Farm comprising up to 100 WTGs, transmission lines and ancillary infrastructure, approximately 5 km southeast of the township of Tarago in the Southern Tablelands region of New South Wales. Given the project exceeds the threshold level capital investment value of \$30 Million AUD, the Project classifies as SSD in accordance with clause 20 of schedule 1 the *State Environmental Planning Policy (State and Regional Development) 2011*. Through the submission of this report, which includes a preliminary assessment of environment issues relevant to the Project, EPYC is seeking DGRs from the NSW DP&I to proceed with the development application process under Part 4 of the EP&A Act and prepare a comprehensive EIS.

Department of Planning and Infrastructure (DP&I) (2011). **Draft NSW Planning Guidelines: Wind Farms**. December 2011.

Annex A

Vegetation Community Descriptions

Vegetation Community	General Description ¹	Floristic Summary ¹	Vegetation Type Source Profile (Hawkesbury Nepean and Southern Rivers CMA) ²
Eastern Tablelands Dry Forest	Eastern Tablelands Dry Forest is an open eucalypt forest with an open understorey of sclerophyll shrubs, sedges and forbs. It occurs on ridges, primarily on the eastern edge of the Southern Tablelands between Joadja and Braidwood, and less frequently further west in the area between the Cookbundoon Range and Lake Bathurst. Eastern Tablelands Dry Forest is found on sandy-loams derived from fine or coarse grained sedimentary rocks, at elevations of 550 – 900m ASL. Eastern Tablelands Dry Forest occurs mainly as residual vegetation on poor soils in rural landscapes and has been depleted in some areas by land clearing, rough-country grazing and frequent fires.	Trees: <i>Eucalyptus sieberi</i> , <i>E. agglomerata</i> . Shrubs: <i>Persoonia linearis</i> , <i>Allocasuarina littoralis</i> , <i>Hibbertia obtusifolia</i> , <i>Stypandra glauca</i> Climbers: <i>Billardiera scandens</i> . Groundcover: <i>Goodenia hederacea</i> , <i>Pomax umbellata</i> , <i>Lomandra obliqua</i> , <i>Microlaena stipoides</i> .	HN583/SR624: Silvertop Ash - Blue-leaved Stringybark shrubby open forest on ridges, north east South Eastern Highlands
Western Tablelands Dry Forest	Western Tablelands Dry Forest is a low eucalypt forest with an open understorey of sclerophyll shrubs, grasses and forbs. It is widely distributed on dry ridges in the Southern Tablelands between Wallerawang and Captains Flat, at elevations 550 – 1150m ASL and where average annual rainfall is 670 – 920mm. Western Tablelands Dry Forest covers broad areas in the rocky hills to the west of the Great Dividing Range north of Goulburn, where it grades into Abercrombie-Tarlo Foothills Woodland on hill footslopes. Elsewhere, it may co-occur with Tableland Grassy Box-Gum Woodland, which occupies more gently undulating land with deeper loamy soils. Large areas have been cleared or used for rough-country grazing. A large portion of the vegetation in the PA has been mapped as Western Tablelands Dry Forest.	Trees: <i>Eucalyptus macrorhyncha</i> , <i>E. mannifera</i> , <i>E. rossii</i> , <i>E. dives</i> . Shrubs: <i>Hibbertia obtusifolia</i> , <i>Brachyloma daphnoides</i> , <i>Daviesia leptophylla</i> . Groundcover: <i>Gonocarpus tetragynus</i> , <i>Lomandra filiformis</i> subsp. <i>coriacea</i> , <i>Poa sieberiana</i> , <i>Goodenia hederacea</i> , <i>Dianella revoluta</i> , <i>Joycea pallida</i> , <i>Hovea linearis</i> .	HN570: Red Stringybark - Brittle Gum - Inland Scribbly Gum dry open forest of the tablelands, South Eastern Highlands. SR600: Red Stringybark - Brittle Gum - Inland Scribbly Gum dry open forest on skeletal hills of the tablelands, South Eastern Highlands.
Tableland Ridge Forest	Tableland Ridge Forest is a eucalypt forest with an open understorey of sclerophyll shrubs, forbs, sedges and grass, found at elevations from 600 to 1200m ASL along drier parts of the Great Diving Range receiving 700 – 1100mm mean annual rainfall. It occurs from Hartley to Big Badja, primarily on sandy-loams derived from sedimentary, acid-volcanic or, more rarely, granitic substrates. Tableland Ridge Forest often co-occurs with Cool Montane Wet Forest, with the former occupying ridgetops and dry slopes and the latter found on deeper, moister loam soils. While large areas of Tableland Ridge The southern part of the distribution (south of Goulburn) has been reduced by some land clearing and some remnants are subject to rough grazing on the footslopes of ridges in rural landscapes.	Trees: <i>Eucalyptus sieberi</i> , <i>E. radiata</i> . Shrubs: <i>Hibbertia obtusifolia</i> , <i>Persoonia linearis</i> , <i>Leucopogon lanceolatus</i> , <i>Monotoca scoparia</i> . Groundcover: <i>Gonocarpus tetragynus</i> , <i>Pteridium esculentum</i> , <i>Lomandra longifolia</i> , <i>Dianella revoluta</i> , <i>Poa sieberiana</i> .	HN584/SR628: Silvertop Ash - Narrow-leaved Peppermint open forest on ridges of the eastern tableland, South Eastern Highlands and South East Corner.

Vegetation Community	General Description ¹	Floristic Summary ¹	Vegetation Type Source Profile (Hawkesbury Nepean and Southern Rivers CMA) ²
Frost Hollow Grassy Woodland	Frost Hollow Grassy Woodland is a low open eucalypt woodland with a sparse shrub layer and dense, diverse groundcover of grasses and forbs. In some areas the trees may have been so sparse that the community had a grassland structure, however these patterns are now difficult to discern given extensive clearing of this vegetation. Frost Hollow Grassy Woodland is found between Abercrombie and the Monaro tableland south of Bombala, within a mean annual rainfall range of 650–950 mm, and probably extends to the west of the study area. Within the study area it occurs from 600–1100m ASL on soils derived from a variety of substrates including fine-grained sedimentary, granite, acid volcanics and alluvium. Frost Hollow Grassy Woodland is typically restricted to broad valley flats of the tablelands where cold air accumulates or frosts occur frequently. It has been extensively cleared and persists almost exclusively as small remnants on grazing properties	Trees: <i>Eucalyptus pauciflora</i> , <i>E. rubida</i> . Groundcover: <i>Themeda australis</i> , <i>Gonocarpus tetragynus</i> , <i>Microlaena stipoides</i> , <i>Hypericum gramineum</i> , <i>Chrysocephalum apiculatum</i> , <i>Poa sieberiana</i> , <i>Asperula conferta</i> , <i>Elymus scaber</i> , <i>Hydrocotyle laxiflora</i> .	HN589/SR637: Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands.
Tableland Lacustrine Herbfield	Tableland Lacustrine Herbfield is a low open ephemeral herbfield. This unit is found at approximately 670 – 750m elevation on deep alluvium subject to alternate wetting and drying periods, on the shores of Lake Bathurst, The Morass, and Breadalbane, Wollogorang and Rows Lagoons south and south-west of Goulburn. Mean annual rainfall is approximately 700-750mm in this area. Tableland Lacustrine Herbfield also occurs on Lake George. The species composition of these herbfields is likely to vary substantially with sequences of wetting and drying. The lake beds have been grazed since the 1820s and consequently the vegetation is now highly modified and includes a large component of exotic species. It is likely that the lake margins originally supported a fringe of emergent perennial plants. This vegetation community only occurs at the northernmost end, where the PA intersects with Lake George.	Groundcover: <i>Wilsonia rotundifolia</i> , <i>Agrostis avenacea</i> , <i>Austrodanthonia duttoniana</i> , <i>A. pilosa</i> , <i>Myriophyllum crispatum</i> , <i>Ranunculus diminutus</i> , <i>Schoenus nitens</i> , <i>Selliera radicans</i> , <i>Spergularia marina</i> .	HN546: Lakebed ephemeral herbfield on the tablelands, Sydney Basin and South Eastern Highlands
Tableland Low Woodland	Tableland Low Woodland is a low eucalypt woodland with an open understorey of sclerophyll shrubs, sedges, grass and forbs. It occurs on low ridges on the southern tablelands from Canyonleigh to Braidwood on sandy loam soils derived primarily from fine-grained sedimentary rocks. Tableland Low Woodland is found on dry parts of the tableland receiving 650-800mm mean annual rainfall, at elevations of 550 - 800m ASL. In moister areas or on slightly deeper soils it is replaced by Eastern Tablelands Dry Forest. About half of its original extent has been cleared, and very little is represented within conservation reserves. A large portion of the vegetation in the PA has been mapped as Tableland Low Woodland.	Trees: <i>Eucalyptus rossii</i> , <i>E. mannifera</i> . Shrubs: <i>Brachyloma daphnoides</i> , <i>Persoonia linearis</i> , <i>Hibbertia obtusifolia</i> , <i>Allocasuarina littoralis</i> , <i>Melichrus urceolatus</i> . Groundcover: <i>Goodenia hederacea</i> , <i>Lepidosperma gunnii</i> , <i>Dianella revoluta</i> , <i>Lomandra obliqua</i> , <i>Gonocarpus tetragynus</i> , <i>Joycea pallida</i> , <i>Lomandra multiflora</i> , <i>L. filiformis</i> , <i>Patersonia sericea</i> .	HN543/SR558: Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands

Vegetation Community	General Description ¹	Floristic Summary ¹	Vegetation Type Source Profile (Hawkesbury Nepean and Southern Rivers CMA) ²
Southern Montane Heath	Southern Montane Heath comprises a closed shrub canopy of <i>Allocasuarina nana</i> exceeding 1 m in height, with a variety of other shrubs present at lower densities and a sparse scattering of eucalypt saplings 10 m tall emerging from the shrub canopy. The groundcover comprises scattered tussocks of grasses and graminoids. Southern Montane Heath has a restricted distribution with disjunct occurrences on the western fall of the Budawang Range from Corang to Mongarlowe, along the Bendoura and Minuma Ranges from Bendoura to Snowball and possibly on the Bombalawa and Gourock Ranges in the Hereford Hall area. Further south it occurs on the edge of the Monaro Tableland in the upper Tuross and Numeralla Rivers area in the north-west and the Bombala area in the south-west. Southern Montane Heath occurs on skeletal sandy loams derived from metasedimentary, acid volcanic or granitic substrates. It is typically found on exposed slopes and ridges between 600m to 800m ASL.	Shrubs: <i>Allocasuarina nana</i> , <i>Brachyloma daphnoides</i> , <i>Hakea dactyloides</i> , <i>Monotoca scoparia</i> Groundcover: <i>Austrostipa pubinodis</i> , <i>Gonocarpus tetragynus</i> , <i>Joycea pallida</i> , <i>Lepidosperma gunnii</i> , <i>Lomandra glauca</i> , <i>Stylidium graminifolium</i>	SR541: Dwarf She-oak closed heathland of escarpment ranges, South Eastern Highlands
Tableland Grassy Box Gum Woodland	Tableland Grassy Box-Gum Woodland is a eucalypt woodland with a sparse shrub layer and grassy groundcover. It is found on undulating country on the tablelands between Hartley and Braidwood, and is likely to extend west of the study area. Tableland Grassy Box-Gum Woodland spans elevations from 600 to 900m ASL in areas receiving from 650 – 900mm average annual rainfall. It occurs on loamy soils derived predominantly from fine-grained sedimentary or acid-volcanic substrates, but is also found on granite soils near Hartley and between Woodhouselee and the Breadalbane Plains. Tableland Grassy Box-Gum Woodland has been extensively cleared for pastoral land use. The remnants are distributed almost exclusively on freehold land and are subject to continuing small-scale clearing, grazing and weed invasion.	Trees: <i>Eucalyptus melliodora</i> , <i>E. dives</i> , <i>E. macrorhyncha</i> . Shrubs: <i>Lissanthe strigosa</i> , <i>Melichrus urceolatus</i> . Groundcover: <i>Lomandra filiformis</i> ssp <i>coriacea</i> , <i>Themeda australis</i> , <i>Microlaena stipoides</i> , <i>Gonocarpus tetragynus</i> , <i>Hydrocotyle laxiflora</i> , <i>Poa sieberiana</i> , <i>Austrodanthonia racemosa</i> , <i>Goodenia hederacea</i> .	HN614/SR670: Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands.
Tableland Hills Grassy Woodland	Tableland Hills Grassy Woodland is an open eucalypt forest or woodland with a sparse shrub layer and grassy groundcover. It occurs across the tablelands, primarily between the Abercrombie River district, Berrima and Braidwood, with an outlying area to the north around Hartley. Tableland Hills Grassy Woodland occurs on loamy soils from 550 – 1100m ASL and extends to the northwest and south-west of the study area within a mean annual rainfall band of 650 – 950 mm. This woodland shares several species with Tableland Grassy Box-Gum Woodland. Both communities are found in undulating terrain on the tablelands, although Tableland Hills Grassy Woodland occurs more frequently than Tableland Grassy Box-Gum	Trees: <i>Eucalyptus dives</i> , <i>E. macrorhyncha</i> . Shrubs: <i>Melichrus urceolatus</i> . Groundcover: <i>Microlaena stipoides</i> , <i>Gonocarpus tetragynus</i> , <i>Lomandra filiformis</i> ssp <i>coriacea</i> , <i>Hydrocotyle laxiflora</i> , <i>Hypericum gramineum</i> , <i>Hibbertia obtusifolia</i> , <i>Goodenia hederacea</i> , <i>Oxalis perennans</i> , <i>Austrodanthonia racemosa</i> .	HN514/SR524: Broad-leaved Peppermint - Red Stringybark grassy open forest on undulating hills, South Eastern Highlands

Vegetation Community	General Description ¹	Floristic Summary ¹	Vegetation Type Source Profile (Hawkesbury Nepean and Southern Rivers CMA) ²
Braidwood Dry Forest	Woodland closer to the coast. Where their distributions overlap, Tableland Hills Grassy Woodland is found in more rugged terrain. The extensive original distribution of Tableland Hills Grassy Woodland has been heavily fragmented by clearing and rough grazing. Braidwood Dry Forest is a low eucalypt forest with an open understorey of sclerophyll shrubs, grasses and forbs. It is found on the eastern edge of the Southern Tablelands between Nerriga and Captains Flat, in areas receiving 670 – 900mm mean annual rainfall. Braidwood Dry Forest typically lies on rises in gently undulating terrain with deep sandy loams or coarse sands between 600 and 900m elevation. Braidwood Dry Forest shares several species with Western Tablelands Dry Forest, which has a much wider but non-overlapping distribution to the north and west. About half of the original distribution of Braidwood Dry Forest has been cleared. Most of the remaining area occurs as remnants subject to grazing in rural landscapes, although small areas occur within the south-western fringe of Morton National Park.	Trees: <i>Eucalyptus dives</i>, <i>E. mannifera</i>, <i>E. radiata</i>. Shrubs: <i>Brachyloma daphnoides</i>, <i>Lomatia ilicifolia</i>, <i>Gompholobium minus</i>, <i>Acacia gunnii</i>. Groundcover: <i>Goodenia hederacea</i>, <i>Dianella revoluta</i>, <i>Hovea linearis</i>, <i>Stylidium graminifolium</i>, <i>Gonocarpus tetragynus</i>, <i>Poa sieberiana</i>, <i>Hibbertia obtusifolia</i>, <i>Lomandra multiflora</i>.	SR522: Broad-leaved Peppermint - Brittle Gum shrubby open forest on the eastern tablelands, South Eastern Highlands.
1. Source: Tozer et al 2010. 2. Source: OEH Vegetation Types Database (2012b).			

Annex B

Likelihood of Occurrence of Threatened Flora And Fauna

TABLE B.1 **LIKELIHOOD OF OCCURRENCE TABLE FOR THREATENED FLORA**

Scientific Name	Common Name	TSC Act	EPBC Act	Atlas Record	PMST	Habitat Requirements	Likelihood of Occurrence	Targeted Survey Required
<i>Bossiaea bombayensis</i>	Bombay Bossiaea	V		Y		Bombay Bossiaea grows in the steeply incised valley of the Shoalhaven River, near Braidwood on the Southern Tablelands. It is mainly found on sandy, rocky slopes and terraces above the frequent flood line in a shrubland of <i>Callitris endlicheri</i> , <i>Grevillea arenaria</i> , <i>Lomandra longifolia</i> , <i>Micrantheum hexandrum</i> , <i>Pomaderris andromedifolia</i> and <i>Leptospermum polygalifolium</i> (OEH 2012b).	Unlikely - unsuitable habitat.	No
<i>Bossiaea oligosperma</i>	Few-seeded Bossiaea	V	V	Y	Y	Occurs on stony slopes or ridges on sandstone in the Yerranderie area. Occurs in low woodland on loamy soil in the Windellama area (OEH 2012b).	Potential in woodland areas.	Yes - spring survey in woodland areas.
<i>Caladenia tessellata</i>	Thick-lipped Spider-orchid	E	V		Y	Generally found in grassy sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil. The single leaf regrows each year (OEH 2012b).	Potential in woodland areas.	Yes - spring survey in woodland areas.
<i>Dampiera fusca</i>	Kydra Dampiera	E		Y		The species may germinate in large numbers after fires, rapidly colonising areas and setting seed within two years post-fire. However, few (if any) standing plants are observed in populations 20-30 years post fire. Recorded in montane heath, also amongst rock platform and tors interspersed with closed heath. Habitat in the Canberra area is generally restricted to granite ridgetops and plateaux on very shallow soils supporting heath, scrub and heathy snow gum and/or mallee woodland (OEH 2012b).	Potential in areas of montane heath.	Yes - spring and / or summer surveys in areas of montane heath.
<i>Dillwynia glauca</i>	Michelago Parrot-pea	E		Y		Occurs on exposed patches of clay or on rocky outcrops in eucalypt woodland often dominated by Scribbly Gum (<i>Eucalyptus rossii</i>), Snow Gum (<i>E. pauciflora</i>), Broad-leaved Peppermint (<i>E.dives</i>) and Red Stringybark (<i>E. macrorhyncha</i>). The understorey may be either grassy or shrubby. Grows adjacent to Natural Temperate Grassland in the Michelago area (OEH 2012c).	Potential in woodland areas.	Yes - spring survey in woodland areas.

Scientific Name	Common Name	TSC Act	EPBC Act	Atlas Record	PMST	Habitat Requirements	Likelihood of Occurrence	Targeted Survey Required
<i>Diuris aequalis</i>	Buttercup Doubletail	E	V	Y	Y	Occurs in forest, low open woodland with grassy understorey and secondary grassland on the higher parts of the Southern and Central Tablelands (especially on the Great Dividing Range) (OEH 2012c).	Known, records within the PA.	Yes - surveys required within the October-November flowering period in woodland and native grassland.
<i>Dodonaea procumbens</i>	Creeping Hop-bush	V	V	Y	Y	Grows in Natural Temperate Grassland or fringing eucalypt woodland of Snow Gum (<i>Eucalyptus pauciflora</i>). Grows in open bare patches where there is little competition from other species. Found on sandy-clay soils, usually on or near vertically-tilted shale outcrops. Often occurs on roadside batters. Does not persist in heavily grazed pastures of the Monaro (OEH 2012c).	Potential in woodland and native grassland areas.	Yes - spring survey in woodland and native grassland.
<i>Eucalyptus aggregata</i>	Black Gum	V		Y		Grows in the lowest parts of the landscape. Grows on alluvial soils, on cold, poorly-drained flats and hollows adjacent to creeks and small rivers. Often grows with other cold-adapted eucalypts, such as Snow Gum or White Sallee (<i>Eucalyptus pauciflora</i>), Manna or Ribbon Gum (<i>E. viminalis</i>), Candlebark (<i>E. rubida</i>), Black Sallee (<i>E. stellulata</i>) and Swamp Gum (<i>E. ovata</i>). Black Gum usually occurs in an open woodland formation with a grassy groundlayer dominated either by River Tussock (<i>Poa labillardierei</i>) or Kangaroo Grass (<i>Themeda australis</i>), but with few shrubs. Also occurs as isolated paddock trees in modified native or exotic pastures. Many populations occur on travelling stock reserves, though stands and isolated individuals also occur on private land (OEH 2012c).	Potential in areas supporting Frost Hollow Grassy Woodland or areas that once supported this vegetation community.	Yes - survey of woodland areas and paddock trees at any time of year.

Scientific Name	Common Name	TSC Act	EPBC Act	Atlas Record	PMST	Habitat Requirements	Likelihood of Occurrence	Targeted Survey Required
<i>Eucalyptus recurva</i>	Mongarlowe Mallee	E	E	Y	Y	Found in shallow soils on gentle slopes in low heathland and in some cases at the margins of the heathland and adjacent low woodland; the woodlands are dominated by Brittle Gum (<i>Eucalyptus mannifera</i>) and Snow Gum (<i>E. pauciflora</i>), but scattered Candlebark (<i>E. rubida</i>) and Broad-leafed Peppermint (<i>E. dives</i>) trees are also nearby at some sites; in the Mongarlowe area the heathland is dominated by Stunted She-oak (<i>Allocasuarina nana</i>), with emergent shrubs of Finger Hakea (<i>Hakea dactyloides</i>) (OEH 2012c).	Potential in woodland and heathland.	Yes – survey of woodland and heathland areas at any time of year.
<i>Grevillea acanthifolia</i> subsp. <i>paludosa</i>	Bog Grevillea	E	E		Y	Bog Grevillea is found, as the name implies, in peaty swamps. Within such habitat it grows on densely vegetated low hummocks. The larger known population consists solely of old plants of similar age. The species is bird-pollinated and, although seed is set, no seedlings are apparent (OEH 2012b).	Unlikely – unsuitable habitat.	No
<i>Leucochrysum albicans</i> var. <i>tricolor</i>	Hoary Sunray		E	Y	Y	The Hoary Sunray occurs at relatively high elevations in woodland and open forest communities, in an area roughly bounded by Goulburn, Albury and Bega. The species has been recorded in the Yass Valley, Tumut, Upper Lachlan, Snowy River and Galong (DoE 2010).	Potential in woodland areas and roadsides.	Yes – spring survey in woodland and roadsides.
<i>Pelargonium</i> sp. (G.W. Carr 10345)	Omeo Storksbill	E	E	Y	Y	It has a narrow habitat that is usually just above the high-water level of irregularly inundated or ephemeral lakes, in the transition zone between surrounding grasslands or pasture and the wetland or aquatic communities. It sometimes colonises exposed lake beds during dry periods (OEH 2012c).	Potential within the northern portion of the PA in the vicinity of Lake Bathurst.	Yes – spring and / or summer surveys in areas adjacent to Lake Bathurst.
<i>Phyllota humifusa</i>	Dwarf Phyllota	V	V		Y	The species occurs in dry sclerophyll forest, sometimes near swamps, in deep sandy soils or gravely loams over a sandstone substrate. Accompanying trees are often Brittle Gum <i>Eucalyptus mannifera</i> , Narrow-leafed Peppermint <i>E. radiata</i> or Sydney Peppermint <i>E. piperita</i> (OEH 2012c).	Potential in woodland areas.	Yes – late spring and summer surveys in woodland areas.

Scientific Name	Common Name	TSC Act	EPBC Act	Atlas Record	PMST	Habitat Requirements	Likelihood of Occurrence	Targeted Survey Required
<i>Pomaderris delicata</i>	Delicate Pomaderris	E		Y		At both known sites the Delicate Pomaderris grows in dry open forest dominated by <i>Eucalyptus sieberi</i> with a dense she-oak understorey. Soils are shallow and derived from sandstone and siltstone. Nothing is known about the response of the species to fire and other disturbance (OEH 2012c).	Potential in woodland areas.	Yes – spring survey in woodland.
<i>Pomaderris pallida</i>	Pale Pomaderris	V	V	Y	Y	This species usually grows in shrub communities surrounded by Brittle Gum (<i>Eucalyptus mannifera</i>) and Red Stringybark (<i>E. macrorhyncha</i>) or <i>Callitris</i> spp. Woodland (OEH 2012c).	Potential in woodland areas.	Yes – spring survey in woodland.
<i>Pultenaea pedunculata</i>	Matted Bush-pea	E		Y		The Matted Bush-pea occurs in a range of habitats. NSW populations are generally among woodland vegetation but plants have also been found on road batters and coastal cliffs. It is largely confined to loamy soils in dry gullies in populations in the Windellama area. The ability of stems to creep and root from the nodes has made this species a very good coloniser of bare ground in many parts of its range (OEH 2012c).	Potential in woodland areas and roadsides.	Yes – spring survey in woodland and roadsides.
<i>Rulingia prostrata</i>	Dwarf Kerrawang	E	E		Y	Occurs on sandy, sometimes peaty soils in a wide variety of habitats: Snow Gum (<i>Eucalyptus pauciflora</i>) Woodland and Ephemeral Wetland floor at Rows Lagoon; Blue leaved Stringybark (<i>E. agglomerata</i>) Open Forest at Tallong; and in Brittle Gum (<i>E. mannifera</i>) Low Open Woodland at Penrose; Scribbly Gum (<i>E. haemostoma</i>)/ Swamp Mahogany (<i>E. robusta</i>) Ecotonal Forest at Tomago. Associated native species may include <i>Imperata cylindrica</i> , <i>Empodisma minus</i> and <i>Leptospermum continentale</i> (OEH 2012c).	Potential in woodland areas.	Yes - surveys required within the October-November flowering period in woodland.
<i>Thesium australe</i>	Austral Toadflax, Toadflax	V	V			Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast. Often found in association with Kangaroo Grass (<i>Themeda australis</i>) (OEH 2012c).	Potential in woodland and native grassland areas.	Yes – spring survey in woodland and native grassland.
<i>Wilsonia rotundifolia</i>	Round-leafed Wilsonia	E		Y		Grows in mud in coastal saltmarsh and inland saline or brackish lake beds. In undisturbed habitat, it can be a good coloniser as the creeping stems root from the nodes (OEH 2012c).	Potential within the northern portion of the PA in the vicinity of Lake Bathurst.	Yes – spring and summer surveys in areas adjacent to Lake Bathurst.

TABLE B.2 **LIKELIHOOD OF OCCURRENCE TABLE FOR THREATENED FAUNA**

Scientific Name	Common Name	TSC Act	EPBC Act	Atlas Record	PMST	Habitat Requirements	Likelihood of Occurrence	Targeted Survey Required
<i>Amphibia</i>	<i>Amphibians</i>							
<i>Heleioporus australiacus</i>	Giant Burrowing Frog	V	V		Y	Found in heath, woodland and open dry sclerophyll forest on a variety of soil types except those that are clay based. Breeding habitat of this species is generally soaks or pools within first or second order streams. They are also commonly recorded from 'hanging swamp' seepage lines and where small pools form from the collected water (OEH 2012c).	Unlikely – unsuitable habitat and no records exist	No
<i>Litoria aurea</i>	Green and Golden Bell Frog	E	V	Y		Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (<i>Typha</i> spp.) or spikerushes (<i>Eleocharis</i> spp.). Optimum habitat includes water-bodies that are unshaded, free of predatory fish such as Plague Minnow (<i>Gambusia holbrooki</i>), have a grassy area nearby and diurnal sheltering sites available (OEH 2012c)	Potential, based on known range	Yes- if suitable breeding habitat is identified. November to March
<i>Litoria castanea</i>	Yellow-spotted Tree Frog	Cr En	E		Y	Require large permanent ponds or slow flowing streams with plenty of emergent vegetation such as bulrushes. Move and forage at night on grassy banks or float on the water's surface. Shelter during autumn and winter under fallen timber, rocks, other debris or thick vegetation (OEH 2013).	Potential, although species has not been positively recorded since the 1980s	Yes- if suitable breeding habitat is identified, during summer, following rainfall
<i>Litoria littlejohni</i>	Littlejohn's Tree Frog	V	V		Y	This species breeds in the upper reaches of permanent streams and in perched swamps. Non-breeding habitat is heath based forests and woodlands where it shelters under leaf litter and low vegetation, and hunts for invertebrate prey either in shrubs or on the ground (OEH 2012c).	Unlikely – outside of known range	No
<i>Litoria raniformis</i>	Southern Bell Frog	E	V		Y	Usually found in or around permanent or ephemeral Black Box/Lignum/Nitre Goosefoot swamps, Lignum/Typha swamps and River Red Gum swamps or billabongs along floodplains and river valleys (OEH 2012c).	Unlikely – no recent records	No

Scientific Name	Common Name	TSC Act	EPBC Act	Atlas Record	PMST	Habitat Requirements	Likelihood of Occurrence	Targeted Survey Required
<i>Aves</i>	<i>Birds</i>							
<i>Anseranas semipalmata</i>	Magpie Goose	V		Y		Mainly found in shallow wetlands with dense growth of rushes or sedges. Equally at home in aquatic or terrestrial habitats; often seen walking and grazing on land; feeds on grasses, bulbs and rhizomes. Activities are centred on wetlands, mainly those on floodplains of rivers and large shallow wetlands formed by run-off. Breeding unlikely to occur within south-eastern NSW (OEH 2012c).	Potential, recorded at Lake Bathurst	Yes – as part of waterbird and wader surveys
<i>Anthochaera phrygia</i>	Regent Honeyeater	E	E		Y	Mainly found on the inland slopes of south east Australia in dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. Key eucalypt species include Mugga Ironbark (<i>Eucalyptus sideroxylon</i>), Yellow Box (<i>E. melliodora</i>), Blakely's Red Gum (<i>E. blakelyi</i>), White Box (<i>E. albens</i>) and Swamp Mahogany (<i>E. robusta</i>). A shrubby understorey is an important source of insects and nesting material (OEH 2012c).	Potential in woodland and forest	Yes – winter bird surveys
<i>Botaurus poiciloptilus</i>	Australasian Bittern	E	E		Y	Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (<i>Typha</i> spp.) and spikerushes (<i>Eleocharis</i> spp.). Hides during the day amongst dense reeds or rushes and feed mainly at night on frogs, fish, yabbies, spiders, insects and snails. Breeding occurs in summer from October to January; nests are built in secluded places in densely-vegetated wetlands (OEH 2012c).	Potential to fly over the site	No
<i>Calyptorhynchus lathami</i>	Glossy Black-Cockatoo	V		Y		Inhabits open forest and woodlands of the coast and the Great Dividing Range up to 1000m in which stands of She-oak species, particularly black She-oak (<i>Allocasuarina littoralis</i>), Forest She-oak (<i>A. torulosa</i>) or Drooping She-oak (<i>A. verticillata</i>) occur. Feeds almost exclusively on the seeds of these species, shredding the cones with the massive bill. Dependent on large hollow-bearing eucalypts for nest sites (OEH 2012c).	Known – recent records exist.	Yes

Scientific Name	Common Name	TSC Act	EPBC Act	Atlas Record	PMST	Habitat Requirements	Likelihood of Occurrence	Targeted Survey Required
<i>Calidris ferruginea</i>	Curlew Sandpiper	E	C,J,K	Y		It generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts. It also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes the inland. It forages in or at the edge of shallow water, occasionally on exposed algal mats or waterweed, or on banks of beach cast seagrass or seaweed (OEH 2012c).	Potential	Yes – as part of waterbird and wader surveys
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	V		Y		In summer, it is generally found in high altitude tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. The species moves to lower altitudes in winter, preferring more open eucalypt forests and woodlands, particularly in box-ironbark assemblages, or in dry forest in coastal areas. The species favours old growth attributes for nesting and roosting (OEH 2012c).	Likely within woodland and forested areas	Yes, during summer
<i>Chthonicola sagittata</i>	Speckled Warbler	V		Y		The Speckled Warbler lives in a wide range of Eucalyptus dominated communities that have a grassy understorey, often on rocky ridges or in gullies. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy (OEH 2012c).	Potential, within woodland and forested areas	Yes, within woodland
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (eastern subspecies)	V		Y		Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and River Red Gum (<i>Eucalyptus camaldulensis</i>). Hollows in standing dead or live trees and tree stumps are essential for nesting (OEH 2012c).	Potential, within woodland and forested areas	Yes, within woodland
<i>Circus assimilis</i>	Spotted Harrier	V		(ERM)	(ERM)	Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands. Preys on terrestrial mammals, birds and reptiles, occasionally insects and carrion (OEH 2012c).	Potential, throughout the PA	Yes

Scientific Name	Common Name	TSC Act	EPBC Act	Atlas Record	PMST	Habitat Requirements	Likelihood of Occurrence	Targeted Survey Required
<i>Daphoenositta chrysoptera</i>	Varied Sittella	V		Y		Distribution in NSW is nearly continuous from the coast to the far west. Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland (OEH 2012c).	Potential, within woodland and forested areas	Yes, within woodland
<i>Epthianura albifrons</i>	White-fronted Chat	V		Y		Gregarious species, usually found foraging on bare or grassy ground in wetland areas, singly or in pairs. They are insectivorous, feeding mainly on flies and beetles caught from or close to the ground. Nests are usually built about 23 cm above the ground (but have been found up to 2.5 m above the ground) (OEH 2012c).	Potential, especially close to Lake Bathurst	Yes
<i>Hieraaetus morphnoides</i>	Little Eagle	V		(ERM)	(ERM)	The Little Eagle is found throughout the Australian mainland. The species occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used. Nests in tall living trees within a remnant patch (OEH 2012c).	Potential especially in wooded areas	Yes
<i>Falco subniger</i>	Black Falcon	V		Y		The Black Falcon inhabits woodland, shrubland and grassland in the arid and semi-arid zones, especially wooded watercourses and agricultural land with scattered remnant trees. The Black Falcon is usually associated with streams or wetlands, visiting them in search of prey and often using standing dead trees as lookout posts (OEH 2013).	Potential throughout	Yes
<i>Lathamus discolor</i>	Swift Parrot	E	E	Y	Y	The Swift Parrot is endemic to south eastern Australia. It breeds only in Tasmania, and migrates to mainland Australia in autumn (Higgins 1999; Swift Parrot Recovery Team 2001, cited in DSEWPC 2012). White Box-Yellow Box-Blakely's Red Gum EEC woodland on the New South Wales tablelands and western slopes is utilised for foraging by this species (DSE, 2005; DEC NSW 2005, cited in DSEWPC 2012).	Potential, within woodland and forested areas	Yes – winter bird surveys

Scientific Name	Common Name	TSC Act	EPBC Act	Atlas Record	PMST	Habitat Requirements	Likelihood of Occurrence	Targeted Survey Required
<i>Leipoa ocellata</i>	Malleefowl	E	V		Y	Predominantly inhabit mallee communities, preferring the tall, dense and floristically-rich mallee found in higher rainfall (300 - 450mm mean annual rainfall) areas. Utilises mallee with a spinifex understorey, but usually at lower densities than in areas with a shrub understorey. Less frequently found in other eucalypt woodlands, such as Inland Grey Box, Ironbark or Bimble Box Woodlands with thick understorey, or in other woodlands such dominated by Mulga or native Cypress Pine species OEH 2012c.	Unlikely – no records exist within locality	No
<i>Ninox connivens</i>	Barking Owl	V		Y		Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. Sometimes able to successfully breed along timbered watercourses in heavily cleared habitats (e.g. western NSW) due to the higher density of prey on these fertile soils. Roost in shaded portions of tree canopies, including tall midstorey trees with dense foliage such as Acacia and Casuarina species. Requires very large permanent territories in most habitats due to sparse prey densities (OEH 2012c).	Potential, within and forested areas	Yes
<i>Ninox strenua</i>	Powerful Owl	V		Y		Within NSW, this species is widely distributed throughout the eastern forests from the coast inland to the tablelands with scattered, historical records from the western slopes and plains. Inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. Generally requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well. Nests in large tree hollows (at least 0.5 m deep), in large eucalypts (DBH of 80-240 cm) that are at least 150 years old (OEH 2012c).	Potential, within and forested areas	Yes

Scientific Name	Common Name	TSC Act	EPBC Act	Atlas Record	PMST	Habitat Requirements	Likelihood of Occurrence	Targeted Survey Required
<i>Oxyura australis</i>	Blue-billed Duck	V		Y		The Blue-billed Duck prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. Blue-billed Ducks are partly migratory, with short-distance movements between breeding swamps and overwintering lakes with some long-distance dispersal to breed during spring and early summer. Blue-billed Ducks usually nest solitarily in Cumbungi over deep water between September and February. Young birds disperse in April-May from their breeding swamps in inland NSW to non-breeding areas on the Murray River system and coastal lakes (OEH 2012c)	Likely at Lake Bathurst	Yes – as part of waterbird and wader surveys
<i>Pedionomus torquatus</i>	Plains Wanderer	E	V		Y	Plains-wanderers live in semi-arid, lowland native grasslands that typically occur on hard red-brown soils. These grasslands support a high diversity of plant species, including a number of state and nationally threatened species. Habitat structure appears to play a more important role than plant species composition. Preferred habitat of the Plains-wanderer typically comprises 50% bare ground, 10% fallen litter, and 40% herbs, forbs and grasses (OEH 2012c)	Unlikely, no records within the locality	No
<i>Petroica boodang</i>	Scarlet Robin	V		Y		In NSW, the Scarlet Robin occurs from the coast to the inland slopes. The Scarlet Robin lives in dry eucalypt forests and woodlands, usually with an open grassy understorey with few scattered shrubs. It occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps. Scarlet Robin habitat usually contains abundant logs and fallen timber, which are important for foraging (OEH 2012c).	Likely throughout the site	Yes
<i>Petroica phoenicea</i>	Flame Robin	V		Y		The Flame Robin breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes, with a ground layer dominated by native grasses. In winter, the bird moves to inland slopes and plains, where it occurs in dry forests, open woodlands and in pastures and native grasslands, with or without scattered trees. The species is occasionally found in temperate rainforest, herbfields, heathlands, shrublands and sedgelands. The species prefers clearings or areas with open understoreys (OEH 2012c).	Likely throughout the site	Yes

Scientific Name	Common Name	TSC Act	EPBC Act	Atlas Record	PMST	Habitat Requirements	Likelihood of Occurrence	Targeted Survey Required
<i>Polytelis swainsonii</i>	Superb Parrot	V	V		Y	In NSW the Superb Parrot mostly occurs west of the Great Divide, where it mainly inhabits the Riverina. Its range extends north to around Narrabri and Wee Waa in the North west Plain Region. They mainly inhabit forests and woodlands dominated by eucalypts, especially River Red Gums and box eucalypts such as Yellow Box or Grey Box. The species also seasonally occurs in box-pine (<i>Callitris</i>) and Boree (<i>Acacia pendula</i>) woodlands (DSEWPC 2012). The Superb Parrot is dependent on aggregations of large hollow bearing trees and nests between September and December in hollow limbs or holes in the trunk of large eucalypts, mainly near water. In the inland slopes, most nests are in large Blakely's Red Gums, with many nest trees either dead or suffering from dieback. The entrance to the nesting cavity ranges from 5–13 m above the ground for nest trees on the inland slopes. Birds nest deep within the tree hollow, sometimes even at ground level (DSEWPC 2012).	Potential within wooded and forested areas	Yes, between September and January
<i>Rostratula australis</i>	Australian Painted Snipe	E	V		Y	Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber. Nests on the ground amongst tall vegetation, such as grasses, tussocks or reeds. The nest consists of a scrape in the ground, lined with grasses and leaves (OEH 2012c).	Potential to occur at Lake Bathurst	Yes – as part of waterbird and wader surveys
<i>Stagonopleura guttata</i>	Diamond Firetail	V		Y		Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum (<i>Eucalyptus pauciflora</i>) Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. Often found in riparian areas (rivers and creeks), and sometimes in lightly wooded farmland. Has been recorded in some towns and near farm houses (OEH 2012c).	Likely in woodland and grassland	Yes
<i>Stictonetta naevosa</i>	Freckled Duck	V		Y		Prefer permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree. During drier times they move from ephemeral breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds. Nests are usually located in dense vegetation at or near water level OEH 2012c.	Likely at Lake Bathurst	Yes – as part of waterbird and wader surveys

Scientific Name	Common Name	TSC Act	EPBC Act	Atlas Record	PMST	Habitat Requirements	Likelihood of Occurrence	Targeted Survey Required
<i>Mammalia</i>	<i>Mammals</i>							
<i>Petrogale penicillata</i>	Brush-tailed Rock-wallaby	E	V		Y	Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north. Browse on vegetation in and adjacent to rocky areas eating grasses and forbs as well as the foliage and fruits of shrubs and trees (OEH 2012c).	Unlikely – unsuitable habitat and no records within the locality.	No
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V	V		Y	Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (<i>Petrochelidon ariel</i>), frequenting low to mid-elevation dry open forest and woodland close to these features. Females have been recorded raising young in maternity roosts (c. 20-40 females) from November through to January in roof domes in sandstone caves and overhangs. They remain loyal to the same cave over many years (OEH 2012c).	Unlikely – no records within the locality.	No
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V	E	Y	Y	Found on the east coast of NSW and is recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Individual animals use hollow-bearing trees, fallen logs, small caves, rock crevices, boulder fields and rocky-cliff faces as den sites (OEH 2012c).	Likely, within woodland and forested areas	Yes, within forest
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V		Y		Prefers moist habitats, with trees taller than 20 m. Generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings. Hunts beetles, moths, weevils and other flying insects above or just below the tree canopy. Hibernates in winter. Females are pregnant in late spring to early summer (OEH 2012c).	Likely, within woodland and forested areas	Yes, Spring to Autumn
<i>Miniopterus schreibersii oceanensis</i>	Eastern Bentwing-bat	V		Y		Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. Form discrete populations centred on a maternity cave with specific temperature and humidity regimes that is used annually in spring and summer for the birth and rearing of young. At other times of the year, populations disperse within about 300 km range of maternity caves. The species hunts in forested areas, catching moths and other flying insects above the tree tops (OEH 2012c).	Likely, within woodland and forested areas	Yes - Summer and Autumn

Scientific Name	Common Name	TSC Act	EPBC Act	Atlas Record	PMST	Habitat Requirements	Likelihood of Occurrence	Targeted Survey Required
<i>Phascolarctos cinereus</i>	Koala	V	V	Y	Y	In NSW, the Koala inhabits a range of forest and woodland communities, including coastal forests, woodlands on the tablelands and western slopes, and woodland communities along watercourses. The primary feed trees in the Central and Southern Tablelands are the Ribbon Gum (<i>Eucalyptus viminalis</i>) and the River Red Gum (<i>Eucalyptus camaldulensis</i>) with 18 secondary feed tree species including White Box (<i>Eucalyptus albens</i>), Yellow Box (<i>Eucalyptus melliodora</i>), Bundy (<i>Eucalyptus nortonii</i>), Blakely's Red Gum (<i>Eucalyptus blakelyi</i>), and Apple-topped Box (<i>Eucalyptus bridgesiana</i>). There are two Stringybark supplementary species, including Red Stringybark (<i>Eucalyptus macrorhyncha</i>) and Yellow stringybark (<i>Eucalyptus muelleriana</i>) (OEH 2012c).	Known –record exists within the PA from 2004.	Yes
<i>Myotis macropus</i>	Southern Myotis	V		Y		Generally roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. Forage over streams and pools catching insects and small fish by raking their feet across the water surface (OEH 2012c).	Potential	Yes, Spring to Autumn
<i>Potorous tridactylus</i>	Long-nosed Potoroo	V	V	Y		Inhabits coastal heaths and dry and wet sclerophyll forests. Dense understorey with occasional open areas is an essential part of habitat, and may consist of grass-trees, sedges, ferns or heath, or of low shrubs of tea-trees or melaleucas. A sandy loam soil is also a common feature. The fruit-bodies of hypogeous fungi are a large component of the diet of the Long-nosed Potoroo. They also eat roots, tubers, insects and their larvae and other soft-bodied animals in the soil (OEH 2012c).	Potential within woodland and forested areas	Yes
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail Bat	V		(ERM)	(ERM)	In the most southerly part of its range - most of Victoria, south western NSW and adjacent South Australia - it is a rare visitor in late summer and autumn (OEH 2012). Roosts in tree hollows and buildings, and in treeless areas they are known to utilise mammal burrows. Forages for insects in most habitats across its very wide range, and flies high and fast over the forest canopy, but lower in more open country. Seasonal movements are unknown but there is speculation about a migration to southern Australia in late summer and autumn (OEH 2012c).	Potential, throughout PA	Yes, Spring to Autumn

Scientific Name	Common Name	TSC Act	EPBC Act	Atlas Record	PMST	Habitat Requirements	Likelihood of Occurrence	Targeted Survey Required
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	V		Y	Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. Feed on the nectar and pollen of native trees, in particular <i>Eucalyptus</i> , <i>Melaleuca</i> and <i>Banksia</i> , and fruits of rainforest trees and vines (OEH 2012c).	Unlikely – no records within the locality.	No
Osteichthyes	Bony Fish							
<i>Maccullochella peelii</i>	Murray Cod	V			Y	The Murray Cod is found extensively throughout the Murray Darling Basin in the south-eastern region of Australia. The Murray Cod has the ability to live in a diverse range of habitats, including clear rocky streams (such as those found in the upper western slopes of NSW), to slow flowing, turbid rivers and billabongs. Within the large range of habitats, the Murray Cod is usually found near complex structural cover such as large rocks, snags, overhanging vegetation and other woody structures (SPRAT, 2013).	Unlikely – no records within locality.	No
<i>Macquaria australasica</i>	Macquarie Perch	E			Y	The Macquarie Perch is a riverine, schooling species. It prefers clear water and deep, rocky holes with lots of cover. As well as aquatic vegetation, additional cover may comprise of large boulders, debris and overhanging banks. Spawning occurs just above riffles (SPRAT, 2013).	Likely to occur within the creeklines	Yes if impacts are predicted
Reptilia	Reptiles							
<i>Suta flagellum</i>	Little Whip Snake	V		Y		Occurs in Natural Temperate Grasslands and grassy woodlands, including those dominated by Snow Gum <i>Eucalyptus pauciflora</i> or Yellow Box <i>E. melliodora</i> . Also occurs in secondary grasslands derived from clearing of woodlands. Found on well drained hillsides, mostly associated with scattered loose rocks (OEH 2012c).	Potential to occur within woodland and native grassland	Yes, late spring summer, early autumn

Scientific Name	Common Name	TSC Act	EPBC Act	Atlas Record	PMST	Habitat Requirements	Likelihood of Occurrence	Targeted Survey Required
<i>Invertebrata</i>	Invertebrates							
Golden Sun Moth	<i>Synemon plana</i>			(ERM)	(ERM)	The species occurs in Natural Temperate Grasslands and grassy Box-Gum Woodlands in which the groundlayer is dominated by wallaby grasses (<i>Austrodanthonia</i> spp). Habitat may contain several wallaby grass species, which are typically associated with other grasses particularly spear-grasses (<i>Austrostipa</i> spp.) or Kangaroo Grass (<i>Themeda australis</i>) (OEH 2012). Sites supporting Golden Sun Moth populations have generally been subject to light grazing. Based on recent observations at two ACT sites there is a possibility that Golden Sun Moth larvae feed on Chilean Needle Grass (<i>Nassella neesiana</i>) and Redleg Grass (<i>Bothriochloa macra</i>) (DSEWPC 2012).	Potential within grassy woodland and native grassland	Yes – mid October to early January
1. TSC = Species listed under the Threatened Species Conservation Act, 1995). 2. EPBC Act = Species listed under the EPBC Act, 1999. 3. V = Vulnerable, E = Endangered, Cr En = Critically Endangered. 4. Atlas Records = Species records from the Atlas of NSW Wildlife 5. PMST = Protected Matters Search Tool. 6. ERM = Species was identified as having the potential to occur but has not been recorded within the locality.								

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