ECOLOGICAL ASSESSMENT FOR PROPOSED PALING YARDS WIND FARM

Prepared for
Union Fenosa Wind Australia Pty Ltd

Prepared by
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Executive Summary

This study has been undertaken to address the Environmental Assessment Requirements for the proposed Paling Yards Wind Farm including its Transmission Routes to the electricity grid (**Project**) and determine the presence or potential presence within the Project Site of any threatened species, populations or endangered ecological communities as listed under the *Threatened Species Conservation Act 1995* (NSW) (**TSC Act**) and the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* (**EPBC Act**). The findings of this report are that the Project is unlikely to have a significant impact on any communities, populations or threatened species listed under the EPBC Act or the TSC Act.

The results of the field surveys carried out detected no Endangered Ecological Communities or threatened species listed under either the EPBC Act or the TSC Act within the Project Site. Whilst no threatened species listed under either the EPBC Act or the TSC Act were detected within the Project Site by the surveys undertaken to date, each threatened species which was considered likely to have the potential to occur with the Project Site and to be potentially impacted by the Project was further assessed in accordance with:

- the criteria contained in the EPBC Act in the case of species listed under the EPBC Act; and
- the 7-Part Tests of Significance criteria in the case of species listed under the TSC Act.

The results of this assessment concluded that:

- The Project is not likely to result in a significant impact on any endangered ecological community or flora species listed under the EPBC Act. Accordingly, the Project is not considered, for this reason, to be a controlled action which requires approval under the EPBC Act.

The Project is not likely to result in a significant impact on any fauna species listed under the TSC Act. Accordingly, there is no requirement for a species impact statement to be prepared.

Overall the project had been designed since its inception to be situated mainly on cleared grazed paddock areas thus avoiding as far as possible potential ecological impacts.

The Project is proposing to utilise many of the existing farm access tracks to reduce the levels of impact and there would be no impacts on riparian or instream habitats. As the land is already cleared (causing the existing fragmentation) where the infrastructure is proposed, there are considered to be no biodiversity corridor impacts.

This report has been revised to address concerns raised in the by the NSW Office of Environment and Heritage (OEH) dated 22nd February 2013 and also on 19th April 2013. Recently there have been significant changes in the proposal involving the removal (and

resiting) of several turbines and their associated infrastructure from timbered vegetation remnants (to address concerns from OEH) and as such this report has been amended to both address the concerns of OEH and the changes in the proposal.

The changes to the proposal are as follows:

(a) Deletion of Turbine P11;

   a. Deletion of associated crane hard stand;

   b. Deletion of associated 1,184m of access track;

(b) Relocation of Turbine P10 to 184m south of original location;

   a. Removing 184m of access track from the remnant area;

(c) Relocation of Turbine P13 to 70m south-east of original location;

   a. Removing 77m of access track from the remnant area;

   b. Turbine and crane hard stand will be located in a more cleared area, hence reducing the vegetation clearing by 50% for this location;

(d) Relocation of Turbine P14 to 86m south-east of original location;

   a. Removing 101m of access track from the remnant area;

   b. Turbine and crane hard stand will be located closer to the edge of the remnant area, hence reducing the vegetation clearing by 20% for this location;

The placement of turbines P10, P13 and P14 during the construction phase would remove 0.65ha and of this 0.14ha would be rehabilitated post construction. Thus 0.51ha of woodland vegetation comprising Western Tablelands Dry Forest would be removed as part of the project. The placement of an access track over an existing farm track that traverses through remnant C would potentially disturb 0.1ha that can be rehabilitated after the construction has been completed. The remaining areas where the other turbines are proposed represent improved pastures which have been grazed, fertilized and seeded and these are not representative of Derived Native Grasslands.

Overall there would be a direct disturbance of approximately 0.75 hectares of remnant vegetation and removal required for the wind farm, of which approximately 0.24 hectare is proposed to be rehabilitated post construction when the access tracks and temporary crane hard stands are reduced in size to the size required for operation and maintenance.

These changes above are reflected in the amended layout maps as provided in Appendix D.

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1. INTRODUCTION

1.1. BACKGROUND

Anderson Environmental Consultants Pty Ltd was engaged by Union Fenosa Wind Australia Pty Ltd (**UFWA**) to undertake an Ecological Assessment in relation to the proposed Paling Yards Wind Farm including the proposed Transmission Routes to the electricity grid (**Project**).

This ecological assessment has been prepared to address the Director-General's Requirements issued in relation to the Project and determine the potential ecological impacts of the Project. This study will support the environmental assessment report being prepared in relation to the Project.

1.2. SITE DESCRIPTION

1.2.1. Location

The Project is located on the western extent of the Great Diving Range, 60km south of Oberon, 60km north of Goulburn in NSW and approximately 140km west of Sydney. The proposed wind farm site and northern transmission line route option are situated in the Oberon local government area (LGA) and the proposed transmission line options to the south fall within the Upper Lachlan LGA within the South Eastern Highlands Bioregion and the Central Tablelands botanical subdivision.

The Project Site of the proposed wind farm includes two separate land holdings totalling over approximately 3,900 Hectares which are known as 'Mingary Park' and 'Paling Yards'. Please refer to Figure 1 – Site Boundary Map. The majority of the proposed wind farm site has been cleared of native vegetation. The proposed wind farm site is bordered by National Parks and uncleared land to the southeast, all of which are heavily vegetated.

The area surrounding the proposed wind farm site consists predominantly of large rural properties and National Park with the eastern edge of the proposed wind farm site in the proximity of the Kanangra Boyd National Park and Abercrombie National Park to the west and south.

The area is heavily undulating with some steep slopes. The proposed wind farm site is bisected by Abercrombie Road which links the towns of Oberon and Goulburn. The closest towns are Porters Retreat and Curraweela which have township populations of approximately 180 and 320 respectively.

Several water courses traverse the area including the Abercrombie River which flows into the Lachlan River. The Abercrombie River forms the southern boundary of the proposed wind farm site.

The proposed wind farm site is approximately 40km to the northeast of the existing Crookwell 1 wind farm and the approved Crookwell 2 wind farm.
It is proposed to connect the wind farm site to the electricity grid by one of four options (referred to as the **Transmission Route Options**):

- Options 1 to 3 each lead from the south of the proposed wind farm site to the approved Crookwell 2 wind farm substation and then connecting to the Yass to Bannaby 330kV transmission line (**Southern Transmission Route Options**).
- Option 4 leads from the north of the proposed Project Site to the Mt Piper to Bannaby 500kV transmission line which passes to the North-East and East of the Project Site (**Northern Transmission Route Option**).

Please refer to Figure 2 which shows the indicative location of the Southern Transmission Route Options and Figure 3 which shows the indicative location of the Northern Transmission Route Option.

Whilst all four Transmission Route Options have been assessed as part of this ecological assessment, the Northern Transmission Route Option is the preferred option as, owing to its much shorter length, it will result in significantly lower impacts and improved constructability. Accordingly, the Southern Transmission Routes are no longer proposed as part of the Project.

Given that the Northern Transmission Route has now been identified as the preferred option and the Southern Transmission Routes are no longer proposed as part of the Project, this assessment focuses on the proposed wind farm site and the Northern Transmission Route (**Project Site**). However, an assessment of the Southern Transmission Route Options has been included in this report for completeness.

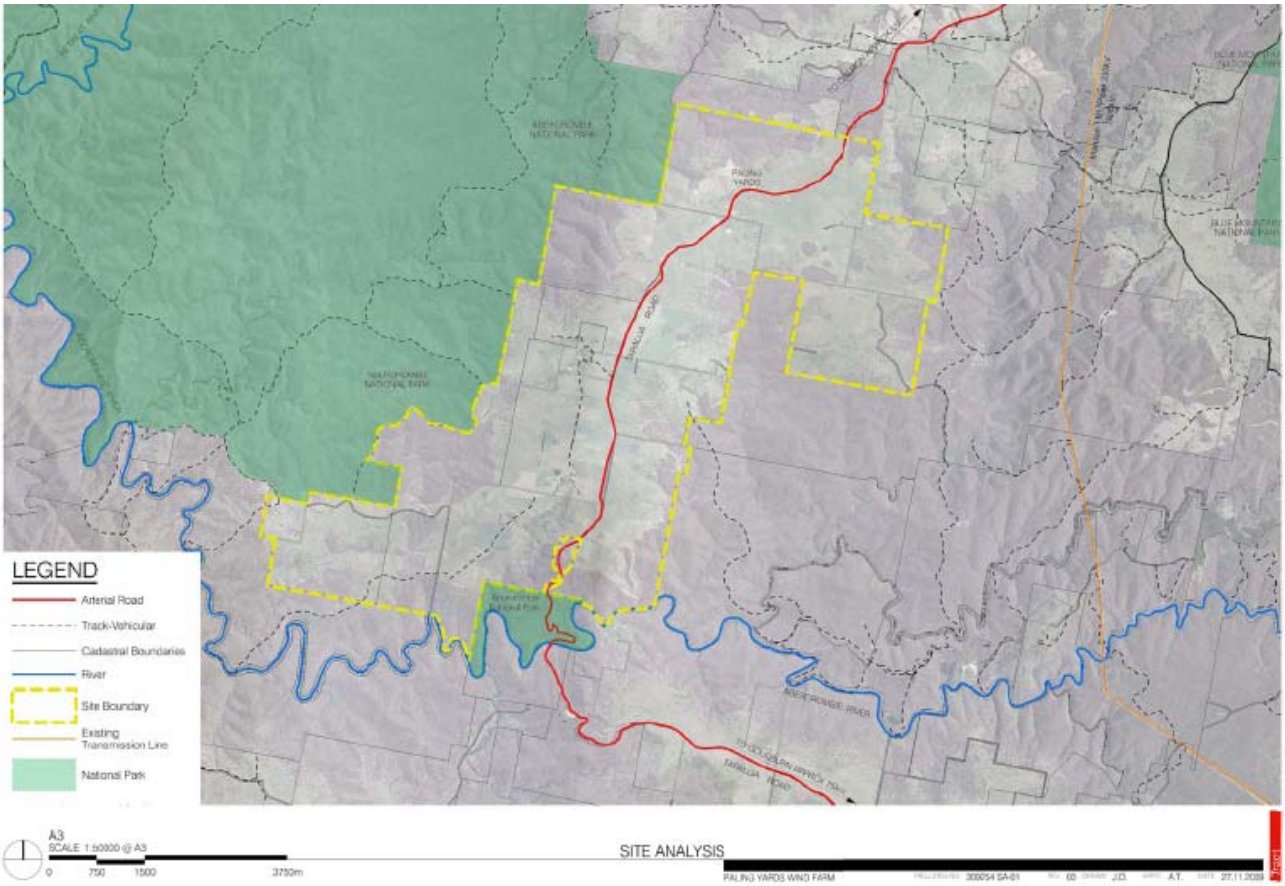

Figure 1: Proposed wind farm site

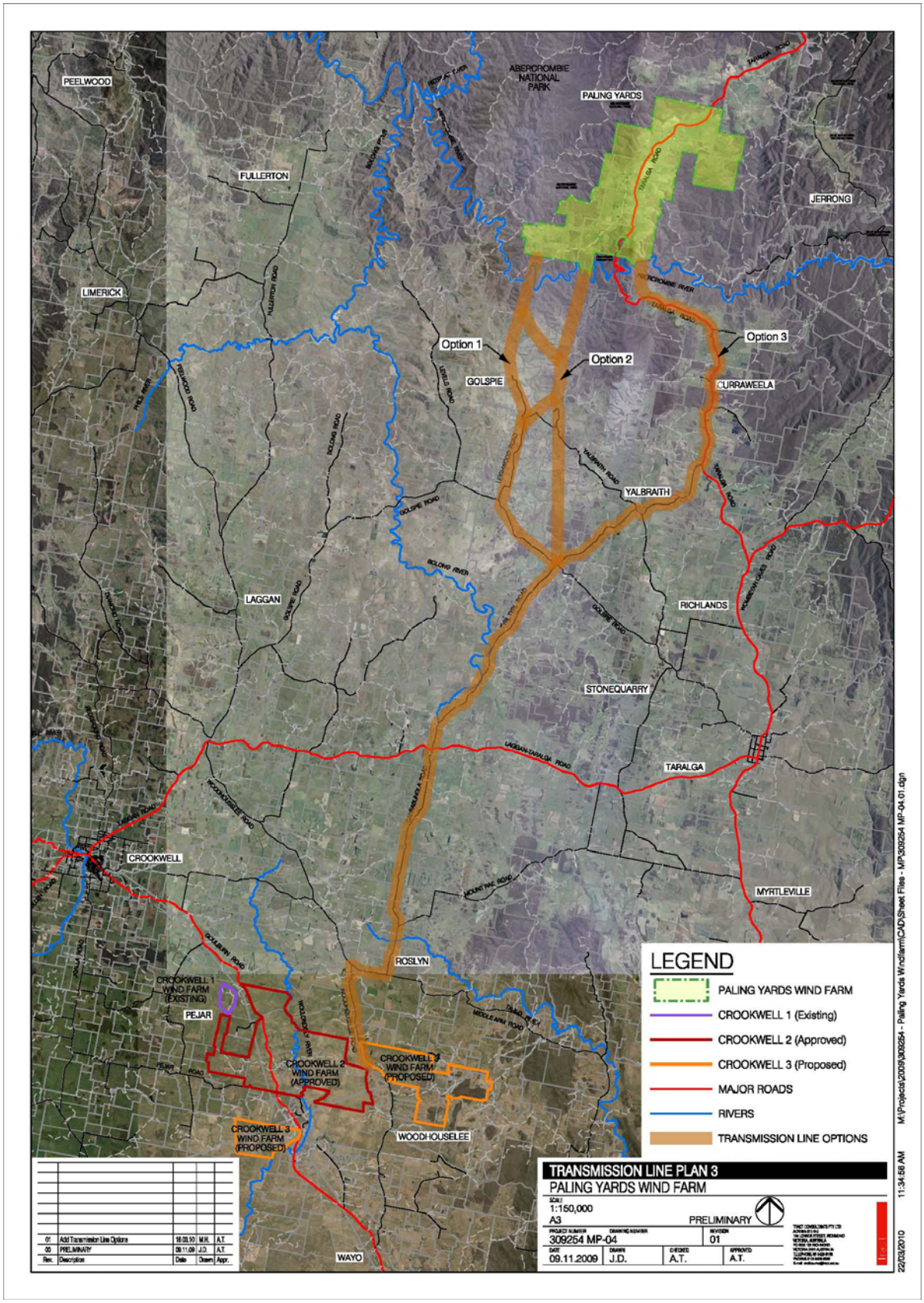

Figure 2: Indicative location of the Southern Options

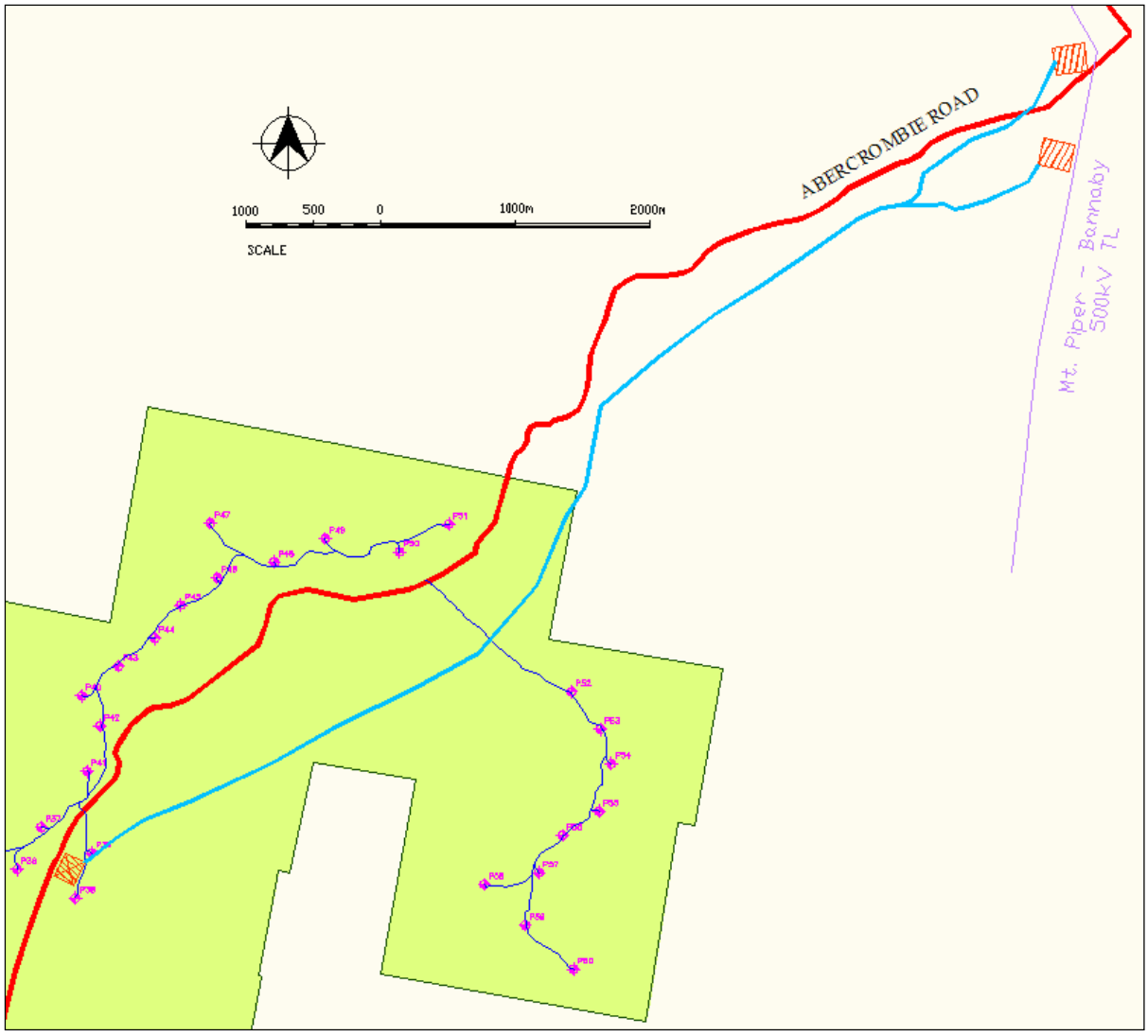

Figure 3: Proposed Northern Option

1.2.2. Physical Environment

The proposed wind farm site and the Northern Transmission Route are located within Oberon Shire Council LGA. This route follows existing transmission lines and areas within open cleared and grazed paddocks. The Southern Transmission Routes each cross into the Upper Lachlan Shire LGA. The southern routes predominately follow existing roads and road reserves. The proposed wind farm site was selected due to its topography and high wind levels being located on the Great Dividing Range.

The proposed wind farm site is generally cleared for sheep and cattle grazing with remaining native vegetation located mostly on the slopes where the soil condition and quality has no value for grazing activities. The wind turbines are proposed to be located primarily on cleared grazing lands as are the access roads and other associated infrastructure. The turbine sites vary in elevation from 900 m AHD to 1065 m AHD.

Photo 1: Typical Turbine Site in Paddock showing agricultural nature of the property

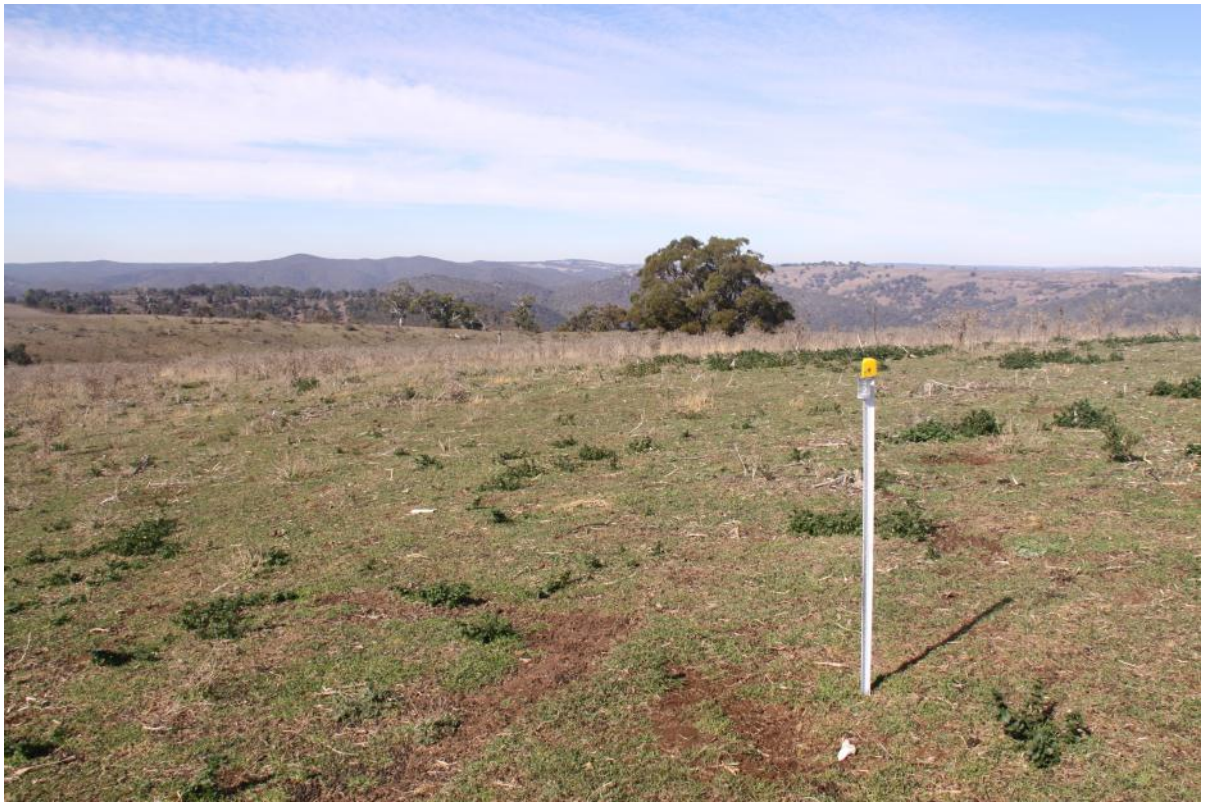

Photo 2: Typical proposed paddock turbine site location showing P001. Typical sheep grazing country with pasture improvement.

1.3. DESCRIPTION OF THE PROJECT

UFWA, the proponent, is seeking Project approval for the construction and operation of a wind energy facility to be known as the Paling Yards Wind Farm.

The revised Project comprises a number of elements, including:

- Up to 55 individual wind turbines standing up to 175m at top of blade tip with up to 4.5MW capacity each;
- Internal unsealed tracks for turbine access;
- Upgrades to local road infrastructure;
- An underground electrical and communication cable network linking turbines to each other and the proposed on-site substation;
- A temporary concrete batching plant to supply concrete for the foundations of the turbines and other associated structures;
- Potential for obstacle lighting to selected turbines;
- Clearing of native vegetation to the extent necessary to enable construction of the Project elements
- A wind farm and substation control room and facilities building;
- Connection to the electricity grid by the northern route option, approximately 9km of overhead transmission line leading north from the proposed on-site substation to the off-site substation located adjacent to the Mt Piper to Bannaby 500kV transmission line which passes to the North-East and East of the site; This option replaces the other assessed options for the southern route options which had approximately 55km of overhead transmission line leading south from the proposed wind farm site to the approved Crookwell 2 Wind Farm substation and then connecting to the Yass to Bannaby 330kV transmission line.

Figure 3 shows the proposed indicative layout of the proposed wind farm and is subject to further detailed design. In the interests of completeness, Figure 3 includes turbines P2, P6, P7, and P11 which no longer form part of the current Project.

Subject to appropriate arrangements being put in place regarding the current conservation agreement, approval for turbines P2, P6 and P7 may be sought at a later date (either by way of a modification to the Project under section 75W of the Environmental Planning and Assessment Act 1979 (NSW) (EP&A Act) or as a separate approval)**.**

Figure 3: Indicative Site Layout Plan

Early planning of the Project involved discussions aimed at avoiding areas of native vegetation to minimise potential ecological impacts. As such, the design of the Project aimed to minimise disturbance to areas of native vegetation by establishing turbines and network connection infrastructure in areas of existing disturbance wherever practicable. This included the evaluation of the four Transmission Routes.

1.4. DIRECTOR GENERAL'S REQUIREMENTS

The Director-General's Requirements (**DGRs**) issued by the NSW Department of Planning and Infrastructure in relation to the Project require that the following flora and fauna impacts be assessed:

Flora and Fauna - the EA must:

- *include an assessment of all Project components on flora and fauna and their habitat consistent with the Draft Guidelines for Threatened Species Assessment (DEC, 2005), including details on the existing site conditions and likelihood of disturbance (including quantifying the worst case extent of impact on the basis of vegetation type and the total native vegetation disturbed);*

- *The EA must specifically consider impacts to threatened species and communities listed under both State and Commonwealth legislation that have been recorded on the Project Site and surrounding land, impacts to riparian and/or instream habitat in the case of disturbance of waterways, and to biodiversity corridors. In addition, impact of the Project on birds and bats from blade strikes, low air pressure zones at the blade tips (barotrauma), and alteration to movement patterns resulting from the turbines must be assessed, including demonstration of how the Project has been sited to avoid and/or minimise such impacts;*

- *details of how flora and fauna impacts would be managed during construction and operation including adaptive management and maintenance protocols (including the mitigation and/or management of weeds); and*

- *measures to avoid, mitigate or offset impacts consistent with "improve or maintain" principles. Sufficient details must be provided to demonstrate the availability of viable and achievable options to offset the impacts of the Project.*

A complete copy of the DGRs is contained in Appendix C to this report.

1.5. LEGISLATIVE REQUIREMENTS

1.5.1. Commonwealth Legislative Requirements - Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* (**EPBC Act**) applies to the Project Site. The objects of the EPBC Act include "to provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance".

Under the EPBC Act, 'actions' that "have, will have or are likely to have a significant impact" on Commonwealth land or specified matters of national environmental significance (even if taken outside Commonwealth land) are subject to a rigorous assessment and approval process. An 'action' includes a Project, development, undertaking, activity, or series of activities. Matters of national environmental significance include World Heritage properties, National Heritage places, Ramsar wetlands of international significance, listed threatened species and ecological communities and listed migratory species.

A proposed action which is likely to have a significant impact" on Commonwealth land or specified matters of national environmental significance must be referred to the Commonwealth Environment Minister for a determination as to whether or not it is a controlled action which requires approval under the EPBC Act. The approval process for controlled actions under the EPBC Act is separate from and in addition to the approval processes under the *Environmental Planning and Assessment Act 1979* (NSW) (**EP&A Act**).

The *Significant Impact Guidelines 1.1 - Matters of National Environmental Significance* (EPBC Guidelines) have been made under the EPBC Act to assist in determining whether an action is "likely to have a significant impact" on any matter of "national environmental significance" such that the action will be a controlled action which requires approval under the EPBC Act. The EPBC Guidelines state that:

> *An action will require approval if the action has, will have, or is likely to have a significant impact on a species listed in any of the following categories:*
>
> - *extinct in the wild*
> - *critically endangered*
> - *endangered, or*
> - *vulnerable*
>
> *An action will also require approval if the action has, will have, or is likely to have a significant impact on an ecological community listed in any of the following categories:*
>
> - *critically endangered, or*
> - *endangered.*
>
> ***Notes:***
> *Species in the extinct and conservation dependant categories of species listed under the EPBC Act, and listed ecological communities in the vulnerable category of ecological communities listed under the EPBC Act, are not matters of national environmental significance for the purposes of Part 3 of the EPBC Act (requirements for environmental approvals).*
> *Species and ecological communities listed under the EPBC Act may differ from those listed under State and Territory legislation. This is due to the different status of some species and ecological communities under the legislation applying in the different States and Territories, and nationally.*

One of the aims of this assessment has been:

- to identify any World Heritage properties, National Heritage places, Ramsar wetlands of international significance, listed threatened species and ecological communities and listed migratory species which may potentially occur at the Project Site or be impacted by the Project; and

- to determine whether the Project is likely to have a significant impact on any World Heritage properties, National Heritage places, Ramsar wetlands of international significance, listed threatened species and ecological communities and listed migratory species which may potentially occur at the Project Site or be impacted by the Project.

The results of this assessment will guide the decision of the proponent in determining whether or not the Project may potentially be a controlled action which may require referral under the EPBC Act.

1.5.2. NSW Legislative requirements

Environmental Planning and Assessment Act 1979 and the Threatened Species Conservation Act 1995

The key NSW legislation relating to the assessment of the Project is the EP&A Act. The Project is a project to which Part 3A of the EP&A Act applies. Whilst Part 3A of the EP&A Act has been repealed, the Project is a "transitional Part 3A Project" under the transitional provisions contained within Schedule 6A of the EP&A Act and, accordingly, Part 3A of the EP&A Act continues to apply to the Project.

Section 75R of the EP&A Act limits the other provisions of the EP&A Act which apply to projects being assessed under Part 3A. Accordingly, whilst:

- both Part 4 and Part 5 of the EP&A Act are subject to specific obligations relating to the assessment of certain impacts, including impacts on threatened species, populations or ecological communities, or their habitats; and
- section 5A(1) of the EP&A Act contains a list of factors which must be taken into account in any such assessment.

These provisions do not apply to projects being assessed under Part 3A.

However, the DGRs prepared under Part 3A of the EP&A Act (as set out at section 1.4 above in full), include a requirement that the environmental assessment of the Project (**EA**) must:

- *include an assessment of all Project components on flora and fauna and their habitat consistent with the Draft Guidelines for Threatened Species Assessment (DEC, 2005), including details on the existing site conditions and quantity and likelihood of disturbance (including quantifying the worst case extent of impact on the basis of vegetation type and the total native vegetation disturbed);*
- *The EA must specifically consider impacts to threatened species and communities listed under both State and Commonwealth legislation that have been recorded on the Project Site and surrounding land, impacts to riparian and/or instream habitat in the case of disturbance of waterways, and to biodiversity corridors. In addition, impact of the Project on birds and bats from blade strikes, low air pressure zones at the blade tips, and alteration to movement patterns resulting from the turbines must be assessed, including demonstration of how the Project has been sited to avoid and/or minimise such impacts*

The *Draft Guidelines for Threatened Species Assessment* (DEC, 2005) provide guidance as to the matters which are to be taken into account in assessing the impacts of projects on species, populations and ecological communities. This includes the factors which are to be taken into account in applying the 7 Part Test of Significance contained in section 94 of the *Threatened Species Conservation Act 1995 (NSW)* (**TSC Act**). The 7 Part Test of Significance is used to assess the potential impacts of a Project on threatened species, population(s) (including their habitats) and Endangered Ecological Community. Schedules 1 and 2 of the TSC Act list threatened species and communities. The 7 Part Test of Significance requires an assessment of the following:

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:
  (i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or
  (ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

(d) in relation to the habitat of a threatened species, population or ecological community:
  (i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and
  (ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and
  (iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

If the results of the 7 Part Test of significance concludes that there is likely to be a significant impact on a listed species, population of Endangered Ecological Community then the *Draft Guidelines for Threatened Species Assessment* (DEC, 2005) specify that a Species Impact Statement is required.

Native Vegetation Conservation Act 2003

The *Native Vegetation Conservation Act 2003 (NSW)* (**NVC Act**) governs the conservation and sustainable management of native vegetation in NSW. If approval is granted under Part 3A of the EP&A Act for the Project then no approval will be required under section 12 of the NVC Act to authorise the clearing of native vegetation.

State Environmental Planning Policy 44 – Koala Habitat Protection

State Environmental Planning Policy 44 – Koala Habitat Protection (**SEPP 44**) applies to the Project Site. SEPP 44 was gazetted in 1995 to stem the decline of Koalas in NSW. The policy objective is "to encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline".

The SEPP defines potential habitat as native vegetation of the overstorey species listed in Schedule 2 of the policy. These must constitute at least 15% of the total number of trees in

the upper or lower strata.

The Project Site is located in Oberon LGA which is listed under Schedule 1 of SEPP 44. Schedule 2 of SEPP 44 lists preferred koala feed tree species. No Koalas or signs of Koalas being present were detected within the Project Site.

The nearest koala recorded in the vicinity of the Project Site was recorded approximately 1.5 kilometres to the west of the proposed wind farm site within Abercrombie River National Park. Whilst some listed feed tree species were identified as being present on the Project Site, there will be negligible disturbance to the native eucalypts identified within the Project Site. This includes the turbine sites, interconnections and northern transmission line route options. Accordingly there is unlikely to be a significant impact on this species and there is no need to further consider the requirements of SEPP 44 in relation to the Project.

Commonwealth Conservation Agreements

The landowner of 'Paling Yards' has entered into contracts under the Australian Government's Environmental Stewardship Program to improve the condition of the remnant white box, yellow box and Blakely's Red Gum grassy woodland or derived native grassland ecological community on the property.

The Environmental Stewardship Program offers funding rounds through which eligible private land managers can apply to provide a range of agreed management activities to protect, rehabilitate and improve particular ecological communities. The landowner of 'Paling Yards' exchanged contracts with the land managers which were signed in May and June 2010 and they have a fifteen year duration. The two patches on Paling Yards property were assessed as State 2 (Box Gum Grassy Woodland State and Transition Model). This vegetation community is listed as Critically Endangered under the EPBC Act.

Figure 4 below shows the extent of the conservation agreements on and surrounding the Paling Yards property. As a result of the deletion of proposed turbines P2, P6 and P7 from the Project, the Project does not involve any disturbance of the land subject to the conservation agreement or to the box gum grassy woodland on the Paling Yards property.

Subject to appropriate arrangements being put in place regarding the current conservation agreement, approval for turbines P2, P6 and P7 may be sought at a later date (either by way of a modification to the Project under section 75W of the EP&A Act or as a separate approval).

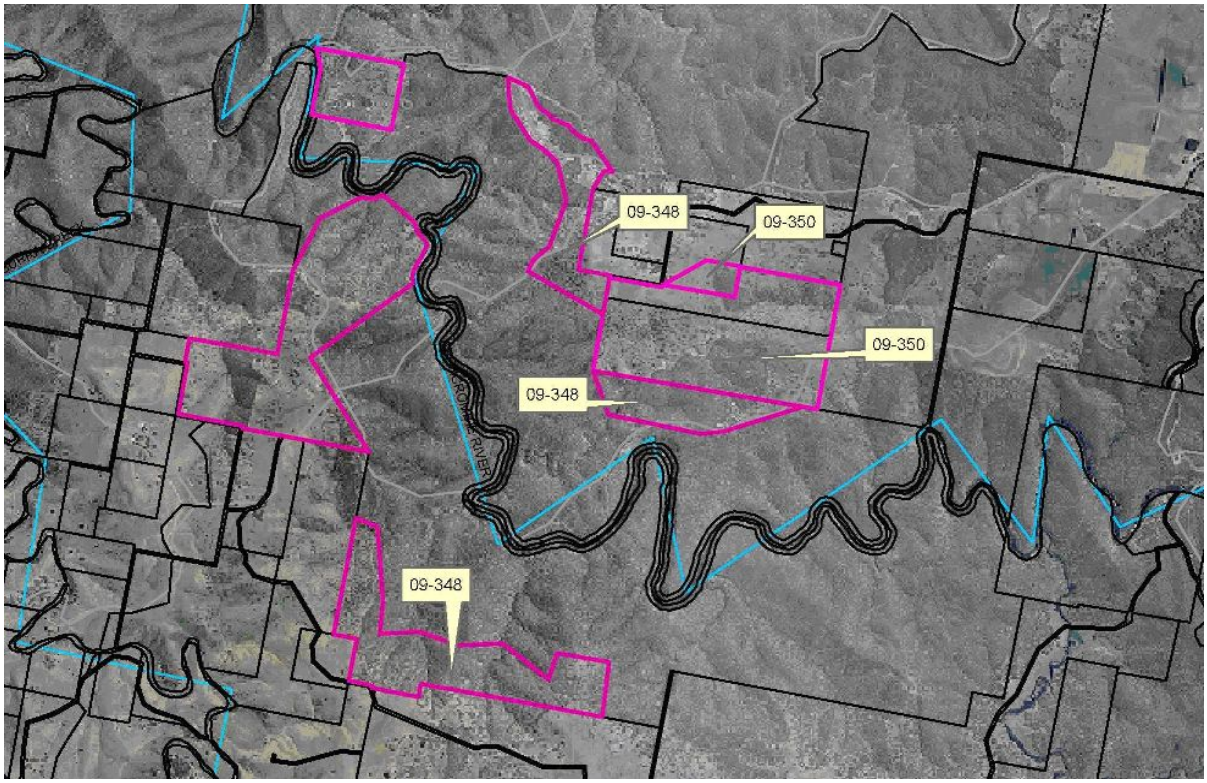

Figure 4 - Conservation Agreement areas

2. METHODOLOGY - FLORA

2.1. DESKTOP REVIEW

A literature review was carried out in order to assist in the identification of threatened species and endangered ecological communities listed under the TSC Act and the EPBC Act which have the potential to occur in the area of the Project Site. This literature review was based on database searches of:

- NPWS Wildlife Atlas for the Oberon and Upper Lachlan Local Government Areas;
- EPBC online Protected Matters database search tool for the Oberon and Upper Lachlan Local Government Area; and
- NPWS (2000) Forest Ecosystem Classification and Mapping for the Southern CRA region, Volumes I and II.

2.2. SURVEY METHODOLOGY

The field surveys were based on the following methodology;

1. Initial site familiarisation to determine potential ecological issues in relation to turbine cluster sitings, access tracks and access roads.
2. Field surveys to identity vegetation types, condition and potential level of impacts including targeted threatened plant surveys. This entailed a modified random meander approach of transects through the vegetation and paddock areas. The approach was modified from Cropper 2003. This approach allows for the easy identification of vegetation community types and boundaries and is particularly suited to areas where the quality of vegetation varies. The four Transmission Routes were assessed based on the mapping provided with regard to minimising the ecological impacts. The surveys for these areas involved walking/driving linear transects (or spot assessments) along these areas. As most of the proposed Transmission Routes (both north and south) follow existing roads or other transmission lines, there was highly disturbed and modified habitat for most of the proposed routes.
3. Mapping of vegetation community units on aerial photographs. This was undertaken concurrently with the field surveys to identify the vegetation types.

The field surveys for flora recorded attributes including; vegetation type and structure (Specht), slope, aspect, soils and geology, elevation, floristic, vegetation condition, foliage projection cover (FPC), level of understorey disturbance, fire history and level of weed invasion. As part of these surveys, particular attention was paid to threatened species and communities listed under the TSC Act or EPBC Act. All surveys do however have limitations. Accordingly, it is recommended that pre-construction surveys are undertaken by a qualified ecologist in vegetated areas of the Project Site in order to identify any potential species or habitat trees which may be avoided, where practicable, by micrositing infrastructure.

Plant specimens that were not identifiable in the field were collected for identification using standard botanical texts such as Flora of NSW. Flora species recorded are represented in

Appendix A. The condition assessment and conservation ratings of the vegetation communities described are based on the following criteria;

- **Poor:** Vegetation which has suffered high levels of historical and current disturbance. These areas are highly modified both structurally and floristically. They contain only the indicators of what the vegetation community would have once been.
- **Moderate:** Areas of moderate quality vegetation which retain many of their natural characteristics but have immediate indicators of disturbance and modification readily present. Moderate levels of structural and floristic modification evident.
- **Good:** Areas with high levels of natural integrity both structurally and floristically.

2.3. LIMITATIONS

Every survey has limitations in relation to timing and season. The surveys were undertaken over a 15 month period from late May 2010 to August 2011. A total of 18 days were spent surveying the Project Site. Every survey has limitations however and, as far as practicable, potential species were addressed during the surveys. Vegetation remnants located within the Project Site which would in no way be impacted directly or indirectly were surveyed in less detail than the areas which would be potentially impacted by the Project.

The surveys were undertaken following the drought and as such this was a limitation to the surveys. The paddock areas are however well maintained and fertilized along with the general pasture improvement undertaken by most farmers on the Tablelands. Overall the paddock areas are considered maintained lands under pasture improvement and grazing.

The assessment considered the vegetation communities of White Box-Yellow Box Blakelys Red Gum and derived Native Grassland when undertaking the surveys and while the random meanders were being undertaken attributes of these communities were considered. Other than the conservation agreement areas however no other areas were found to be representative of this community. This property has been well assessed by the CMA as part of the process of entering the conservation agreement areas and as such the likelihood of other areas of this community being represented on the property is considered low.

2.4. RESULTS (FLORA)

2.4.1. Literature Review

The results of the literature review and background searches revealed that the following endangered ecological communities and threatened flora species listed under the EPBC Act and/or TSC Act have the potential to occur at the Project Site:

Critically Endangered Ecological Communities

White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (EPBC Act – Critically Endangered, TSC Act – Endangered)
(Conservation Agreements in place on Paling Yards property) - (Description of Listed Community)

Two areas of the property known as 'Paling Yards' and located within the Project Site have been identified as State 2 (Box Gum Grassy Woodland State and Transition Model) under the conservation agreement applying in the Paling Yards property. Please refer to Figure 4 of this report for details. State 2 (Box Gum Grassy Woodland State and Transition Model) is listed as Critically Endangered under the EPBC Act. As set out at section 2.4.2 below, no activities proposed as part of the Project will disturb the identified State 2 (Box Gum Grassy Woodland State and Transition Model) vegetation.

In a nomination received for the Yellow Box – Red Gum Grassy Woodland, experts identified numerous similarities and intergradations between the nominated Yellow Box-Blakely's Red Gum and the Grassy White Box Woodlands ecological community, which was previously separately listed as endangered under the EPBC Act. The Committee now considers these two ecological communities to be sufficiently similar and intermixed with the result that they have now been listed as a single entity.

In addition, the Committee also considers that, in order to highlight the important contribution of the understorey to the biodiversity and function of this ecological community, emphasis should be placed upon it in naming the ecological community, including areas in which no overstorey remains. Therefore, to reflect the broader definition of the ecological community and the role of its understorey, the name of the ecological community was changed to the White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland, to be known informally as Box – Gum Grassy Woodland and Derived Grassland.

Box – Gum Grassy Woodlands and Derived Grasslands are characterised by a species-rich understorey of native tussock grasses, herbs and scattered shrubs, and the dominance, or prior dominance, of White Box, Yellow Box or Blakely's Red Gum trees. In the Nandewar Bioregion, Grey Box (*Eucalyptus microcarpa* or *E. moluccana*) may also be dominant or co-dominant. The tree-cover is generally discontinuous and consists of widely-spaced trees of medium height in which the canopies are clearly separated.

In its pre-1750 state, this ecological community was characterised by:

- a ground layer dominated by tussock grasses;

- an overstorey dominated or co-dominated by White Box, Yellow Box or Blakely's Red Gum, or Grey Box in the Nandewar bioregion; and,
- a sparse or patchy shrub layer.

Associated, and occasionally co-dominant, trees include, but are not restricted to: Grey Box (*Eucalyptus microcarpa*), Fuzzy Box (*E. conica*), Apple Box (*E. bridgesiana*), Red Box (*E. polyanthemos*), Red Stringybark (*E. macrorhyncha*), White Cypress Pine (*Callitris glaucophylla*), Black Cypress Pine (*C. enderlicheri*), Long-leaved Box (*E. gonicalyx*), New England Stringybark (*E. calignosa*), Brittle Gum (*E. mannifera*), Candlebark (*E. rubida*), Argyle Apple (*E. cinerea*), Kurrajong (*Brachychiton populneus*) and Drooping She-oak (*Allocasuarina verticillata*).

This ecological community occurs in areas where rainfall is between 400 and 1200 mm per annum, on moderate to highly fertile soils at altitudes of 170 metres to 1200 metres (NSW Scientific Committee 2002). Given the occurrence of Box – Gum Grassy Woodlands and Derived Grasslands on the best soils, and therefore the most sought-after agricultural land, very little of the ecological community is reserved. The reserved areas tend to be shrubbier and occur on less arable soils. Remnants on the most fertile soils are the least commonly reserved and remnants in the existing reserves do not represent the natural variation in Grassy White Box Woodland, but favoured communities on poorer soils, i.e. soils classed as unsuitable for agriculture, generally associated with steeper slopes, or shallower soils and/or areas with high shrub abundance. While the ecological community does occur in a number of reserves, most reserves contain only small occurrences, and these remnants have usually been modified by historical land use (NSW Scientific Committee 2002).

Shrubs can occur naturally in grassy woodlands, and can form an important part of the Box – Gum Grassy Woodland and Derived Grassland ecological community, however, on poorer soils throughout its range, this ecological community grades into shrubby woodlands. This can lead to confusion in recognising the listed ecological community, and the following can be used to determine if a remnant is included in the listed ecological community or if it is a shrubby woodland. Shrub cover in this ecological community is naturally patchy, and shrubs may be dominant only over a very localised area. Shrub cover should therefore be assessed over the entire remnant, not just in a localised area. A remnant, with a significant ground layer of tussock grasses, and where the distribution of shrubs is scattered or patchy, is part of the ecological community. In shrubby woodlands, the dominance of native tussock grasses in the ground layer of vegetation is lost. Therefore, a remnant with a continuous shrub layer, in which the shrub cover is greater than 30%, is considered to be a shrubby woodland and so is not part of the listed ecological community. Remnant attributes, such as shrubbiness, should be measured on a scale of 0.1 hectares or greater.

Endangered Ecological Communities

Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South Eastern Australia

The community is mapped as occurring outside the Project Site by the Department of Environment, Water, Heritage and Arts (2009).

Inland Grey Box Woodland includes those woodlands in which the most characteristic tree species, *Eucalyptus microcarpa* (Inland Grey Box), is often found in association with *E.*

populnea subsp. *bimbil* (Bimble or Poplar Box), *Callitris glaucophylla* (White Cypress Pine), *Brachychiton populneus* (Kurrajong), *Allocasuarina luehmannii* (Bulloak) or *E. melliodora* (Yellow Box), and sometimes with *E. albens* (White Box). Shrubs are typically sparse or absent, although this component can be diverse and may be locally common, especially in drier western portions of the community. A variable ground layer of grass and herbaceous species is present at most sites. At severely disturbed sites the ground layer may be absent. The community generally occurs as an open woodland 15–25 m tall but in some locations the overstorey may be absent as a result of past clearing or thinning, leaving only an understorey.

Inland Grey Box Woodland occurs predominately within the Riverina and South West Slopes regions of NSW down to the Victorian border. It includes Albury to the east and may extend out west towards Hay. This community also extends across the slopes and plains in Central and Northern NSW up to the Queensland Border. This includes Yetman and Inverell in the North, Molong to the east of the Central Slopes and plains and out towards Nymagee to the east.

Inland Grey Box Woodland occurs on fertile soils of the western slopes and plains of NSW. The community generally occurs where average rainfall is 375- 800 mm pa and the mean maximum annual temperature is 22- 26°C. There is a correlation between the distribution of *Eucalyptus microcarpa* communities and soils of Tertiary and Quaternary alluvial origin, largely corresponding with the Red Brown Earths. The majority of remnant patches of Inland Grey Box Woodland survive with trees largely intact but with the shrub or ground layers degraded to varying degrees through grazing or pasture modification. Some species that are part of the community appear intolerant to heavy grazing by domestic stock and are confined to the least disturbed remnants.

Native Temperate Grasslands of the Southern Tablelands of NSW and the Australian Capital Territory (EPBC Act – Endangered, TSC Act – Not Listed)

Natural temperate grassland is closed grassland, grassland and open grassland whose biomass is dominated by two or more of the perennial native tussock grasses *Themeda triandra* (Kangaroo Grass), *Austrodanthonia* spp (wallaby grasses), *Austrostipa* spp (speargrasses), *Bothriochloa macra* (Red Grass, Red-leg Grass) and/or *Poa* spp (snowgrasses).

Mature tussock grasses range in height from moderately tall (25–50 cm) to tall (50–100 cm) (Endangered Species Scientific Subcommittee 2000). The spaces between the dominant grass tussocks are occupied by graminoids (grasses and grass-like plants) and a wide range of forbs (herbaceous, non-graminoid plants) which may comprise up to 70% of all plant species and form a distinct, lower layer of vegetation. Many forbs are from the daisy family (Asteraceae), or are lilies or native legumes (Endangered Species Scientific Subcommittee 2000). Dwarf herbs, lichens and mosses may also be present on the soil surface.

Tablelands Basalt Forest (EPBC Act – Not listed, TSC Act – Endangered)

Tableland Basalt Forest is dominated by an open eucalypt canopy of variable composition. *Eucalyptus viminalis, E. radiata, E. dalrympleana* subsp. *dalrympleana* and *E. pauciflora* may occur in the community in pure stands or in varying combinations. The community typically has an open canopy of eucalypts with sparse mid-story shrubs (e.g. *Acacia melanoxylon* and *A. dealbata*) and understory shrubs (e.g. *Rubus parvifolius*) and a dense groundcover of herbs and grasses, although disturbed stands may lack either or both of the

woody strata. The structure of the community varies depending on past and current disturbances, particularly fire history, clearing and grazing. Contemporary tree-dominated stands of the community are largely relics or regrowth of originally taller forests and woodlands, which are likely to have had scattered shrubs and a largely continuous grassy groundcover. At some sites, mature trees may exceed 30 m tall, although regrowth stands may be shorter than 10 m tall.

Tableland Basalt Forest is currently found in the Eastern Highlands and Southern and Central Tablelands, covering the local government areas of Bathurst Regional, Goulburn Mulwaree, Oberon, Palerang, Shoalhaven, Upper Lachlan and Wingecarribee. The community, however, may be found elsewhere within the designated bioregions. It is known to occur in the Crookwell area on Clay Loam Soils.

Tableland Basalt Forest typically occurs on loam or clay soils associated with basalt or, less commonly, alluvium, fine-grained sedimentary rocks, granites and similar substrates that produce relatively fertile soils. The species composition of Tableland Basalt Forest varies with average annual rainfall. On basalt or plutonic substrates east of Mittagong and Moss Vale, at the eastern edge of its distribution where average rainfall exceeds 1000-1100 mm per year, the community is replaced by Robertson Basalt Tall Open-forest and Mount Gibraltar Forest. Its distribution spans altitudes from approximately 600 m to 900 m above sea level, usually on undulating or hilly terrain. Mean annual rainfall varies from approximately 750 mm up to 1100 mm across the distribution of the community.

Threatened Species

Table 1 below sets out the individual threatened flora species which the results of the literature review identified as having the potential to occur within the Project Site. Table 1 also provides details of whether these individual flora species are listed under the EPBC Act and/or the TSC Act.

Table 1: Individual Flora Species

Common Name	Scientific Name	EPBC	TSC	Data
Yass Daisy	*Ammobium craspedioides*	V	V	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA.
River Swamp Wallaby Grass	*Amphibromus fluitans*	V	V	EPBC search states species or species habitat may occur within Upper Lachlan LGA.
Flockton Wattle	*Acacia flocktoniae*	V	V	EPBC search states species or species habitat likely to occur within Oberon LGA.
Dense Cord-rush	*Baloskion longipes*	V	V	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA and Oberon LGA.
Deane's Boronia	*Boronia deanei*	V	V	EPBC search states species or species habitat likely to occur within Oberon LGA.
Thick-lipped Spider-orchid	*Caladenia tessellata*	V	E	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA and Oberon LGA.
Leafless Tongue Orchid	*Cryptostylis hunteriana*	V	V	EPBC search states species or species habitat likely to occur within Oberon LGA.
Buttercup Doubletail	*Diuris aequalis*	V	E	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA and Oberon LGA.
Tricolor Diuris	*Diuris tricolor*	V	V	EPBC search states species or species habitat - may occur within Upper Lachlan LGA.

Common Name	Scientific Name	EPBC	TSC	Data
Silver-leafed Gum	*Eucalyptus pulverulenta*	V	V	EPBC search states species or species habitat likely to occur within Oberon LGA.
Herb	*Euphrasia arguta*	CE	CE	EPBC search states species or species habitat likely to occur within Oberon LGA.
Kowmung Hakea	*Hakea dohertyi*	E	E	EPBC search states species or species habitat likely to occur within Oberon LGA.
Cambage Kunzea	*Kunzea cambagei*	V	V	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA and Oberon LGA.
Basalt Pepper-cress	*Lepidium hyssopifolium*	E	E	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA.
Hoary Sunray	*Leucochrysum albicans var. tricolor*	E	V	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA and Oberon LGA.
Rufus Pomaderris	*Pomaderris brunnea*	V	V	EPBC search states species or species habitat likely to occur within Oberon LGA.
Cobar Greenhood Orchid	*Pterostylis cobariensis*	V	V	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA.
Button Wrinklewort	*Rutidosis leptorrhynchoides*	E	E	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA.
Kangaloon Sun Orchid	*Thelymitra sp. Kangaloon (D.L Jones 18108)*	CE	-	EPBC search states species or species habitat may occur within Upper Lachlan LGA and Oberon LGA.
Austral Toadflax	*Thesium australe*	V	V	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA and Oberon LGA.

Common Name	Scientific Name	EPBC	TSC	Data
Mountain Trachymene	*Trachymene scapigera*	E	E	EPBC search states species or species habitat likely to occur within Oberon LGA.
Silky Swainson Pea	*Swainsonia sericea*	-	V	Letter from the Office of Environmental Heritage (OEH) setting out the matters it would like addressed in the environmental assessment for the Project.
Small Purple Pea	*Swainsonia recta*	E	E	Letter from OEH setting out the matters it would like addressed in the environmental assessment for the Project.
Tarengo Leek Orchid	*Prasophyllum petilum*	E	E	Letter from OEH setting out the matters it would like addressed in the environmental assessment for the Project.

Key: CE= Critically Endangered, E= Endangered, V=Vulnerable.

2.4.2. Field Survey Results

General

The results of the field surveys detected no other Endangered Ecological Communities or individual threatened flora species listed under either the EPBC Act or the TSC Act within the Project Site apart from the Box Gum Woodland the subject of the Conservation Agreement areas and south-west of Paling Yards as shown in Figure 4.

The surveys undertaken considered the potential for the previously mentioned communities to occur within the site area. The site itself has been cleared since early European history and unlike some farming enterprises it is well managed and a full time working agricultural enterprise which encompasses pasture improvement through fertilising, spraying and seeding. No areas representing any threatened communities were detected and the turbines are mainly within cleared paddock areas which are grazed and maintained.

The vegetation across the Project Site (being 'Paling Yards', 'Mingary Park' and the Northern Transmission Route Option) is represented mostly by cleared grazing paddock, most of which is highly disturbed. Most of the more fertile areas of the Project Site have been extensively cleared for grazing (primarily sheep and cattle grazing) and have also been pasture improved through planting pasture grass species and fertiliser application. By contrast the no longer preferred Southern Transmission Route Options are longer and traverse more native vegetation.

The 'Paling Yards' and 'Mingary Park' properties have been extensively cleared in the past and are highly pasture improved, being working large scale properties. Both of these properties are located within the Taralga Landscape Soil Group and are surrounded, in part,

by the Midgee Soil Landscape. The Taralga Soil Landscape is noted in Hird (1991) as having Brown Barrell *(Eucalyptus fastigata)* and Ribbon Gum *(Eucalyptus viminalis)* while the Midgee Soil Landscape is noted as having Red-Stringybark *(E.maccorhyncha)* and Scribbly Gum *(E.sclerophylla)*. While these species occur within the Project Site, a broader range of species occur within both properties as discussed below.

Both Paling Yards and Mingary Park have a combination of good quality agricultural and poorer quality agricultural soils. The vegetation present reflects these soil types as does the land cleared for farming. All of the better quality agricultural lands have been cleared and used for agriculture and have been extensively pasture improved. The surrounding poorer quality land has been either cleared with little or no pasture improvement or has been retained as timbered country. Specifically, the cleared areas reflect almost exactly the extent of the Taragla Soil Landscape occurrence on these properties as shown in Figure 5 below. This also corresponds to the location of most of the wind turbines and their related infrastructure. As such, the wind farm has been designed to limit disturbance to native vegetation.

As most of the Taralga Soil Landscape has been previously cleared for agriculture, many of the overstorey eucalypts have been removed, with only remnants of what would have once been present remaining. The shrub layers have been removed and the ground covers dominate throughout the properties by a minimum of >60% non-endemic/exotic pasture species and weeds. The few scattered overstorey flora species remaining are represented by Long-leafed Box *(Eucalyptus goniocalyx)*, Red Stringybark *(Eucalyptus macrorhyncha)*, Broad-leafed Peppermint *(Eucalyptus dives)* and Mountain Gum *(Eucalyptus dalrympleana)* with occasional Apple Box *(Eucalyptus bridgesiana)* and Ribbon Gum *(Eucalyptus viminalis)*. Occasional specimens of Ribbon Gum *(Eucalyptus dives)* and Broad-leafed Peppermint also occur. Ground covers are represented by a range of species which varies according to grazing and the levels of pasture improvement. Species occurring include *Phalaris minor *, Panicum maximum *, Hordeum leporinum *, Nasella trichotoma *, Carthamus lanatus, Carduus nutans ssp. nutans *, Rubus fruticosus *, Galium aparine *, Chondrilla juncea *, Rumex acetosella *, Malva parvifolia *, Microlaena stipoides, Stipa verticillata,* and *Chionchloa pallida*. (* denotes exotic species).

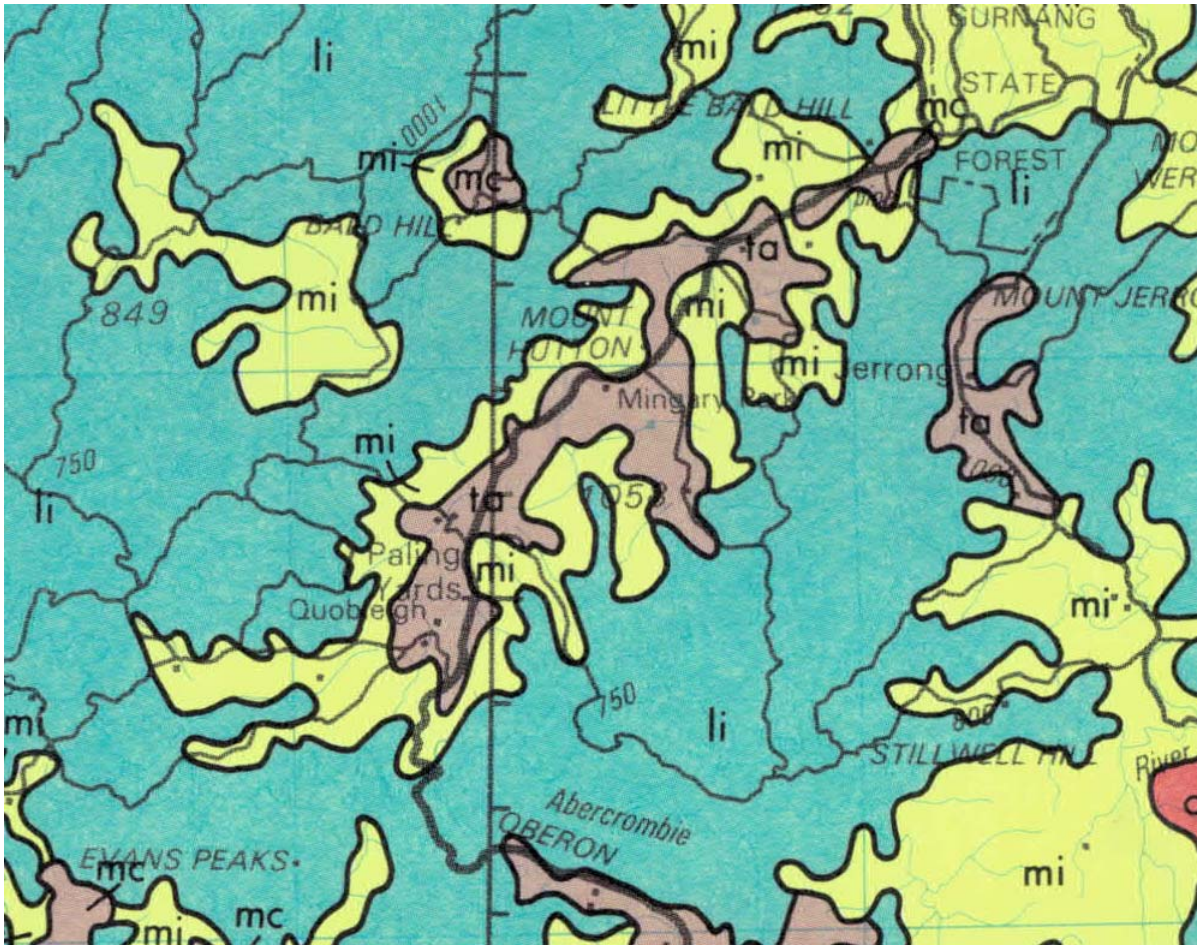

Figure 5: Soil Landscapes of Paling Yards and Mingary Park Properties. (Li = Lickinghole, Ta = Taralga, Mi = Midgee)

The Migdee Soil Landscape occurs towards the borders of these two properties as shown on Figure 5 above. There is usually a distinct change in the vegetation reflecting the soil type. These areas are usually dominated by Red Stringybark *(E. macrorhyncha)*, Long-leafed Box *(E.goniocalyx)*, Brittle Gum *(E.mannifera ssp maculosa)* and Scribbly Gum (*E.rossii* with occasional *E.sclerophylla*). The understorey in these areas is usually sparse, and generally without any shrubs present due to the soil type and/or grazing and ground covers.

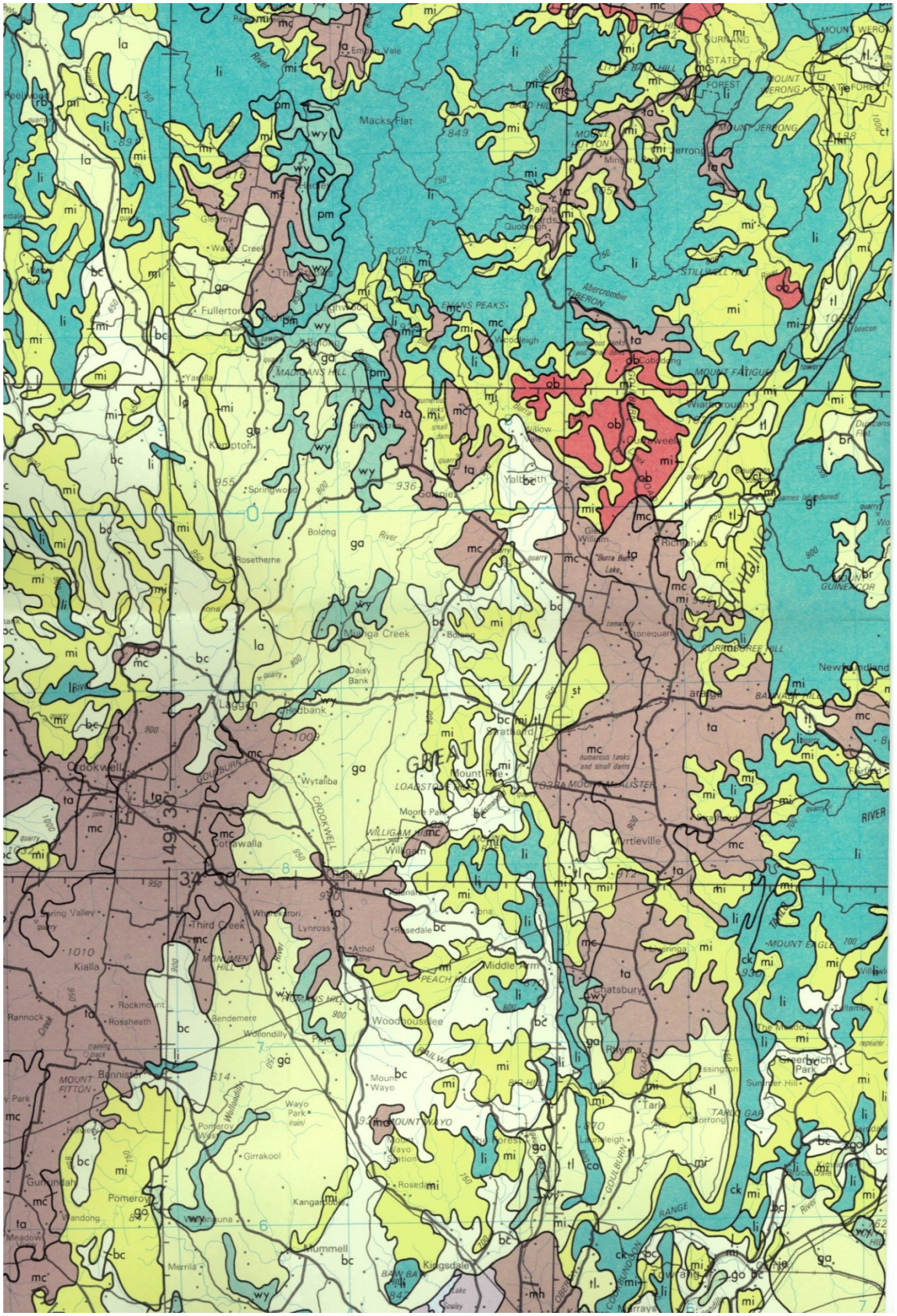

Figure 6: Soil Types of the Project Site. (Li = Lickinghole, Ta = Taralga, Mi = Midgee, Ck – Cockbundoon, Bc = Blakney Creek, Ga = Garland, Ob = Oberon, Mc = Macalister)

Remnant Native Vegetation

There are the following areas of native forest vegetation remaining within the 'Paling Yards' and 'Mingary Park' properties as shown on the map in Appendix D:

Remnant A

This remnant is continuous with large tracts of bushland to the southeast and west of the Abercrobmie River. No removal or disturbance of this vegetation is necessary.

This remnant represents the Box Gum Woodland which is the subject of the conservation agreement and is located in the south-west of 'Paling Yards'. The vegetation within the conservation agreement area has been defined as Box Gum Woodland which is listed as a Critically Endangered Ecological Community under the EPBC Act.

It was initially proposed to construct turbines P2, P6 and P7 within this remnant. However, so as to miminse impacts on the Box Gum Woodland, it is no longer proposed to construct turbines P2, P6 and P7 and these no longer form part of this stage of the Project. Accordingly, the Project will not impact on Remnant A or any land subject to the conservation agreement.

Subject to appropriate arrangements being put in place regarding the current conservation agreement, approval for turbines P2, P6 and P7 may be sought at a later date (either by way of a modification under section 75W of the EP&A Act or as a separate approval).

Remnants B and C

Remnant B extends along the southern portion of the 'Paling Yards' property boundary and to the Abercrombie River. It is an area that has been mostly excluded from intense grazing activities due to the poor nature of the soil type. The vegetation within this area is generally dominated by Red Stringybark *(E. macrorhyncha)*, Long-leafed Box *(E.goniocalyx)*, Brittle Gum *(E.mannifera ssp maculosa)* and Scribbly Gum (*E.rossii* with occassional *E.sclerophylla*). This vegetation is representative of Western Tablelands Dry Forest and this vegetation community is not listed as an Endangered or Threatened vegetation community under either the EPBC Act or the TSC Act. This remnant is continuous with vegetation to the southeast and to the west. No removal or disturbance to this vegetation is required.

Remnant C contains the same vegetation type as Remnant B and would not be impacted significantly by the Project as only an access track would disturb a small part of the northern side of this remnant where there is an existing farm track traversing through the remnant area. Remnant C represents approximately 16 hectares of Western Tablelands Dry Forest. It is estimated that less than 0.1 hectare of this vegetation would require temporary disturbance during the construction period which would then be rehabilitated post construction.

Remnant D

Remnant D represents one area of vegetation running along the western boundary of the Project Site and extending to the west. This remnant has been labelled individually to

identify the different areas occurring along the Project Site. Most of this remnant is located on the Licking hole Soil Landscape. This soil type is quite limiting to farming practices as it is extremely poor with high levels of various rocks and low levels of nutrients, including trace elements. It is not often cleared due to its high levels of limitation in relation to agricultural grazing.

It contains Western Tablelands Dry Forest comprising Red Stringybark *(Eucalyptus macrorhyncha)*, Broad-leafed Peppermint *(Eucalytus dives)*, Brittle Gum *(Eucalytpus mannifera)*, and Candlebark *(Eucalytpus rubida)*. This vegetation is not representative of an Endangered or Threatened vegetation community listed under either the EPBC Act or the TSC Act. Turbines P10, P13 and P14 have been relocated from their original proposed locations within this remnant to now occur just within this remnant area. Turbine P11 and its associated access track and temporary crane hard stand have been deleted from the layout. This redesign has considerably reduced the impacts on this vegetation, therefore the new layout will now only affect 0.65 ha of this Western Tablelands Dry Forest.

Surveys of the proposed turbine location and access tracks detected no listed threatened species or endangered ecological communities. Turbine P11 had potential to cause impact to this remnant however this turbine has been deleted from the proposal and therefore the potential impact has been avoided.

Overall, based on the redesign of the development footprint, it is estimated that a total of 0.65 ha of this remnant may be potentially disturbed as part of the construction of these turbines with approximately 0.14 ha of this disturbed area able to be rehabilitated post construction, resulting in a long term development footprint and disturbance of 0.51 ha of this vegetation community.

Remnants E, F, G and H

Remnants E, F, G and H have been labelled individually. Remnants E and G are one continuous remnant occurring along the western boundary of the property. These will not be impacted in any way by the proposed development. Remnants F and H occur on the eastern side of the property. Remnant F is continuous with large tracts of vegetation to the east whilst there are several small polygons of vegetation (labelled H) left in the paddock areas. These areas are representative of Western Tablelands Dry Forest whch is the most common vegetation type surrounding the site. None of these would be impacted by the proposal.

Transmission Route Options

All four Transmission Route Options have been assessed as part of this ecological assessment. As a result of this assessment, the Northern Transmission Route Option has been identified as the preferred option as, owing to its much shorter length, it will result in significantly lower impacts and improved constructability. Accordingly, the Southern Transmission Route Options are no longer proposed as part of the Project but are included in this assessment for completeness.

The 3 proposed Southern Transmission Route Options traverse, via overhead power lines, approximately 55 km south from the proposed wind farm site to the approved Crookwell 2 wind farm substation (CKWF) and then connecting to the Yass to Bannaby 330kV transmission line. The three Southern Transmission Route Options are shown on Figure 2 as

Options 1, 2 and 3. Options 1, 2 and 3 exit the wind farm site in different locations but share a common alignment south from the intersection of Golspie and Tyrl Tyrl Road ('Common Route'), following the route of Carrabungla Road and Woodhouselee Road to connect to CKWF.

- **Option 1** represents the western option and exits 'Paling Yards' at Scrammies Waterhole as it crosses the Abercrombie River. It runs south along Leighwood Road down to the intersection with Golspie Road, and then to the intersection with Tyrl Tyrl Road where it continues to the Common Route. This route follows the existing roads and as such creates very little potential impacts due to vegetation removal. This option, along with Option 3, among the three Southern Transmission Routes would cause the least ecological impacts. The exit of this overhead transmission line from 'Paling Yards' and crossing the Abercrombie River will span much of the low woodland vegetation. There is an existing access track in the area where it would cross the river which may assist in reducing impacts due to construction.

- **Option 2** represents the middle option. It crosses the river approximately 500 metres to the east of Peters waterhole on the Abercrombie River as it exits the 'Paling Yards' Property. It runs approximately 14km directly south, not following a defined road, where it meets the intersection of Golspie and Tyrl Tyrl Road to follow the Common Route. The section before the Common Route represents private lands and farming country, therefore it was not surveyed in high levels of detail due to access difficulties. This section has a large remnant of Woodland which would be disturbed by the construction of the overhead transmission line. This may represent a limitation to this route and further surveys would be required of this remnant if this option was chosen. Of the proposed three Southern Transmission Routes this option has the greatest ecological impacts. If this option were to be chosen, these impacts could be reduced by proceeding south from Yalibraith Road along Leighwood Road and Golsipie Road to the Common Route.

- **Option 3** represents the easterly option which exits the south-eastern side of 'Paling Yards'. It crosses the Abercrombie River with minimal vegetation removal and heads south over an area called "the racecourse". It runs south along Taralga Road and intersects with Tyrl Tyrl Road to follow the Common Route. The exit from the proposed wind farm site to join the Taralga Road is relatively short and, due to the topography, the line would potentially span most of the vegetation present including the Abercrombie River. As such, the impacts would be minimal in relation to vegetation removal. Micrositing of the towers guided by an ecologist on site would further reduce the potential for vegetation removal. Generally most of the vegetation along the route to the Common Route represents cleared road verge vegetation. The ecological impacts of this proposed route would be minimal. Micrositing could be used to avoid areas of native trees or other vegetation where possible.

Northern Transmission Route – Option 4

The Northern Transmission Route, Option 4, would involve the construction of approximately 9km of overhead transmission line and therefore represents the shortest path to the main electricity grid. The route heads north through cleared grazing country (see Figure 6) to connect to the Mt Piper to Bannaby 500kV transmission line which passes north east of the proposed wind farm site. The Northern Transmission Route Option represents the route of

least environmental impact when compared with the three Southern Transmission Route Options. The vegetation along the Northern Transmission Route Option is consistent with that of the Taralga soil landscape (previously described) and is in the same condition as Paling Yards and Mingary Park. This option would only disturb cleared grazing paddock. Accordingly, the ecological impacts as a result of this option are considered negligible. No Endangered Ecological Communities or significant threatened species habitat would be impacted.

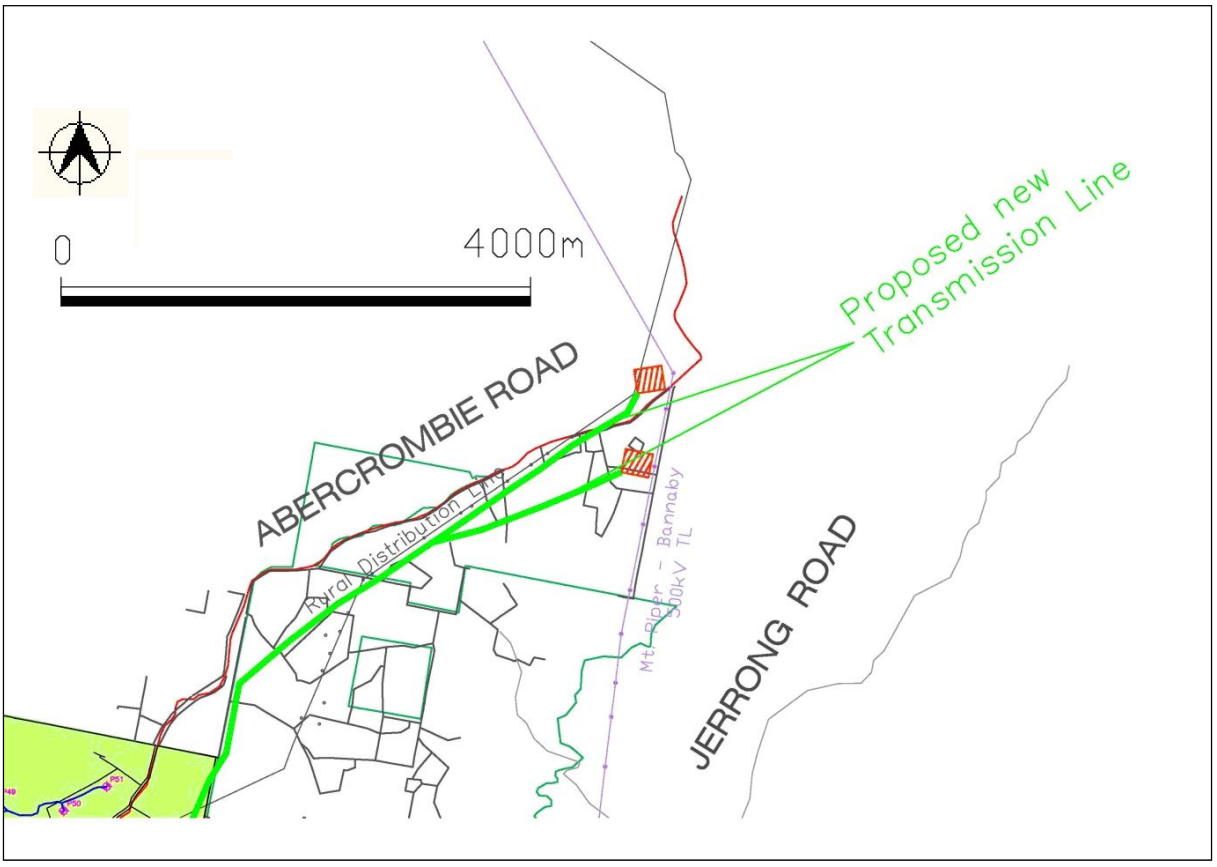

Figure 7: Proposed Northern Transmission line Option

Extent of Woodland Vegetation Removal

The extent of woodland vegetation removal in the wind farm site required to facilitate the construction of the Project infrastructure (including turbines, access tracks, crane hard stands, and substations) would be small. The approximate areas of vegetation required to be removed are outlined below:

- Turbine P10, 314 m^2 for turbine foundation, 700 m^2 for access track, and 2,000 m^2 for temporary crane hard stand, resulting in 0.3 ha during construction of which 0.06 ha would be rehabilitated after the construction phase.
- Turbine P13, 314 m^2 for turbine foundation, and 595 m^2 for temporary crane hard stand, resulting in 0.09 ha during construction of which 0.02 ha would be rehabilitated after the construction phase.
- Turbine P14, 314 m^2 for turbine foundation, 500 m^2 for access track, and 1,800 m^2 for temporary crane hard stand, resulting in 0.26 ha during construction of which 0.06 ha would be rehabilitated.
- Removal of vegetation along the existing farm tracks for the access track through remnant C being less than 0.1 hectare. Most of this can be rehabilitated once construction activities have been finalised.

The extent of woodland vegetation removal under the former project proposal was 2.6 hectares of Western Tablelands Dry Forest. As part of the new revised proposal the extent of woodland vegetation removal (shown above) is now only 0.65 ha of which 0.14 ha would be rehabilitated thus resulting in the total removal of 0.51 ha. This has been achieved through the deletion of proposed turbine P11 and the re-siting of turbines, P10, P13 and P14, and realignment of proposed access tracks.

Overall there would be a direct disturbance of approximately 0.75 hectares of remnant woodland vegetation removal required for the wind farm, of which approximately 0.24 hectare is proposed to be rehabilitated post construction when the access tracks and temporary crane hard stands are reduced in size to the size required for operation and maintenance.

It is recommended that pre-construction surveys by a qualified ecologist be undertaken just before construction takes place to identify any potential habitat trees which can, where practicable, be avoided by micrositing of the access tracks.

The Southern Transmission Routes (Options 1, 2 and 3) are characterised by some timbered farming land (primarily around the Abercrombie River) and largely cleared farming areas and areas of native vegetation within the Road reserves. The areas of native vegetation within the Road reserves are normally quite disturbed due to the grading of the dirt roads. Many of these areas are also between farmers cleared paddocks and the existing road and, as such, are quite degraded. Option 2 would be the least preferred option due to the remnant woodland vegetation it would have to traverse just to the north of the intersection of Gillespie and Tyrl Tyrl Road, before following the Common Route.

Specific details of the exact location in which the power line poles would be located if one of Options 1, 2 and 3 were to be preferred was not available at the time of survey. However, it is expected that, due to the flexible nature of the development, much of the native vegetation

within the Southern Transmission Route Options could be substantially avoided through the micrositing of poles. Accordingly, while it is likely that there would be no significant ecological impacts if the Southern Transmission Route Options were preferred, it is recommended that if one of the Southern Transmission Route Options is proposed that there should be additional pre-commissioning surveys undertaken once the exact location of the power poles has been determined.

The Northern Transmission Routes (Option 4) would remove negligible native vegetation due to the cleared state of the grazing paddocks which it traverses. As such, the Northern Transmission Route Option is the preferred option as there are unlikely to be any ecological impacts arising from this option. Accordingly, the Southern Transmission Routes (Options 1, 2 and 3) are no longer proposed as part of the Project.

Summary of Impacts

The proposed wind farm is located within existing managed agricultural lands. The proposed layout has been designed to reduce any ecological impacts. As previously mentioned, most of the land where the turbines are proposed to be located has been cleared historically and is pasture improved and used as sheep/cattle grazing country. The construction of the wind farm is considered to be a largely negligible impact as very little vegetation would require removal and no threatened species or endangered ecological communities were detected during the surveys.

The construction phase has the highest potential to impact on flora species. Once construction is completed the internal access tracks will be reduced in size to the extent required for maintenance and servicing of the wind farm and additional areas of native vegetation disturbed during construction would be rehabilitated as part of a Vegetation Management Plan. Overall, it is considered that the impacts of the proposed wind farm development are not significantly higher than the levels of impact from the existing farm management practices of sheep grazing, cattle grazing, weed spraying, pasture improvement and low level timber collection.

The Northern Transmission Route (Option 4) represents the shortest path and would create the least ecological impacts of any of the options and is accordingly the proposed option for the construction of the transmission line. The Northern Transmission Route (Option 4) traverses cleared farming land which is maintained and consistent with the cleared grazing land found also on the proposed wind farm site.

3. METHODOLOGY - FAUNA

3.1. DESKTOP REVIEW

A literature review was carried out in order to assist in the identification of threatened fauna species and endangered ecological populations listed under the TSC Act and EPBC Act with potential to occur in the area. This literature review was based on database searches of:

- the NPWS Wildlife Atlas for the Upper Lachlan Local Government Area and Oberon LGA; and
- the EPBC online Protected Matters database search tool for Upper Lachlan and Oberon Local Government Areas.

3.2. SURVEY METHODOLOGY

The field surveys were based on the following methodology:

1. Initial site familiarisation to determine potential ecological issues in relation to turbine cluster sitings, access tracks and access roads.
2. Field surveys to identity habitat types, condition and potential level of impacts.
3. Mapping of habitat types on aerial photographs. This was undertaken concurrently with the field surveys to identify the vegetation types.

The field surveys for fauna recorded attributes including; vegetation type and structure (Specht), slope, aspect, soils and geology, elevation, floristics, vegetation condition, foliage projection cover (FPC), level of understorey disturbance, fire history and level of weed invasion. During these surveys particular attention was paid to any threatened species listed under the TSC Act or EPBC Act which the literature review identified as having the potential to occur at the Project Site.

Fauna species recorded during the survey are listed in Appendix B. The condition assessment and conservation ratings of the habitat present is described based on the following criteria;

- **Poor:** Habitat which have suffered high levels of historical and current disturbance. These areas are highly modified both structurally and floristically in relation to the flora species present. They contain only the indicators of what the vegetation community and habitat would have once been. They contain no species features such as fallen timber, hollow trees, rocky outcrops, or waterbodies to provide potential habitat for threatened fauna. These areas are generally farming paddocks with limited trees remaining and are often pasture improved.
- **Moderate:** Areas of moderate quality habitat which retain many of their natural characteristics but have immediate indicators of disturbance and modification readily present. Moderate levels of structural and floristic modification evident to the vegetation and any landform features. These areas are generally open paddock with scattered overstorey trees.
- **Good:** Areas with high levels of natural integrity both structurally and floristically in relation to the vegetation which provides fauna habitat. May contain other features

such as hollow trees, fallen timber, water bodies, rocky outcrops or other significant fauna habitat features.

Targeted Surveys

Targeted surveys were undertaken for a range of threatened species as outlined in **Appendix E**. This table outlines the weather conditions, survey dates, and effort. The results of the targeted surveys for threatened fauna only detected one species. This was the Gang Gang Cockatoo which is listed under the TSC Act as Vulnerable. This species was detected in the bushland area where turbines P10, P11 (now deleted), P13 and P14 occur. Additional surveys were undertaken in September for this species in order to determine the actual potential nesting hollows present, as well as hollow availability within these areas. In addition to the listed targeted surveys outlined in **Appendix E**, 15 hours of spotlighting was undertaken across the Project Site.

Owl Surveys

Owl Surveys were undertaken at the locations provided in Appendix E. The surveys comprised a 45 minute call playback period. The surveys also included a 20 minute listening period prior to commencing the surveys and then a 20 minute listening period after the survey period. The 45 minute call playback included the Barking, Powerful, Masked, and Sooty Owls. Overall a total of approximately 85 minutes was spent at each site.

Microchiropteran Bat Surveys

Due to the large site area and low availability of flyways to place harp traps the surveys undertaken utilised Anabat Bat detectors. These were set to record all night with calls analysed in the office by Jason Anderson. He has experience undertaking bat surveys and Anabat call analysis since 1997 when he commenced work in the Ecological Research Section at State Forests of NSW. The use of Anabat is justified as it will effectively record all the species of concern in the local area. The decision was made to use solely anabat as effort for effort it yields more records than putting effort into harp trapping in such open environments. The anabats were located at altitudes and locations where the turbines are to be located and as such were located such that they could record the high flying species with high aspect wing ratios. Anabat is particularly effective at detecting high flying species which are otherwise not easily captured using harp or mist netting. The use of Anabat at the higher elevaton ridges also allows for the detetion of any potentially migrating species.

3.3. LIMITATIONS

Every survey has some limitations in relation to timing and season. The surveys concentrated on areas to be potentially impacted by the proposed development and any surrounding areas which may be directly or indirectly impacted by the Project. As with any large area survey, individual species may not have been detected due to a number of reasons including area size and seasonal variability.

Every survey has limitations however and, as far as practicable, potential species were addressed during the surveys. Overall the Project has been designed to limit impacts on native vegetation communities and/or fauna habitat. Given this, the Project is assessed as having low potential impacts which are not likely to be significant on any fauna species present in this highly modified and managed agricultural system.

3.4. RESULTS FAUNA

3.4.1. Literature Review

The results of the literature review and background searches revealed that a number of threatened species listed under the EPBC Act and the TSC Act have the potential to occur within the Project Site.

Tables 2 to 7 below set out the individual threatened fauna species which the results of the literature review identified as having the potential to occur within the Project Site. Table 2 also provides details of whether these individual fauna species are listed under the EPBC Act and/or the TSC Act.

Table 2: Potential Threatened Fauna species - Birds

Common Name	Scientific Name	EPBC	TSC	Data
Regent Honeyeater	*Anthochaera phrygia*	E	E	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA and Oberon LGA.
Swift Parrot	*Lathamus discolor*	E	E	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA and Oberon LGA.
Superb Parrot	*Polytelis swainsonii*	V	V	EPBC search states breeding likely to occur within Upper Lachlan LGA and Oberon LGA.
Australian Painted Snipe	*Rostratula australis*	V	E	EPBC search states species or species habitat may occur within Upper Lachlan LGA and Oberon LGA.
Brown Treecreeper	*Climacteris picumnus victoriae*	-	V	Letter from OEH setting out the matters it would like addressed in the environmental assessment for the Project

Common Name	Scientific Name	EPBC	TSC	Data
Diamond Firetail	*Stagonopleura guttata*	-	V	Letter from OEH setting out the matters it would like addressed in the environmental assessment for the Project
Hooded Robin	*Melanodryas cucullata cucullata*	-	V	Letter from OEH setting out the matters it would like addressed in the environmental assessment for the Project
Speckled Warbler	*Pyrrholaemus saggitatus*	-	V	Letter from OEH setting out the matters it would like addressed in the environmental assessment for the Project
Varied Sittella	*Daphoenositta chrysoptera*	-	V	Letter from OEH setting out the matters it would like addressed in the environmental assessment for the Project
Scarlet Robin	*Petroica boodang*		V	Letter from OEH setting out the matters it would like addressed in the environmental assessment for the Project
Barking Owl	*Ninox connivens*	-	V	Letter from OEH setting out the matters it would like address in the environmental assessment for the Project.
Powerful Owl	*Ninox strenua*	-	V	Letter from OEH setting out the matters it would like addressed in the environmental assessment for the Project
Gang Gang Cockatoo	*Callocephalon fimbriatum*	-	V	Letter from OEH setting out the matters it would like addressed in the environmental assessment for the Project
Glossy Black Cockatoo	*Calyptorhynchus lathami*	V	E	Letter from OEH setting out the matters it would like addressed in the environmental assessment for the Project

Key: CE= Critically Endangered, E= Endangered, V=Vulnerable.

Table 3: Potential Threatened Fauna Species - Amphibians

Common Name	Scientific Name	EPBC	TSC	Data
Giant Burrowing Frog	*Heleioporus australiacus*	V	V	EPBC search states species or species habitat may occur within Upper Lachlan LGA and Oberon LGA.
Booroolong Frog	*Litoria booroolongensis*	E	E	EPBC search states species or species habitat may occur within Upper Lachlan LGA and Oberon LGA.
Yellow-spotted Tree Frog	*Litoria castanea*	CE	E	EPBC search states species or species habitat may occur within Upper Lachlan LGA.
Littlejohn's Tree Frog	*Litoria littlejohni*	V	V	EPBC search states species or species habitat may occur within Upper Lachlan LGA and Oberon LGA.
Growling Grass Frog	*Litoria raniformis*	V	E	EPBC search states species or species habitat may occur within Upper Lachlan LGA.

Table 4: Potential Threatened Fauna Species - Insects

Common Name	Scientific Name	EPBC	TSC	Data
Golden Sun Moth	*Synemon plana*	CE	E	EPBC search states species or species habitat known to occur within Upper Lachlan LGA.

Key: CE= Critically Endangered, E= Endangered, V=Vulnerable.

Table 5: Potential Threatened Fauna Species - Mammals

Common Name	Scientific Name	EPBC	TSC	Data
Large-eared Pied Bat	*Chalinolobus dwyeri*	V	V	EPBC search states species or species habitat may occur within Upper Lachlan LGA and Oberon LGA.
Tiger Quoll	*Dasyurus maculatus maculatus (SE mainland population)*	E	V	EPBC search states species or species habitat may occur within Upper Lachlan LGA and Oberon LGA.

Common Name	Scientific Name	EPBC	TSC	Data
Greater Long-eared Bat	*Nyctophilus timoriensis (south-eastern form)*	V	V	EPBC search states species or species habitat may occur within Upper Lachlan LGAand Oberon LGA
Brush-tailed Rock Wallaby	*Petrogale penicillata*	V	E	EPBC search states species or species habitat may occur within Upper Lachlan LGA and Oberon LGA.
Long-nosed Potoroo	*Potorous tridactylus tridactylus*	V	V	EPBC search states species or species habitat may occur within Upper Lachlan LGA and Oberon LGA.
Grey-headed Flying Fox	*Pteropus poliocephalus*	V	V	EPBC search states foraging, feeding or related behaviour known to occur within Upper Lachlan LGA.
Eastern False Pipistrelle	*Falsistrellus tasmaniensis*	-	V	Letter from OEH setting out the matters it would like addressed in the environmental assessment for the Project
Eastern Bent Wing Bat	*Miniopterus schreibersi*	-	V	Letter from OEH setting out the matters it would like addressed in the environmental assessment for the Project
Large Footed Myotis	*Myotis macropus*	V	V	Letter from OEH setting out the matters it would like addressed in the environmental assessment for the Project
Greater Broad-nosed Bat	*Scoteanax rueppelli*	-	V	Letter from OEH setting out the matters it would like addressed in the environmental assessment for the Project.
Yellow-bellied Sheath-tailed Bat	*Saccolaimus flaviventris*	-	V	Letter from OEH setting out the matters it would like addressed in the environmental assessment for the Project

Key: CE= Critically Endangered, E= Endangered, V=Vulnerable.

Table 6: Potential Threatened Fauna species - Fish

Common Name	Scientific Name	EPBC	TSC	Data
Murray Cod	*Maccullochella peelii peelii*	V		EPBC search states species or species habitat may occur within Upper Lachlan LGA.
Macquarie Perch	*Macquaria australasica*	E		EPBC search states species or species habitat may occur within Upper Lachlan LGA.

Key: CE= Critically Endangered, E= Endangered, V=Vulnerable.

Table 7: Potential Threatened Fauna species - Reptiles

Common Name	Scientific Name	EPBC	TSC	Data
Pink-tailed Worm Lizard	*Aprasia parapulchella*	V	V	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA.
Striped Legless Lizard	*Delma impar*	V	V	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA.
Little Whip Snake	*Suta flagellum*	-	V	Letter from OEH setting out the matters it would like addressed in the environmental assessment for the Project
Grassland Earless Dragon	*Tympanocryptis pinquicolla*	E	E	Letter from OEH setting out the matters it would like addressed in the environmental assessment for the Project
Broad-headed Snake	*Hoplocephalus bungarioides*	V	E	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA.

Key: CE= Critically Endangered, E= Endangered, V=Vulnerable.

3.4.2. Field Survey Results

General

The results of the field surveys detected no other threatened fauna other than the Gang Gang Cockatoo (*Callocephalon fimbriatum*) which is listed under the TSC Act as Vulnerable. This species was detected in the woodland area near turbine P14. The Wedge-tailed Eagle *(Aquilia audax)* was also detected during the surveys (around the area of turbines P1-P8 and flying over the Abercrobie River) and, while not a protected listed species under the TSC Act or the EPBC Act, it represents a significant species, as it is the largest bird of prey in Australia.

The targeted surveys and detailed habitat assessment for the Gang Gang Cockatoo undertaken during September 2011 indicate that there are good levels of potential hollows present for nesting (approximately 3 per hectare). However, no actual nests were located during the targeted survey. As such, the area represents potential habitat and it is recommended that potential impacts be mitigated by avoiding potential nest hollows where practicable.

This has been largely achieved within the amended proposal which significantly reduces impacts to this area of Western Tablelands Dry Forest to 0.65ha. Thus the level of impact is small and would not constitute a significant impact for this species potential habitat.

The targeted surveys and detailed habitat assessment for the Wedge-tailed Eagle did not identify any nest(s). Accordingly, this species is unlikely to be impacted by any clearing required for the wind farm and its associated infrastructure. Generally this species was observed soaring well above the maximum turbine height, and often over the forested area to the north and the Abercrombie River area to the south which are not proposed to be impacted by the Project.

Most of the areas where the Project infrastructure (including turbines, access roads and substation areas) is proposed represent cleared grazing paddocks, with high levels of disturbance and limited fauna habitat for most of the species listed in Tables 2 to 7 above. This is due to the historical farming of these areas, which has removed most of the native vegetation and replaced it with pasture improved paddocks. Most of the more fertile areas of the Project Site have been extensively cleared for grazing (primarily sheep and cattle grazing) and have also been pasture improved, through planting pasture grass species and fertiliser application, which has severely degraded the habitat throughout most of the Project Site.

The proposed use of many of the existing farm access tracks significantly reduces the levels of impact and there would be no impacts on riparian or instream habitats. As the land is already cleared (causing the existing fragmentation) where the infrastructure is proposed, there are considered to be no biodiversity corridor impacts. The level of potential impacts resulting from the level of native vegetation which is required to be cleared for the Project is considered to be small as the land has been extensively cleared historically for farming. As such, it is considered that there is unlikely to be any significant change to the current situation and levels of impacts.

The habitat types present generally conform to the remaining vegetation remnants on the Project Site as fauna habitat attributes relate generally to vegetation features within the landscape. As a result of the high levels of clearing, pasture improvement and continued grazing since European settlement, the paddock areas are generally no longer consistent with any native vegetation communities. Serrated Tussock has become a serious weed in some paddocks and there are only occasional scattered trees.

The main woodland vegetation remnants contained within the Project Site have been mapped and categorised by vegetation type (refer to Appendix D). Descriptions of each are provided in section 2.4.2 of this report. As most of the paddocks are homogenous in relation to their vegetation, these have been grouped for descriptive and impact assessment purposes. The Project has been sited on largely cleared grazing lands and the proposed Project layout has been designed to reduce ecological impacts, with most of the infrastructure located in paddock areas and avoiding individual paddock trees.

Transmission Route Options

As outlined above, all four Transmission Route Options have been assessed as part of this ecological assessment. As a result of this assessment, the Northern Transmission Route Option has been identified as the preferred option as, owing to its much shorter length, it will result in significantly lower impacts and improved constructability. Accordingly, the Southern Transmission Route Options are no longer proposed as part of the Project but are included in this assessment for completeness.

The Southern Transmission Route Options (Options 1, 2 and 3) consist of approximately 55km of overhead transmission line leading south from the proposed wind farm site to the approved Crookwell 2 Wind Farm substation and then connecting to the Yass to Bannaby 330kV transmission line.

Options 1 and 3 follow existing roads and therefore utilise road reserve areas for the potential placement of power poles. Option 2 would have the highest potential impacts as it does not follow existing roads and therefore there is remnant vegetation present north of the Common Route.

All of the Southern Transmission Route Options cross the Abercrombie River, however due to the topography in this area there would be no impacts to the riparian zone as the line would span the river if any of these options were to be implemented. As such, there would be no impact on the aquatic habitats of aquatic species. The use of existing roads limits the impact to native vegetation as generally the habitat along the existing roads has been degraded and continues to be impacted due to road maintenance activities. The power poles themselves have a very small footprint and can be microsited by choosing one side of the road or the other in a zig zag fashion where practicable to avoid any impacts on native roadside vegetation.

In general, much of these potential routes are cleared grazing paddock area. Potential habitat trees can be largely avoided with these options and, due to the heights of the power poles, tree trimming is unlikely to be required in most areas.

The Northern Transmission Route (Option 4) consists of approximately 9 km of overhead transmission line leading north from the proposed wind farm site to the Mt Piper to Bannaby 500kV transmission line located to the east of the Project Site. The location of the option is within cleared paddock areas and impacts on native vegetation would accordingly be avoided. As such, due to its short route and its location within cleared paddock areas this option is preferred to reduce any potential ecological impacts.

The proposed northern transmission line can avoid impacts on remnant vegetation and be placed fully within cleared paddock areas.

Accordingly, even though the potential impacts of Southern Transmission Routes (Options 1, 2 and 3) would be generally low, the preferred option to minimise impacts is Northern Transmission Route (Option 4).

4. DISCUSSION - FLORA

4.1. ENDANGERED ECOLOGICAL COMMUNITIES

No endangered ecological communities were identified as being present within the Project Site other than the State 2 (Box Gum Grassy Woodland State and Transition Model) which is protected by the conservation agreement applying in the 'Paling Yards' property. Please refer to Figure 4 of this report for details. In order to minimise impacts on the State 2 (Box Gum Grassy Woodland State and Transition Model), it is no longer proposed to construct turbines P2, P6 and P7 and these no longer form part of this stage of the Project. Subject to appropriate arrangements being put in place regarding the current conservation agreement, approval for turbines P2, P6 and P7 may be sought at a later date (either by way of a modification to the Project under section 75W of the EP&A Act or as a separate approval).

Accordingly, no endangered ecological communities will be significantly impacted as part of the Project. Much of the more fertile soils within the Project Area have been cleared during early European Settlement, with most of the areas present within the wind farm site having been pasture improved and superphosphated. The Project avoids any large impacts on the vegetation remnants within the proposed wind farm site. As discussed in section 2.4.2 above, the amount of clearing of remnant forest vegetation is small and is estimated at approximately 0.75 hectares in the wind farm site area of 3,900 hectares. Of this area of removal approximately 0.24ha would be rehabilitated post costruction resulting in an overall removal of 0.51 hectares. Accordingly, the impact assessment undertaken for the Project indicates that there would be no potential impacts on any Endangered Ecological Communities listed under either the EPBC or TSC Acts.

Nonetheless, each of the Endangered Ecological Communities which was considered likely to have the potential to occur within the Project Site and to be impacted by the Project has been further assessed in accordance with:

- the criteria contained in the EPBC Act in the case of threatened flora species listed under the EPBC Act (see section 4.3 below); and
- the 7-Part Tests of Significance criteria in the case of threatened flora species listed under the TSC Act (see section 4.4 below).

4.2. INDIVIDUAL THREATENED SPECIES

Whilst no listed threatened flora species were identified as being present within the Project Site during the surveys, the background searches identified a number of threatened flora species with the potential to occur within the Project Site. Table 8 below provides information about each of these identified potential threatened species, including its preferred habitat, its assessed potential to occur within the Project Site and likely impacts in the event that the species does in fact occur within the Project Site.

In addition, each listed threatened flora species which was considered likely to have the potential to occur within the Project Site and to be impacted by the Project was further assessed in accordance with:

- the criteria contained in the EPBC Act in the case of threatened flora species listed under the EPBC Act (see section 4.3 below); and
- the 7-Part Tests of Significance criteria in the case of threatened flora species listed under the TSC Act (see section 4.4 below).

Table 8: Individual Flora Species and Analysis

Name	Preferred Habitat/Survey Season	EPBC	TSC	Potential to Occur/Likely Impacts
Yass Daisy *(Ammobium craspedioides)*	Found in moist or dry forest communities, Box-Gum Woodland and secondary grassland derived from clearing of these communities. Grows in association with a large range of eucalypts (*Eucalyptus blakelyi*, *E. bridgesiana*, *E. dives*, *E. goniocalyx*, *E. macrorhyncha*, *E. mannifera*, *E. melliodora*, *E. polyanthemos*, *E. rubida*). Apparently unaffected by light grazing, as populations persist in some grazed sites. Found in a number of TSRs, Crown reserves, cemeteries and roadside reserves within the region. Survey season is spring and early summer in wet years.	V	V	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA. **Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**
River Swamp Wallaby Grass *(Amphibromus fluitans)*	Generally only found in the Hawkesbury/Nepean, Murray and Murrumbidgee CMA's. There is a recent record of this species near Laggan in Upper Lachlan Shire. *Amphibromus fluitans* grows mostly in permanent swamps. The species needs wetlands which are at least moderately fertile and which have some bare ground, conditions which are produced by seasonally-fluctuating water levels. Habitats in south-western NSW include swamp margins in mud, dam and tank beds in hard clay and in semi-dry mud of lagoons with *Potamogeton* and *Chamaeraphis* species. *Flowering time for is from spring to autumn or November to March.*	V	V	EPBC search states species or species habitat may occur within Upper Lachlan LGA. ***This species was not detected during the surveys which were undertaken. Potential habitat is negligible on the Project Site as its potential habitat is not present. No further consideration is deemed necessary for this species.***
Flockton Wattle *(Acacia flocktoniae)*	The Flockton Wattle is found only in the Southern Blue Mountains (at Mt Victoria, Megalong Valley and Yerranderie).	V	V	EPBC search states species or species habitat may occur within Oberon LGA. ***This species was not detected during the surveys which were undertaken. Potential habitat is negligible on the***

Name	Preferred Habitat/Survey Season	EPBC	TSC	Potential to Occur/Likely Impacts
				Project Site as its potential habitat is not present. No further consideration is deemed necessary for this species.
Dense Cord-rush *(Baloskion longipes)*	Known to occur in the Hawkesbury/Nepean, Lachlan and Southern Rivers CMA's. Restricted to the east of the Oberon to Goulburn Road. Occurs in: Mountain Gum - Manna Gum open forest of the South Eastern Highlands, Peppermint - Mountain Gum - Brown Barrel moist open forest of the South Eastern Highlands, Snow Gum - Mountain Gum tussock grass-herb forest of the South Eastern Highlands, and Black Sallee - Tussock Grass open woodland of the South Eastern Highlands. Specifically this species occurs in seasonally inundated peat, sandy wetland swamps. Its distribution overlaps with the EEC "Temperate Highland Peat Swamps on Sandstone". It is best detected in summer and autumn when it is in fruit.	V	V	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA and Oberon LGA. ***This species was not detected during the surveys which were undertaken. Potential habitat is negligible on the Project Site as its potential habitat is not present. No further consideration is deemed necessary for this species.***
Deane's Boronia *(Boronia deanei)*	There are scattered populations of Deane's Boronia between the far south-east of NSW and the Blue Mountains (including the upper Kangaroo River near Carrington Falls, the Endrick River near Nerriga and Nalbaugh Plateau), mainly in conservation reserves. Grows in wet heath, often at the margins of open forest adjoining swamps or along streams.	V	V	EPBC search states species or species habitat likely to occur within Oberon LGA. ***This species was not detected during the surveys which were undertaken. Potential habitat is negligible on the Project Site as its potential habitat is not present. No further consideration is deemed necessary for this species.***
Thick-lipped Spider-orchid *(Caladenia tessellata)*	Occurs in the Hawkesbury/Nepean, Hunter/Central Rivers, Southern Rivers and Sydney Metro Catchments. 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. Flowers appear between September and November (but apparently generally late September or early October in extant southern populations).	V	E	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA and Oberon LGA. ***This species was not detected during the surveys which were undertaken. Potential habitat is of low quality. Much of the Project Sites are pasture improved with a variety of exotic and some native grasses. Impacts on potential habitat are likely to be negligible.***

Name	Preferred Habitat/Survey Season	EPBC	TSC	Potential to Occur/Likely Impacts
				Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.
Leafless Tongue Orchid *(Cryptostylis hunteriana)*	The Leafless Tongue Orchid has been recorded from as far north as Gibraltar Range National Park south into Victoria around the coast as far as Orbost. It is known historically from a number of localities on the NSW south coast and has been observed in recent years at many sites between Batemans Bay and Nowra (although it is uncommon at all sites). Also recorded at Nelson Bay, Wyee, Washpool National Park, Nowendoc State Forest, Ku-Ring-Gai Chase National Park, Ben Boyd National Park. The larger populations typically occur in woodland dominated by Scribbly Gum (*Eucalyptus sclerophylla*), Silvertop Ash (*E. sieberi*), Red Bloodwood (*Corymbia gummifera*) and Black Sheoak (*Allocasuarina littoralis*); appears to prefer open areas in the understorey of this community and is often found in association with the Large Tongue Orchid (*C. subulata*) and the Tartan Tongue Orchid (*C. erecta*).	V	V	EPBC search states species or species habitat likely to occur within Oberon LGA. ***This species was not detected during the surveys which were undertaken. Potential habitat is negligible on the Project Site as its potential habitat is not present. No further consideration is deemed necessary for this species.***
Buttercup Doubletail *(Diuris aequalis)*	The Buttercup Doubletail has been recorded in Kanangra-Boyd National Park, Gurnang State Forest, towards Wombeyan Caves, the Taralga - Goulburn area, and the ranges between Braidwood, Tarago and Bungendore. Recorded 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). Like most Diuris species, the flowers mimic native pea flowers to attract pollinators; in this case the model is a small-flowered wedge-pea (Gompholobium sp.), with which it always grows. Leaves die back each year and resprout just before flowering. Populations tend to contain few, scattered individuals; despite extensive surveys, only about 200 plants in total, from 20 populations are known.	V	E	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA. ***This species was not detected during the surveys which were undertaken. Potential habitat is low-moderate. Much of the Project Sites are pasture improved with a variety of exotic and some native grasses. Impacts on potential habitat are likely to be negligible.*** **Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**

Name	Preferred Habitat/Survey Season	EPBC	TSC	Potential to Occur/Likely Impacts
	Flowering occurs between mid-October and mid-November in the southern part of its range, and between mid-November and early December in the populations north of the Abercrombie River. For the Lachlan CMA the flowering time is between late October and mid-December.			
Tricolor Diuris *(Diuris tricolor)*	This species has been found in the Lachlan CMA. The Pine Donkey Orchid grows in sclerophyll forest among grass, often with native Cypress Pine (*Callitris spp.*). It is found in sandy soils, either on flats or small rises. Also recorded from a red earth soil in a Bimble Box community in western NSW. Usually recorded as common and locally frequent in populations, however only one or two plants have also been observed at sites. The species has been noted as growing in large colonies. Disturbance regimes are not known, although the species is usually recorded from disturbed habitats. Associated species include *Callitris glaucophylla, Eucalyptus populnea, Eucalyptus intertexta*, Ironbark and *Acacia* shrubland. The understorey is often grassy with herbaceous plants such as *Bulbine* species. Flowers from September to November or generally spring. The species is a tuberous, deciduous terrestrial orchid and the flowers have a pleasant, light sweet scent. Best detected for the few weeks when it flowers in Spring.	V	V	EPBC search states species or species habitat may occur within Upper Lachlan LGA. ***This species was not detected during the surveys which were undertaken. Potential habitat quality is low and is not representative of its known habitat. No further consideration is deemed necessary for this species.***
Silver-leafed Gum *(Eucalyptus pulverulenta)*	The Silver-leafed Gum is a distinctive, straggly mallee or small tree that grows to about 10 m tall. The bark is smooth and grey or bronze, shedding in long strips. The tree is made distinctive by its round, stalkless, paired, waxy, blue-green juvenile leaves, 5 cm long and wide, which are characteristically retained on mature plants. Only rarely are adult leaves produced, these being stalked, lance-shaped and up to 10 cm x 2 cm. The buds occur in clusters of 3 and the large cream-coloured			EPBC search states species or species habitat may occur within Upper Lachlan LGA and Oberon LGA's. ***This species was not detected during the surveys which were undertaken. Potential habitat is present due to the vegetation associations present on the poorer quality areas of the Project Site.*** **Potential impacts on this species and its potential habitat is examined in the impact analysis**

Name	Preferred Habitat/Survey Season	EPBC	TSC	Potential to Occur/Likely Impacts
	flowers are produced from September to November. The flowers are followed by large gumnuts. The Silver-leafed Gum is found in two quite separate areas, the Lithgow to Bathurst area and the Monaro (Bredbo and Bombala areas). Grows in shallow soils as an understorey plant in open forest, typically dominated by Brittle Gum (*Eucalyptus mannifera*), Red Stringybark (*E. macrorhynca*), Broad-leafed Peppermint (*E. dives*), Silvertop Ash (*E. sieberi*) and Apple Box (*E. bridgesiana*).			**section of this report.**
Herb *(Euphrasia arguta)*	*Euphrasia arguta* R. Br. was recently rediscovered in the Nundle area of the NSW north western slopes and tablelands in 2008. Prior to this, it had not been collected for 100 years. Historically, *Euphrasia arguta* has only been recorded from relatively few places from an area extending from Sydney to Bathurst and north to Walcha, in the central coast, western slopes and tableland regions. The current known populations are located in the Nundle State Forest in eucalypt forest with a mixed grass and shrub understory. This area is located at the junction of the New England Tableland, NSW North Coast, and Nandewar Bioregions. Ecological information from historical herbarium records is scarce. Three collections noted the following habitat, 'in the open forest country around Bathurst in subhumid places', 'on the grassy country near Bathurst', 'in meadows near rivers' .	CE	CE	EPBC search states species or species habitat Oberon LGA. ***This species was not detected during the surveys which were undertaken. Potential habitat quality is low and is not representative of its known habitat. No further consideration is deemed necessary for this species.***
Kowmung Hakea *(Hakea dohertyi)*	Kowmung Hakea is confined to a small area in the Kowmung Valley in Kanangra Boyd National Park. Less than 100 plants are known.			EPBC search states species or species habitat may occur within Oberon LGA. ***This species was not detected during the surveys which were undertaken. Potential habitat quality is low and is not representative of its known habitat. No further consideration is deemed necessary for this species.***
(Kunzea cambagei)	Cambage Kunzea occurs mainly in the Yerranderie / Mt Werong area in the Blue Mountains but has also been collected on the Wanganderry	V	V	EPBC search states species or species habitat likely to occur within Upper Lachlan and Oberon LGAs.

Name	Preferred Habitat/Survey Season	EPBC	TSC	Potential to Occur/Likely Impacts
	Plateau, and at Medway and along the Wingecarribee River (near Berrima). Cambage Kunzea is restricted to damp, sandy soils in wet heath or mallee open scrub at higher altitudes on sandstone outcrops or Silurian group sediments. *Flowering occurs between September and November.*			***This species was not detected during the surveys which were undertaken. The Project Site is not considered to represent potential habitat for this species and no further assessment is considered necessary. The Project Site does not contain the wet heath habitat where this species occurs.***
Basalt Pepper-cress *(Lepidium hyssopifolium)*	In NSW, there is a small population consisting near Bathurst, two populations near Bungendore, and one near Crookwell. The species was also recorded near Armidale in 1945 and 1958; however it is not known whether it remains in this area. A specimen collected in the Cooma area about 100 years ago may also be Aromatic Peppercress. Appears to respond to disturbance, having appeared after soil disturbance at one site. Its cryptic and non-descript nature (appearing like several weed species) makes it hard to detect. The species occurs in a variety of habitats including woodland with a grassy understorey and grassland. Found in Grassy Woodlands and Temperate Montane Grasslands as well as highly disturbed environments such as roadsides. *Best detected when in flower or fruit (spring, summer and autumn).*	E	E	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA. ***This species was not detected during the surveys which were undertaken. Potential habitat quality is low to moderate. Much of the Project Sites are pasture improved with a variety of exotic and some native grasses. Impacts on potential habitat are likely to be negligible.*** **Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**
Hoary Sunray *(Leucochrysum albicans var. Tricolor)*	In NSW and ACT, Hoary Sunray currently occurs on the Southern Tablelands and some adjacent areas (e.g. Tarcutta, Bega valley) in an area roughly bounded by Albury, Bega and Goulburn, in the South Eastern Highlands, Australian Alps and Sydney Basin bioregions. It once occurred more widely in inland NSW, with records from near Cobar, Dubbo, Lithgow, Mossvale and Delegate. The taxon is now absent from the NSW South West Slopes, South Eastern Corner, Cobar Peneplain and Brigalow Belt South	E	V	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA and Oberon LGA. ***This species was not detected during the surveys which were undertaken. Potential habitat quality is low to moderate. Much of the Project Sites are pasture improved with a variety of exotic and some native grasses. Impacts on potential habitat are likely to be negligible.*** **Potential impacts on this species and its potential habitat is**

Name	Preferred Habitat/Survey Season	EPBC	TSC	Potential to Occur/Likely Impacts
	bioregions. Occurs in a range of habitat types from upland peat to stoney sites.			**examined in the impact analysis section of this report.**
Rufus Pomaderris *(Pomaderris brunnea)*	Brown Pomaderris is found in a very limited area around the Colo, Nepean and Hawkesbury Rivers, including the Bargo area. It also occurs at Walcha on the New England tablelands and in far eastern Gippsland in Victoria. The species has been found in association with *Eucalyptus amplifolia, Angophora floribunda, Acacia parramattensis, Bursaria spinosa and Kunzea ambigua*. It grows in moist woodland or forest on clay and alluvial soils of flood plains and creek lines. Flowering is in September and October.			EPBC search states species or species habitat likely to occur within Upper Lachlan LGA and Oberon LGA. ***This species was not detected during the surveys which were undertaken. The known distribution of this species is not present on this site. The known habitat is also not present on the Project Site. This species is unlikely to occur on the basis of distribution and known habitat. No further consideration is deemed necessary for this species on this basis.***
Cobar Greenhood Orchid *(Pterostylis cobariensis)*	Known chiefly from the Nyngan-Cobar-Bourke district in the far western plains of New South Wales. Recorded districts include Narrabri, Nyngan, Cobar, Nymagee, Mt Gundabooka, Mt Grenfel and Mutawintji National Park. There are also records from the Darling Downs district of Queensland. Known to occur in the Central West, Namoi and Western CMA districts. Habitats are eucalypt woodlands, open mallee or *Callitris* shrublands on low stony ridges and slopes in skeletal sandy-loam soils. Associated species include *Eucalyptus morrisii, E. viridis, E. intertexta, E. vicina, Callitris glaucophylla, Geijera parviflora, Casuarina cristata, Acacia doratoxylon, Senna* spp. and *Eremophila* spp. Flowers from September to November.	V	V	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA. ***This species was not detected during the surveys which were undertaken. The known distribution of this species is not present on this site. The known habitat is also not present on the Project Site. This species is unlikely to occur on the basis of distribution and known habitat. No further consideration is deemed necessary for this species on this basis.***
Button Wrinklewort *(Rutidosis leptorrhynchoides)*	Local populations at Goulburn, the Canberra - Queanbeyan area and at Michelago. Other populations occur in Victoria. Occurs in Box-Gum Woodland, secondary grassland derived from Box-Gum Woodland or in Natural Temperate Grassland; and often in the ecotone between the two communities. Grows on soils that are usually shallow, stony red-brown	E	E	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA. ***This species was not detected during the surveys which were undertaken. Potential habitat quality is low and is not representative of its known habitat. No further consideration is deemed necessary for this species.***

Name	Preferred Habitat/Survey Season	EPBC	TSC	Potential to Occur/Likely Impacts
	clay loams; tends to occupy areas where there is relatively less competition from herbaceous species (either due to the shallow nature of the soils, or at some sites due to the competitive effect of woodland trees). Exhibits an ability to colonise disturbed areas (eg. vehicle tracks, bulldozer scrapings and areas of soil erosion). Normally flowers between December to March; plants do not usually flower until their second year.			
Kangaloon Sun Orchid *(Thelymitra sp. Kangaloon (D.L Jones 18108))*	Flowers in late October and early November. Occurs on Temperate Highland Peat swamps on Sandstone endangered ecological community. It is known from 3 locations near Robertson in the Southern Highlands all above the Kangaloon Aquifer. The locations are; Butlers Swamp, Stockyard Swamp and Molly Morgan Swamp.	CE	-	EPBC search states species or species habitat may occur within Upper Lachlan LGA and Oberon LGA. ***There is no potential habitat for this species on the study site. This species is unlikely to occur and would not be impacted. No further assessment or analysis is deemed necessary.***
Austral Toadflax *(Thesium australe)*	Austral Toad-flax is found in very small populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands. It is also found in Tasmania and Queensland and in eastern Asia. Known to occur in the following CMA areas: Border Rivers/Gwydir, Hunter/Central Rivers, Murray, Murrumbidgee, Namoi, Northern Rivers, Southern Rivers. Occurs in grassland or grassy woodland. Often found in damp sites in association with Kangaroo Grass *(Themeda australis).* A root parasite that takes water and some nutrient from other plants, especially Kangaroo Grass.	V	V	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA and Oberon LGA. ***This species was not detected during the surveys which were undertaken. Potential habitat quality is low. Much of the Project Sites are pasture improved with a variety of exotic and some native grasses. Potential impacts are likely to be negligible.*** **Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**
Mountain Trachymene *(Trachymene scapigera)*	Occurs along the banks of the Boyd River in the Kanangra Boyd National Park, approximately 200 km west of Sydney.	E	E	***There is no potential habitat for this species on the study site. This species is unlikely to occur and would not be impacted. No further assessment or analysis is deemed necessary.***
Silky Swainson Pea *(Swainsonia sericea)*	Silky Swainson-pea has been recorded from the Northern Tablelands to the Southern Tablelands and further inland on the slopes and plains. There is one isolated record from the far north-west of NSW. Its stronghold is on the	-	V	***This species was not detected during the surveys which were undertaken. Potential habitat quality is low to moderate. Much of the Project Sites are pasture improved with a variety of introduced pasture species.***

Name	Preferred Habitat/Survey Season	FPBC	TSC	Potential to Occur/Likely Impacts
	Monaro. Also found in South Australia, Victoria and Queensland. Found in Natural Temperate Grassland and Snow Gum *Eucalyptus pauciflora* Woodland on the Monaro. Found in Box-Gum Woodland in the Southern Tablelands and South West Slopes. Sometimes found in association with cypress-pines *Callitris* spp. Habitat on plains unknown. Regenerates from seed after fire.			**Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**
Small Purple Pea *(Swainsonia recta)*	Small Purple-pea was recorded historically from places such as Carcoar, Culcairn and Wagga Wagga where it is probably now extinct. Populations still exist in the Queanbeyan and Wellington-Mudgee areas. Over 80% of the southern population grows on a railway easement. It is also known from the ACT and a single population of four plants near Chiltern in Victoria. Before European settlement Mountain Swainson-pea occurred in the grassy understorey of woodlands and open-forests dominated by Blakely's Red Gum *Eucalyptus blakelyi*, Yellow Box *E. melliodora*, Candlebark Gum *E. rubida* and Long-leaf Box *E. goniocalyx*. Grows in association with understorey dominants that include Kangaroo Grass *Themeda australis*, poa tussocks *Poa* spp. and spear-grasses *Austrostipa* spp. Plants die back in summer, surviving as rootstocks until they shoot again in autumn. Flowers throughout spring, with a peak in October. Seeds ripen at the end of the year. Individual plants have been known to live for up to 20 years. Generally tolerant of fire, which also enhances germination by breaking the seed coat and reduces competition from other species. ***It bears one to several sprays of between 10 and 20 purple, pea-shaped flowers, between late September and early December. Flowers are followed by pods up***	E	E	***This species was not detected during the surveys which were undertaken. Potential habitat quality is low to moderate. Much of the Project Sites are pasture improved with a variety of exotic and some native grasses. Impacts on potential habitat are likely to be negligible.*** **Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**

Name	Preferred Habitat/Survey Season	FPBC	TSC	Potential to Occur/Likely Impacts
	to 10 mm long in summer.			
Tarengo Leek Orchid *(Prasophyllum petilum)*	Natural populations are known from a total of four sites in NSW. These area at Boorowa, Captains Flat, Ilford and Delegate. Also occurs at Hall in the Australian Capital Territory. This species has also been recorded at Bowning Cemetery where it was experimentally introduced, though it is not known whether this population has persisted. Grows in open sites within Natural Temperate Grassland at the Boorowa and Delegate sites. Also grows in grassy woodland in association with River Tussock *Poa labillardieri* Black Gum *Eucalyptus aggregata* and tea-trees *Leptospermum* spp. at Captains Flat and within the grassy ground layer dominated by Kanagroo Grass under Box-Gum Woodland at Ilford (and Hall, ACT). Apparently highly susceptible to grazing, being retained only at little-grazed travelling stock reserves (Boorowa & Delegate) and in cemeteries (Captains Flat, Ilford and Hall). Population density at the Boorowa site is higher in the open grassland dominated by wallaby grasses *Austrodanthonia* spp., compared to that within the denser stands of Kangaroo Grass *Themeda australis*. Highly colonial, with very large numbers present and very conspicuous at the Boorowa site, but cryptic at the Captains Flat, Ilford and Delegate sites where low numbers are recorded. Flowers are followed by fleshy seed capsules in summer. Plants retreat into subterranean tubers after fruiting, so are not visible above-ground. Flowers in October at Boorowa and Ilford, and December at Captains Flat and Delegate.	E	E	***This species was not detected during the surveys which were undertaken. Potential habitat quality is low. Much of the Project Sites are pasture improved with a variety of exotic and some native grasses. Impacts on potential habitat are likely to be negligible.*** **Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**

Key: CE= Critically Endangered, E= Endangered, V=Vulnerable.

4.3. ASSESSMENT OF SIGNIFICANCE (EPBC ACT)

The EPBC Act Guidelines provide guidance as to the assessment required to determine whether an action is "likely to have a significant impact" on any matter of "national environmental significance" such that the action will be a controlled action which requires approval under the EPBC Act. Whilst no endangered ecological communities or threatened flora species listed under the EPBC Act were identified during the surveys, this section of the report contains an assessment in accordance with the EPBC Act Guidelines of each endangered ecological community and threatened flora species listed under the EPBC Act which was considered likely to have the potential to both occur within the Project Site and to be impacted by the Project.

4.3.1. Significant Impact Criteria for Critically Endangered and Endangered Threatened Flora Species

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- **lead to a long-term decrease in the size of a population**

No critically endangered or endangered species were detected. It is unlikely that the Project would lead to a long term decrease in the size of any population. No critically endangered or endangered species populations were found during the surveys of the Project Site conducted to date. Accordingly, it is considered that the Project is not likely to lead to a long term decrease in the size of any critically endangered or endangered species population.

- **reduce the area of occupancy of the species**

As no species were detected and since only a small area of the total site area would be disturbed there is unlikely to be a reduction in the area of occupancy of any species. The Project has been designed as far as practicable to avoid impacts on native vegetation.

- **fragment an existing population into two or more populations**

The Project has been designed to avoid potential impacts on any threatened species or their habitats. No threatened populations were found and, given the proposed layout of the Project, it is unlikely that there would be any fragmentation to any possibly occurring populations.

- **adversely affect habitat critical to the survival of a species**

The Project has been designed to avoid where possible potential habitat for threatened species. No habitat critical to the survival of any flora species would be significantly impacted. Most of the required infrastructure is sited in cleared grazing paddocks.

- **disrupt the breeding cycle of a population**

The habitats present have been degraded through farming. This is a major impact on the habitats present and as such has resulted in their historical degradation. It is unlikely that the breeding cycles of any critically endangered or endangered species or threatened population would be placed at risk of extinction as the Project has been designed to avoid habitat where possible and since the footprint of the Project is small. The disturbance from the Project overall would be lower than the current existing impacts from farming.

- **modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline**

The level of potential modification to habitat is considered small. The Project has aimed to

avoid any native habitats and has, as far as practicable, sited turbines and infrastructure within modified paddock areas. It is unlikely that there would be any significant modification of habitat such that any threatened species is likely to decline.

- **result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat**

The Project is unlikely to result in the introduction of any invasive species that are not already on the Project Site. Accordingly, it is not considered necessary to implement measures such as wash down bays for vehicles entering and exiting the Project Site to reduce the risk of weed spread.

- **introduce disease that may cause the species to decline, or interfere with the recovery of the species.**

It is highly unlikely that any disease would be introduced as a result of the Project which could impact any potentially occurring threatened species.

4.3.2. Significant Impact Criteria for Vulnerable Threatened Flora Species

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- **lead to a long-term decrease in the size of an important population of a species**

No important populations of any threatened species were detected within the Project Site and the Project has been designed to reduce impacts on any potential habitat. As such there is unlikely to be any long-term decrease in the size of any important population of any species.

- **reduce the area of occupancy of an important population**

The Project will remove some habitat however it is unlikely that there would be any significant reduction in any area of occupancy of an important population.

- **fragment an existing important population into two or more populations**

No important populations were detected within the Project Site and the Project has been designed to avoid impacts on biodiversity. The scale of the infrastructure is small within the Project Site and it is highly unlikely that any fragmentation of an important population would occur. Gene flow would be maintained.

- **adversely affect habitat critical to the survival of a species**

No habitat critical to the survival of any threatened species has been detected. As such it is unlikely that any habitat critical to the survival of any species would be impacted.

- **disrupt the breeding cycle of an important population**

No breeding resources of any threatened species are likely to be impacted. As such, there would be no disruption to the breeding cycle of any important population.

- **modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline**

There is unlikely to be any significant alteration to the quality or availability of habitat such

that the extent of any species is likely to decline. The Project has generally been designed to reduce the potential impacts.

- **result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat**

It is highly unlikely that any invasive species would be introduced. As such there would be no harmful impact on any vulnerable species habitat.

- **introduce disease that may cause the species to decline, or interfere substantially with the recovery of the species.**

It is highly unlikely that any disease would be introduced. As such there would be no harmful impact on any vulnerable species habitat.

4.3.3. Significant Impact Criteria for Critically Endangered and Endangered Ecological Communities

An action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will:

- **reduce the extent of an ecological community**

There would be no reduction in the extent of any Critically Endangered or Endangered Ecological Communities on the Project Site.

- **fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines**

There would be no increase in any fragmentation on the Project Site due to clearing for roads or transmission lines as a result of this Project. The Project is located within farmland which already has a highly fragmented landscape. The Project has been designed to minimise the levels of potential impacts. The Transmission Route Options avoid vegetation where possible and pass mainly through cleared farming land and road reserves.

- **adversely affect habitat critical to the survival of an ecological community**

No habitat critical to the survival of any ecological community would be impacted.

- **modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater**

There would be no significant modification or destruction of abiotic factors such that it would impact any ecological community's survival. The bulk of the Project is located on cleared farming land which is not ecologically significant.

- **cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting**

No substantial change to the species composition of any ecological community would occur. No functionally significant species would be lost and the incidence of fire would not be increased.

- **cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to: -assisting invasive species, that are harmful to the listed ecological community, to become established, or -causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community, or interfere with the recovery of an ecological community.**

There would be no reduction in the quality or integrity of any ecological community. The proposed impacts are of a low level and are in keeping with the current impacts in relation to the farming system.

The Project would not interfere with the recovery of any ecological community.

In conclusion, the results of the assessment undertaken are that the Project is not likely to result in a significant impact on any endangered ecological community or flora species listed under the EPBC Act. Accordingly, the Project is not considered, for this reason, to require referral or approval under the EPBC Act.

4.4. ASSESSMENT OF IMPACT (TSC ACT)

As outlined at section 1.5.2 above, the DGRs prepared under Part 3A of the EP&A Act provide that the EA must include an assessment of all Project components on flora and fauna and their habitat consistent with the Draft Guidelines for Threatened Species Assessment (DEC, 2005). These provide guidance as to the matters which are to be taken into account in assessing the impacts of projects on species, populations and ecological communities. This includes the factors which are to be taken into account in applying the 7 Part Test of Significance contained in the TSC Act. The 7 Part Test of Significance entails the following points:

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
>
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as***

a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Whilst no endangered ecological communities or threatened flora species listed under the TSC Act were identified during the surveys, this section of the report contains an assessment in accordance with the Draft Guidelines for Threatened Species Assessment of each endangered ecological communities and threatened flora species listed under the TSC Act which was considered likely to have the potential to both occur within the Project Site and to be impacted by the Project.

4.4.1. Endangered Ecological Communities – 7 Part Test of Significance

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

Not applicable for Endangered Ecological Communities.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

Not applicable for Endangered Ecological Communities.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

There would be no adverse effects on the extent of any endangered ecological community such that its local occurrence is likely to be placed at risk of extinction. No endangered community would be substantially or adversely modified in relation to its composition such that its local occurrence is likely to be placed at risk of extinction. There would be negligible impacts on any ecological communities as the whole Project has been designed to minimise any such potential impacts. The Project Site has been farmed for many years and this has significantly modified the landscape and removed most of the native vegetation, which would have occurred on site prior to European settlement. The Transmission Route Options are mostly cleared farmland and/or modified road reserve areas. As such there is unlikely to be any significant disturbance to any endangered ecological communities.

(d) in relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,

There will be no significant reduction in the extent or modification, fragmentation or isolation to any endangered ecological community. The long term survival of any endangered ecological community would not be impacted. There are high levels of fragmentation within the highly modified landscape of the Project Site and the Project would not significantly increase this fragmentation.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present within the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the Project aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process, however the Project has been designed as far as practicable to minimise the removal of native vegetation.

4.4.2. Threatened Species – 7 Part Tests of Significance

Yass Daisy *(Ammobium craspedioides)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

This species was not detected during the surveys undertaken of the Project Site. This species can persist under light grazing in a range of forest types, Box Gum Woodland and associated grassland. The levels of existing disturbance to the Project Site make it unlikely to occur in most places as the Project Site is pasture improved in most areas and generally has high levels of grazing present.

The potential for a viable local population to be impacted are relatively low due to the relatively small level of any overall impact given the size of the Project Site compared to the small footprint of the Project. As such, no viable local populations would be placed at risk of extinction. The current impacts of grazing are likely to impact this species more significantly than the Project if this species were to occur.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
>
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
>
> ***(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat relates to this site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act..

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation.

Thick-lipped Spider-orchid *(Caladenia tessellata)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

This species was not detected during the surveys which were undertaken. Generally the habitat present across the Project Site, being disturbed, is not high quality potential habitat for this species. It is unlikely that a viable local population would be impacted such that it would be placed at risk of extinction as a result of the Project.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
>
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
>
> ***(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is located at this site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation.

Buttercup Doubletail *(Diuris aequalis)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

This species was not detected during the surveys which were undertaken of the Project Site. Generally the habitat present being disturbed is not high quality potential habitat for this species. It is unlikely that a viable local population would be impacted such that it would be placed at risk of extinction as a result of the Project. No viable local population is likely to be impacted such that the species is likely to be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
>
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
>
> ***(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is located at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation.

Silver-leafed Gum *(Eucalyptus pulverulenta)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

This species was not detected during the surveys which were undertaken. There is potential habitat present however this species was not detected. Generally the levels of potential impact on this species potential habitat are very small. It is unlikely that a viable local population would be impacted such that it would be placed at risk of extinction as a result of the Project. No viable local population is likely to be impacted such that the species is likely to be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
>
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
>
> ***(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is located at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation.

Basalt Pepper-cress *(Lepidium hyssopifolium)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

This species was not detected during the surveys which were undertaken. Generally the habitat present being disturbed is not high quality potential habitat for this species. No viable local population is likely to be impacted such that the species is likely to be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is located at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation.

Hoary Sunray *(Leucochrysum albicans var. Tricolor)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

There is potential low quality microhabitat available for this species around some of the stony areas on the Project Site. Generally, these areas of potential microhabitat are being mostly avoided. This species was not detected during the surveys which were undertaken. As such it is unlikely that any local viable population is likely to be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
> ***(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is located at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation.

Austral Toadflax *(Thesium australe)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

This species is found in damp locations with Kangaroo Grass (the roots of which it parasitizes). Potential habitat for this species is low on site. The turbines and proposed access infrastructure are not located in such an area and this species was not detected. No viable local population is likely to be impacted such that the species is likely to be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
> ***(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation.

Silky Swainson Pea *(Swainsonia sericea)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

There is potential microhabitat available for this species around some of the bushland remnant areas on the Project Site. Generally, these areas of potential microhabitat are being avoided except for some limited potential impacts due to turbine construction. This species was not detected during the current surveys. As such it is unlikely that any local viable population is likely to be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the TSC Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
> ***(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation.

Small Purple Pea *(Swainsonia recta)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

There is potential microhabitat available for this species around some of the bushland remnant areas on the Project Site. Generally, these areas of potential microhabitat are being mostly avoided except for some limited potential impacts due to turbine construction. This species was not detected during the current surveys. As such it is unlikely that any local viable population is likely to be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
> ***(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation.

Tarengo Leek Orchid *(Prasophyllum petilum)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

There is potential microhabitat available for this species around some of the bushland remnant areas on the Project Site. Generally, these areas of potential microhabitat are being mostly avoided except for some limited potential impacts. This species was not detected during the current surveys. As such it is unlikely that any local viable population is likely to be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
>
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
>
> ***(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation.

In conclusion, the results of the assessment undertaken are that the Project is not likely to result in a significant impact on any flora species listed under the TSC Act. Accordingly, there is no requirement for a species impact statement to be prepared.

5. DISCUSSION - FAUNA

5.1. THREATENED SPECIES

The only threatened species detected during the surveys was the Gang Gang Cockatoo. No other threatened species as listed under the EPBC or TSC Acts were located during the surveys which were undertaken. The full details of the surveys undertaken is provided in Appendix E.

The Project has been designed to avoid impacts on native vegetation where practicable and this has therefore reduced the potential for significant impacts on any threatened fauna species. Generally, the siting of most of the proposed turbines and other infrastructure is within highly modified, cleared grazing paddocks used for sheep and cattle grazing. Most of these paddocks have been pasture improved and fertilised with superphosphate. The Project Site is located within a highly modified environment, which has been used since early European settlement for farming purposes.

Overall there are 3 turbines proposed in forested areas, being turbines P10, P13 and P14. Turbine P11, which would have resulted in the greatest removal of Western Tablelands Dry Forest has now been deleted from the layout whist proposed turbines P10, P13 and P14 have been re-sited to significantly reduce their impacts. **Overall approximately 0.65 hectares will be cleared from this remnant area of which 0.14 hectares will be rehabilitated thus giving 0.51 hectares to be permanently cleared.** The construction phase of the Project creates the most potential disturbance, however, once the construction is complete the access tracks, and temporary crane hard stands will be reduced in size to the level required for operation and maintenance, and all other areas disturbed by construction which are not required for operation and maintenance purposes can and will be rehabilitated.

Tables 9 to 14 below set out the individual threatened fauna species which the results of the literature review identified as having the potential to occur within the Project Site and provides information as to the preferred habitat, the potential to occur and the likely impacts on each species.

As set out in Table 9, whilst no listed threatened fauna species apart from the Gang Gang Cockatoo was identified as being present within the Project Site during the survey, each listed threatened fauna species which was considered likely to have the potential to occur within the Project Site and to be impacted by the Project was further assessed in accordance with:

- the criteria contained in the EPBC Act in the case of threatened fauna species listed under the EPBC Act (see section 5.4 below); and
- the 7-Part Tests of Significance criteria in the case of threatened fauna species listed under the TSC Act (see section 5.5 below).

Table 9: Potential Threatened Fauna Species and Analysis - Birds

Name	Preferred Habitat	EPBC	TSC	Potential to Occur / Likely Impacts
Regent Honeyeater *(Anthochaera phrygia)*	**Distribution** The Regent Honeyeater mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. Birds are also found in drier coastal woodlands and forests in some years. Once recorded between Adelaide and the central coast of Queensland, its range has contracted dramatically in the last 30 years to between north-eastern Victoria and south-eastern Queensland. There are only three known key breeding regions remaining: north-east Victoria (Chiltern-Albury), and in NSW at Capertee Valley and the Bundarra-Barraba region. In NSW the distribution is very patchy and mainly confined to the two main breeding areas and surrounding fragmented woodlands. In some years non-breeding flocks converge on flowering coastal woodlands and forests. **Habitat and ecology** The species inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. Regent Honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. The Regent Honeyeater is a generalist forager, which mainly feeds on the nectar from a wide range of eucalypts and mistletoes. Key eucalypt species include Mugga Ironbark, Yellow Box, Blakely's Red Gum, White Box and Swamp Mahogany. Also utilises : *E. microcarpa, E. punctata, E. polyanthemos, E. mollucana, Corymbia robusta, E. crebra, E. caleyi, Corymbia maculata, E.mckieana, E. macrorhyncha, E. laevopinea,* and *Angophora floribunda*. Nectar and fruit from the mistletoes *A. miquelii, A. pendula, A. cambagei* are also eaten during the breeding season. When nectar is scarce lerp and honeydew comprise a large proportion of the diet. Insects make up about 15% of the total diet and are important components of the diet of nestlings. A shrubby understorey is an important source of insects and nesting	E	E	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA and Oberon LGA. ***The habitat on site does not represent the preferred breeding or foraging habitat for this species. This species is migratory and it quite specialised and selective of its foraging and breeding areas.*** **Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**

Name	Preferred Habitat	EPBC	TSC	Potential to Occur / Likely Impacts
	material. There are three known key breeding areas, two of them in NSW - Capertee Valley and Bundarra-Barraba regions. The species breeds between July and January in Box-Ironbark and other temperate woodlands and riparian gallery forest dominated by River Sheoak			
Swift Parrot *(Lathamus discolor)*	**Distribution** Breeds in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia from Victoria and the eastern parts of South Australia to south-east Queensland. In NSW mostly occurs on the coast and south west slopes. **Habitat and ecology** On the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany *Eucalyptus robusta*, Spotted Gum *Corymbia maculata*, Red Bloodwood *C. gummifera*, Mugga Ironbark *E. sideroxylon*, and White Box *E. albens*. Commonly used lerp infested trees include Inland Grey Box *E. microcarpa*, Grey Box *E. moluccana* and Blackbutt *E. pilularis*. Return to some foraging sites on a cyclic basis depending on food availability.	E	E	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA and Oberon LGA. ***The preferred foraging species of eucalypt are not present for this species on the study site. The Project would not impact any significant habitat for this species. This species would not be significantly impacted and no further consideration is deemed necessary.***
Superb Parrot *(Polytelis swainsonii)*	**Distribution** The Superb Parrot is found throughout eastern inland NSW. On the South-western Slopes their core breeding area is roughly bounded by Cowra and Yass in the east, and Grenfell, Cootamundra and Coolac in the west. Birds breeding in this region are mainly absent during winter, when they migrate north to the region of the upper Namoi and Gwydir Rivers. The other main breeding sites are in the Riverina along the corridors of the Murray, Edward and Murrumbidgee Rivers where birds are present all year round. It is estimated that there are less than 5000 breeding pairs left in the wild. **Habitat and ecology**	V	V	EPBC search states breeding likely to occur within Upper Lachlan LGA and Oberon LGA. ***This species generally occurs approximately 100km further west of the Project Site. They are generally absent in winter as they migrate north to the Upper Namoi and Gwydir River Region. They are migratory in this area and the habitat on the Project Site is only of low quality. As there would be minimal impacts to only low quality habitat there are unlikely to be any significant impacts on this species.***

Name	Preferred Habitat	EPBC	TSC	Potential to Occur / Likely Impacts
	• Inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest. • In the Riverina the birds nest in the hollows of large trees (dead or alive) mainly in tall riparian River Red Gum Forest or Woodland. On the South West Slopes nest trees can be in open Box-Gum Woodland or isolated paddock trees. Species known to be used are Blakely's Red Gum, Yellow Box, Apple Box and Red Box. • Nest in small colonies, often with more than one nest in a single tree. • Breed between September and January. • May forage up to 10 km from nesting sites, primarily in grassy box woodland. • Feed in trees and understorey shrubs and on the ground and their diet consists mainly of grass seeds and herbaceous plants. Also eaten are fruits, berries, nectar, buds, flowers, insects and grain.			**Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**
Australian Painted Snipe *(Rostratula australis)*	**Distribution** In NSW, this species has been recorded at the Paroo wetlands, Lake Cowell, Macquarie Marshes and Hexham Swamp. Most common in the Murray-Darling Basin. **Habitat and ecology** • 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. • Breeding is often in response to local conditions; generally occurs from September to December. • Forages nocturnally on mud-flats and in shallow water. • Feeds on worms, molluscs, insects and some plant-matter.	V	E	EPBC search states species or species habitat may occur within Upper Lachlan LGA and Oberon LGA. ***There is no potential habitat for this species on this site. This species would not be impacted by the Project and no further consideration is deemed necessary.***
Brown	**Distribution**	-	V	Potential habitat is present on

Name	Preferred Habitat	EPBC	TSC	Potential to Occur / Likely Impacts
Treecreeper *(Climacteris picumnus victoriae)*	The two subspecies grade into each other through central NSW. Individuals are active, noisy and conspicuous, and give a loud 'pink' call, often repeated in contact, and sometimes given in a series of 5 - 10 descending notes. Breeds from July to Feb across its range. The Brown Treecreeper is endemic to eastern Australia and occurs in eucalypt forests and woodlands of inland plains and slopes of the Great Dividing Range. It is less commonly found on coastal plains and ranges. The western boundary of the range of *Climacteris picumnus victoriae* runs approximately through Corowa, Wagga Wagga, Temora, Forbes, Dubbo and Inverell and along this line the subspecies intergrades with the arid zone subspecies of Brown Treecreeper *Climacteris picumnus picumnus* which then occupies the remaining parts of the state. The eastern subspecies lives in eastern NSW in eucalypt woodlands through central NSW and in coastal areas with drier open woodlands such as the Snowy River Valley, Cumberland Plains, Hunter Valley and parts of the Richmond and Clarence Valleys. The population density of this subspecies has been greatly reduced over much of its range, with major declines recorded in central NSW and the northern and southern tablelands. Declines have occurred in remnant vegetation fragments smaller than 300 hectares that have been isolated or fragmented for more than 50 years. **Habitat and ecology** • 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 (*Eucalyptus camaldulensis*) Forest bordering wetlands with an open understorey of acacias,			the Project Site however this species was not detected even through it is quite conspicuous. The level of potential impact is considered to be generally low as only a small portion of this species potential habitat would be disturbed as part of the Project.

Name	Preferred Habitat	EPBC	TSC	Potential to Occur / Likely Impacts
	saltbush, lignum, cumbungi and grasses; usually not found in woodlands with a dense shrub layer; fallen timber is an important habitat component for foraging; also recorded, though less commonly, in similar woodland habitats on the coastal ranges and plains. • Sedentary, considered to be resident in many locations throughout its range; present in all seasons or year-round at many Sites; territorial year-round, though some birds may disperse locally after breeding. • Gregarious and usually observed in pairs or small groups of eight to 12 birds; terrestrial and arboreal in about equal proportions; active, noisy and conspicuous while foraging on trunks and branches of trees and amongst fallen timber; spend much more time foraging on the ground and fallen logs than other treecreepers. • When foraging in trees and on the ground, they peck and probe for insects, mostly ants, amongst the litter, tussocks and fallen timber, and along trunks and lateral branches; up to 80% of the diet is comprised of ants; other invertebrates (including spiders, insects larvae, moths, beetles, flies, hemipteran bugs, cockroaches, termites and lacewings) make up the remaining percentage; nectar from Mugga Ironbark (*Eucalyptus sideroxylon*) and paperbarks, and sap from an unidentified eucalypt are also eaten, along with lizards and food scraps; young birds are fed ants, insect larvae, moths, craneflies, spiders and butterfly and moth larvae. • Hollows in standing dead or live trees and tree stumps are essential for nesting. • The species breeds in pairs or co-operatively in territories which range in size from 1.1 to 10.7 ha (mean = 4.4 ha). Each group is			

Name	Preferred Habitat	EPBC	TSC	Potential to Occur / Likely Impacts
	composed of a breeding pair with retained male offspring and, rarely, retained female offspring. Often in pairs or cooperatively breeding groups of two to five birds.			
Diamond Firetail *(Stagonopleura guttata)*	**Distribution** The Diamond Firetail is endemic to south-eastern Australia, extending from central Queensland to the Eyre Peninsula in South Australia. It is widely distributed in NSW, with a concentration of records from the Northern, Central and Southern Tablelands, the Northern, Central and South Western Slopes and the North West Plains and Riverina. Not commonly found in coastal districts, though there are records from near Sydney, the Hunter Valley and the Bega Valley. This species has a scattered distribution over the rest of NSW, though is very rare west of the Darling River. **Habitat and ecology** • Feeds exclusively on the ground, on ripe and partly-ripe grass and herb seeds and green leaves, and on insects (especially in the breeding season). • Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum *Eucalyptus pauciflora* 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. • Usually encountered in flocks of between five to 40 birds, occasionally more. • Groups separate into small colonies to breed, between August and January. • Nests are globular structures built either in the shrubby understorey, or higher up, especially under hawk's or raven's nests. • Birds roost in dense shrubs or in	-	V	***This species was not detected. There is potential habitat on site however generally very little habitat would be disturbed as part of the Project. This species is unlikely to be significantly impacted if it were present as the proposed levels of impacts would not exceed the current existing impacts.*** **Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**

Name	Preferred Habitat	EPBC	TSC	Potential to Occur / Likely Impacts
	smaller nests built especially for roosting. • Appears to be sedentary, though some populations move locally, especially those in the south. • Has been recorded in some towns and near farm houses.			
Hooded Robin *(Melanodryas cucullata cucullata)*	**Distribution** The Hooded Robin is widespread, found across Australia, except for the driest deserts and the wetter coastal areas - northern and eastern coastal Queensland and Tasmania. However, it is common in few places, and rarely found on the coast. It is considered a sedentary species, but local seasonal movements are possible. The south-eastern form (subspecies *cucullata* is found from Brisbane to Adelaide and throughout much of inland NSW, with the exception of the extreme north-west, where it is replaced by subspecies *picata*. Two other subspecies occur outside NSW. **Habitat and ecology** • Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. • Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses. • Often perches on low dead stumps and fallen timber or on low-hanging branches, using a perch-and-pounce method of hunting insect prey. • Territories range from around 10 ha during the breeding season, to 30 ha in the non-breeding season. • May breed any time between July and November, often rearing several broods. • The nest is a small, neat cup of bark and grasses bound with webs, in a tree fork or crevice, from less than 1 m to 5 m above the ground. • The nest is defended by both sexes with displays of injury-feigning, tumbling across the ground.	-	V	***This species was not detected during the surveys which were undertaken. There is potential habitat of moderate quality present on the Project Site. The level of disturbance to this habitat would be low however due to the scale of the Project. This species would not be significantly impacted if it were to occur.*** **Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**

Name	Preferred Habitat	EPBC	TSC	Potential to Occur / Likely Impacts
	• A clutch of two to three is laid and incubated for fourteen days by the female. Two females often cooperate in brooding.			
Speckled Warbler *(Pyrrholaemus saggitatus)*	**Distribution** The Speckled Warbler has a patchy distribution throughout south-eastern Queensland, the eastern half of NSW and into Victoria, as far west as the Grampians. The species is most frequently reported from the hills and tablelands of the Great Dividing Range, and rarely from the coast. There has been a decline in population density throughout its range, with the decline exceeding 40% where no vegetation remnants larger than 100ha survive. **Habitat and ecology** • 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. • Large, relatively undisturbed remnants are required for the species to persist in an area. • The diet consists of seeds and insects, with most foraging taking place on the ground around tussocks and under bushes and trees. • Pairs are sedentary and occupy a breeding territory of about ten hectares, with a slightly larger home-range when not breeding. • The rounded, domed, roughly built nest of dry grass and strips of bark is located in a slight hollow in the ground or the base of a low dense plant, often among fallen branches and other litter. A side entrance allows the bird to walk directly inside. • A clutch of 3-4 eggs is laid, between August and January, and both parents feed the nestlings. The eggs are a glossy red-brown, giving rise to the unusual folk names 'Blood Tit' and	-	V	***This species was not detected however there is low quality potential habitat on site in some of the woodland areas. The potential habitat is considered to be of low quality as this species generally prefers more open areas.*** **Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**

Name	Preferred Habitat	EPBC	TSC	Potential to Occur / Likely Impacts
	'Chocolatebird'. • Some cooperative breeding occurs. The species may act as host to the Black-eared Cuckoo. • Speckled Warblers often join mixed species feeding flocks in winter, with other species such as Yellow-rumped, Buff-rumped, Brown and Striated Thornbills.			
Varied Sittella (*Daphoenositta chrysoptera)*	**Distribution** The Varied Sittella is sedentary and inhabits most of mainland Australia except the treeless deserts and open grasslands, with a nearly continuous distribution in NSW from the coast to the far west (Higgins and Peter 2002; Barrett *et al*. 2003). **Habitat and ecology** It inhabits eucalypt forests and woodlands, especially rough-barked species and mature smooth-barked gums with dead branches, mallee and *Acacia* woodland. The Varied Sittella feeds on arthropods gleaned from crevices in rough or decorticating bark, dead branches, standing dead trees, and from small branches and twigs in the tree canopy. It builds a cup-shaped nest of plant fibres and cobwebs in an upright tree fork high in the living tree canopy, and often re-uses the same fork or tree in successive years. Generation length is estimated as 5 years (Debus and Soderquist 2008).	-	V	***Potential habitat is present on site however this species was not detected. Potential habitat is present within some of the woodland areas however this species is unlikely to be impacted if present as these areas are generally remaining undisturbed except for 4 turbines.*** **Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**
Scarlet Robin *(Petroica boodang)*	**Distribution** The Scarlet Robin is found from SE Queensland to SE South Australia and also in Tasmania and SW Western Australia. In NSW, it occurs from the coast to the inland slopes. After breeding, some Scarlet Robins disperse to the lower valleys and plains of the tablelands and slopes. Some birds may appear as far west as the eastern edges of the inland plains in autumn and winter. **Habitat and ecology** • The Scarlet Robin is primarily a resident in forests and woodlands, but some adults and young birds disperse to more open habitats after breeding. • The Scarlet Robin lives in dry	-	V	***Potential habitat is present on site however this species was not detected. Potential habitat is only in the woodland areas however the potential habitat is of only low to moderate quality for this species.*** **Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**

Name	Preferred Habitat	EPBC	TSC	Potential to Occur / Likely Impacts
	eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. • This species lives in both mature and regrowth vegetation. 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: these are important components of its habitat. • The Scarlet Robin breeds on ridges, hills and foothills of the western slopes, the Great Dividing Range and eastern coastal regions; this species is occasionally found up to 1000 metres in altitude. • In autumn and winter many Scarlet Robins live in open grassy woodlands, and grasslands or grazed paddocks with scattered trees. • The Scarlet Robin is a quiet and unobtrusive species which is often quite tame and easily approached. • Birds forage from low perches, fence-posts or on the ground, from where they pounce on small insects and other invertebrates which are taken from the ground, or off tree trunks and logs; they sometimes forage in the shrub or canopy layer. • Scarlet Robin pairs defend a breeding territory and mainly breed between the months of July and January; they may raise two or three broods in each season. • This species' nest is an open cup made of plant fibres and cobwebs and is built in the fork of tree usually more than 2 metres above the ground; nests are often found in a dead branch in a live tree, or in a dead tree or shrub. • Eggs are pale greenish-, bluish- or brownish-white, spotted with brown; clutch size ranges from one to four. • Birds usually occur singly or in pairs, occasionally in small family			

Name	Preferred Habitat	EPBC	TSC	Potential to Occur / Likely Impacts
	parties; pairs stay together year-round. • In autumn and winter, the Scarlet Robin joins mixed flocks of other small insectivorous birds which forage through dry forests and woodlands.			
Barking Owl *(Ninox connivens)*	**Distribution** The Barking Owl is found throughout continental Australia except for the central arid regions. Although common in parts of northern Australia, the species has declined greatly in southern Australia and now occurs in a wide but sparse distribution in NSW. Core populations exist on the western slopes and plains (especially the Pilliga) and in some northeast coastal and escarpment forests. Many populations have crashed as woodland on fertile soils was cleared, leaving linear riparian strips of remnant trees as the last inhabitable areas. Sometimes extend their home range into urban areas, hunting birds in garden trees and insects attracted to streetlights. **Habitat and ecology** • Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. Is flexible in its habitat use and hunting can extend in to closed forest and more open areas. 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. During nesting season, the male perches in a nearby tree overlooking the hollow entrance. • Preferentially hunts small arboreal mammals such as Squirrel Gliders and Ringtail Possums, but when loss of tree hollows decreases these prey populations it becomes more reliant on birds, invertebrates and terrestrial mammals such as	-	V	***This species was not detected and the potential prey base is moderate for this species. Diurnal roost sites are sparse as are nesting hollows. The Project is unlikely to remove any significant potential habitat for this species.*** **Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**

Name	Preferred Habitat	EPBC	TSC	Potential to Occur / Likely Impacts
	rodents and rabbits. Can catch bats and moths on the wing, but typically hunts by sallying from a tall perch. • Requires very large permanent territories in most habitats due to sparse prey densities. Monogamous pairs hunt over as much as 6000 hectares, with 2000 hectares being more typical in NSW habitats. • Two or three eggs are laid in hollows of large, old trees. Living eucalypts are preferred though dead trees are also used. Nest Sites are used repeatedly over years by a pair, but they may switch Sites if disturbed by predators (e.g. goannas). • Nesting occurs during mid-winter and spring. Female incubates for 5 weeks, roosts outside the hollow when chicks are 4 weeks old, then fledging starts 2 weeks later. Young are dependent for several months • Territorial pairs respond strongly to recordings of Barking Owl calls from up to 6 km away, though humans rarely hear this response farther than 1.5 km. Because disturbance reduces the pair's foraging time, and can pull the female off her eggs even on cold nights, recordings should not be broadcast unnecessarily nor during the nesting season			
Powerful Owl *(Ninox strenua)*	**Distribution** The Powerful Owl is endemic to eastern and south-eastern Australia, mainly on the coastal side of the Great Dividing Range from Mackay to south-western Victoria. In NSW, it is widely distributed throughout the eastern forests from the coast inland to tablelands, with scattered, mostly historical records on the western slopes and plains. Now uncommon throughout its range where it occurs at low densities. **Habitat and ecology** • The Powerful Owl inhabits a range of vegetation types, from woodland and open sclerophyll	-	V	***The habitat types present on the Project Site are not this species preferred habitat types. No signs of this species were detected in the form of owl whitewash, nest sites, diurnal shelter sites or owl pellets. If this species is utilising the local area it is unlikely to be significantly impacted by the Project.*** **Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**

Name	Preferred Habitat	EPBC	TSC	Potential to Occur / Likely Impacts
	forest to tall open wet forest and rainforest. • The Powerful Owl requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well. The species breeds and hunts in open or closed sclerophyll forest or woodlands and occasionally hunts in open habitats. It roosts by day in dense vegetation comprising species such as Turpentine *(Syncarpia glomulifera)*, Black She-oak *(Allocasuarina littoralis)*, Blackwood *(Acacia melanoxylon)*, Rough-barked Apple *(Angorphora floribunda)*, Cherry Ballart *(Exocarpus cupressiformis)* and a number of eucalypt species. • The main prey items are medium-sized arboreal marsupials, particularly the Greater Glider, Common Ringtail Possum and Sugar Glider. There may be marked regional differences in the prey taken by Powerful Owls. For example in southern NSW, Ringtail Possum make up the bulk of prey in the lowland or coastal habitat. At higher elevations, such as the tableland forests, the Greater Glider may constitute almost all of the prey for a pair of Powerful Owls. Birds comprise about 10% of the diet, with flying foxes important in some areas. As most prey species require hollows and a shrub layer, these are important habitat components for the owl. • Pairs of Powerful Owls are believed to have high fidelity to a small number of hollow-bearing nest trees and will defend a large home range of 400-1450 ha. • Powerful Owls nest in large tree hollows (at least 0.5 m deep), in large eucalypts (diameter at breast height of 80-240 cm) that are at least 150 years old. During the breeding season, the male Powerful Owl roosts in a “grove” of up to 20-30 trees, situated			

Name	Preferred Habitat	EPBC	TSC	Potential to Occur / Likely Impacts
	within 100-200 metres of the nest tree where the female shelters. • Powerful Owls are monogamous and mate for life. Nesting occurs from late autumn to mid-winter, but is slightly earlier in north-eastern NSW (late summer - mid autumn). Clutches consist of two dull white eggs and incubation lasts approximately 38 days.			
Gang Gang Cockatoo *(Callocephalon fimbriatum)*	**Distribution** The Gang-gang Cockatoo is distributed from southern Victoria through south- and central-eastern New South Wales. In New South Wales, the Gang-gang Cockatoo is distributed from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-west slopes. It occurs regularly in the Australian Capital Territory. It is rare at the extremities of its range, with isolated records known from as far north as Coffs Harbour and as far west as Mudgee. **Habitat and ecology** • In summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In winter, may occur at lower altitudes in drier more open eucalypt forests and woodlands, and often found in urban areas. • May also occur in sub-alpine Snow Gum *Eucalyptus pauciflora* woodland and occasionally in temperate rainforests. • Move to lower altitudes in winter, preferring more open eucalypt forests and woodlands, particularly in box-ironbark assemblages, or in dry forest in coastal areas. • Favours old growth attributes for nesting and roosting.	-	V	This species was detected around P14. Further targeted surveys did not detect individuals of this species and potential nest hollow densities were at approximately 3 hollows per hectare. **Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**
Glossy Black Cockatoo (*Calyptorhynchus lathami)*	**Distribution** The species is uncommon although widespread throughout suitable forest and woodland habitats, from the central Queensland coast to East Gippsland in Victoria, and inland to the southern tablelands and central western plains of NSW, with a small population in the	V	E	***There is negligible foraging habitat for this species on the Project Site. Hollow densities for this sized bird for nesting are also generally low. These two critical habitat resources in combination make it unlikely that this site forms an***

Name	Preferred Habitat	EPBC	TSC	Potential to Occur / Likely Impacts
	Riverina. An isolated population exists on Kangaroo Island, South Australia. **Habitat and ecology** • Inhabits open forest and woodlands of the coast and the Great Dividing Range up to 1000 m in which stands of she-oak species, particularly Black She-oak (*Allocasuarina littoralis*), Forest She-oak (*A. torulosa*) or Drooping She-oak (*A. verticillata*) occur. • In the Riverina area, again usually associated with woodlands containing Drooping She-oak but also recorded in open woodlands dominated by Belah (*Casuarina cristata*). • Feeds almost exclusively on the seeds of several species of she-oak (*Casuarina* and *Allocasuarina* species), shredding the cones with the massive bill. • Dependent on large hollow-bearing eucalypts for nest sites. One or two eggs are laid between March and August.			***important habitat for this species. The only woodland habitat to generally be disturbed is for the 4 turbines proposed in woodland areas. This level of disturbance would not be significant for this broad ranging species.*** **Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**

Key: CE= Critically Endangered, E= Endangered, V=Vulnerable.

Table 10: Potential Threatened Fauna Species and Analysis - Amphibians

Name	Preferred Habitat	EPBC	TSC	Potential to Occur/Likely Impacts
Giant Burrowing Frog *(Heleioporus australiacus)*	**Distribution** The Giant Burrowing Frog is distributed in south eastern NSW and Victoria, and appears to exist as two distinct populations: a northern population largely confined to the sandstone geology of the Sydney Basin and extending as far south as Ulladulla, and a southern population occurring from north of Narooma through to Walhalla, Victoria. **Habitat and ecology** • 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	V	V	EPBC search states species or species habitat may occur within Upper Lachlan LGA. ***This species generally only calls for 1-2 weeks after rain in October to November. The habitat on site does not represent its preferred potential habitat. The proposed development will not significantly disturb any potential habitat for this species. As this species does not call every year and only generally only calls after heavy rain in October to November it***

Name	Preferred Habitat	EPBC	TSC	Potential to Occur/Likely Impacts
	lines and where small pools form from the collected water. • This frog is a slow growing and long-lived species, living up to 10 years of age, possibly longer. • Found in heath, woodland and open dry sclerophyll forest on a variety of soil types except those that are clay based. • Spends more than 95 % of its time in non-breeding habitat in areas up to 300 m from breeding sites. Whilst in non-breeding habitat it burrows below the soil surface or in the leaf litter. Individual frogs occupy a series of burrow sites, some of which are used repeatedly. The home ranges of both sexes appear to be non-overlapping suggesting exclusivity of non-breeding habitat. Home ranges are approximately 0.04 ha in size. • Individuals move into the breeding site either immediately before or following heavy rain and occupy these sites for up to 10 days. Most individuals will not attempt to breed every year. • The Giant Burrowing Frog has a generalist diet and studies to date indicate that they eat mainly invertebrates including ants, beetles, cockroaches, spiders, centipedes and scorpions. • When breeding, frogs will call from open spaces, under vegetation or rocks or from within burrows in the creek bank. Males show strong territoriality at breeding sites. This species breeds mainly in Autumn, but has been recorded calling throughout the year. Egg masses are foamy with an average of approximately 500-800 eggs and are laid in burrows or under vegetation in small pools. After rains, tadpoles are washed into larger pools where they complete their development in ponds or ponded areas of the creekline. Tadpole development ranges from around 12 weeks duration to up to 12 months with late developing tadpoles overwintering and			***can be missed. The potential habitat is of low quality, does not represent its preferred habitat and would not be significantly disturbed by the Project. No further consideration is deemed necessary for this species.***

Name	Preferred Habitat	EPBC	TSC	Potential to Occur/Likely Impacts
	completing development when warmer temperatures return.			
Booroolong Frog *(Litoria booroolongensis)*	**Distribution** The Booroolong Frog is restricted to NSW and north-eastern Victoria, predominantly along the western-flowing streams of the Great Dividing Range. It has disappeared from much of the Northern Tablelands, however several populations have recently been recorded in the Namoi catchment. The species is rare throughout most of the remainder of its range. **Habitat and ecology** • Live along permanent streams with some fringing vegetation cover such as ferns, sedges or grasses. • Adults occur on or near cobble banks and other rock structures within stream margins. • Shelter under rocks or amongst vegetation near the ground on the stream edge. • Sometimes bask in the sun on exposed rocks near flowing water during summer. • Breeding occurs in spring and early summer and tadpoles metamorphose in late summer to early autumn. • Eggs are laid in submerged rock crevices and tadpoles grow in slow-flowing connected or isolated pools. Known to occur in Crookwell LGA (OEH).	E	E	***No creek lines including the Abercrombie River would be impacted. The proposed development would not disturb any potential habitat for this species. There is negligible potential for this species on the Project Site.*** **Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**
Yellow-spotted Tree Frog *(Litoria castanea)*	**Distribution** There is only a single known population of the Yellow-Spotted Bell Frog, which occurs on the Southern Tablelands. Historically, this species occurred in two separate highland ranges, on the New England Tableland and on the southern and central highlands from Bathurst/Orange to Bombala. **Habitat and ecology** • Require large permanent ponds or slow flowing streams with plenty of emergent vegetation such as bulrushes. • Adults are active during spring and summer and bask on sunny	CE	E	***There is negligible potential habitat for this species on the Project Site and it would not be impacted by the proposed development.***

Name	Preferred Habitat	EPBC	TSC	Potential to Occur/Likely Impacts
	days. • Move and forage at night on grassy banks or float on the water's surface. • Males call at night from the open water and breeding generally occurs during or following rain. • Eggs are laid amongst aquatic vegetation. • Shelter during autumn and winter under fallen timber, rocks, other debris or thick vegetation.			
Littlejohn's Tree Frog *(Litoria littlejohni)*	**Distribution** Littlejohn's Tree Frog has a distribution that includes the plateaus and eastern slopes of the Great Dividing Range from Watagan State Forest (90 km north of Sydney) south to Buchan in Victoria. The majority of records are from within the Sydney Basin Bioregion with only scattered records south to the Victorian border and this species has not been recorded in southern NSW within the last decade. Records are isolated and tend to be at high altitude. **Habitat and ecology** • 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. • Breeding is triggered by heavy rain and can potentially occur all year, but is usually from late summer to early spring when conditions are favourable. • Males call from low vegetation close to slow flowing pools. • Eggs are laid in loose gelatinous masses attached to small submerged twigs. • Eggs and tadpoles are mostly found in still or slow flowing pools that receive extended exposure to sunlight, but will also use temporary isolated pools.	V	V	***No perched swamps are on site and this species is not likely to have any potential breeding habitat impacted by the Project.***
Growling Grass Frog *(Litoria*	**Distribution** In NSW the species was once distributed	V	E	***The habitat on site does not represent this species preferred***

Name	Preferred Habitat	EPBC	TSC	Potential to Occur/Likely Impacts
raniformis)	along the Murray and Murrumbidgee Rivers and their tributaries, the southern slopes of the Monaro district and the central southern tablelands as far north as Tarana, near Bathurst. Currently, the species is known to exist only in isolated populations in the Coleambally Irrigation Area, the Lowbidgee floodplain and around Lake Victoria. A few yet unconfirmed records have also been made in the Murray Irrigation Area in recent years. The species is also found in Victoria, Tasmania and South Australia, where it has also become endangered. **Habitat and ecology** • 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. They are also found in irrigated rice crops, particularly where there is no available natural habitat. • Breeding occurs during the warmer months and is triggered by flooding or a significant rise in water levels. The species has been known to breed anytime from early spring through to late summer/early autumn (Sept to April) following a rise in water levels. • During the breeding season animals are found floating amongst aquatic vegetation (especially cumbungi or Common Reeds) within or at the edge of slow-moving streams, marshes, lagoons, lakes, farm dams and rice crops. • Tadpoles require standing water for at least 4 months for development and metamorphosis to occur but can take up to 12 months to develop. • Outside the breeding season animals disperse away from the water and take shelter beneath ground debris such as fallen timber and bark, rocks, grass clumps and in deep soil cracks. • Prey includes a variety of invertebrates as well as other			***potential habitat.***

Name	Preferred Habitat	EPBC	TSC	Potential to Occur/Likely Impacts
	small frogs, including young of their own species.			

Key: CE= Critically Endangered, E= Endangered, V=Vulnerable.

Table 11: Potential Threatened Fauna Species and Analysis - Insects

Name	Preferred Habitat	EPBC	TSC	Potential to Occur/Likely Impacts
Golden Sun Moth *(Synemon plana)*	**Distribution** The Golden Sun Moth's NSW populations are found in the area between Queanbeyan, Gunning, Young and Tumut. The species' historical distribution extended from Bathurst (central NSW) through the NSW Southern Tablelands, through to central and western Victoria, to Bordertown in eastern South Australia. It is now known from only 40 sites in NSW, about 12 sites in the Australian Capital Territory and eight sites in Victoria. **Habitat and ecology** • Occurs in Natural Temperate Grasslands and grassy Box-Gum Woodlands in which groundlayer is dominated by wallaby grasses *Austrodanthonia* spp. • Grasslands dominated by wallaby grasses are typically low and open - the bare ground between the tussocks is thought to be an important microhabitat feature for the Golden Sun Moth, as it is typically these areas on which the females are observed displaying to attract males. • Habitat may contain several wallaby grass species, which are typically associated with other grasses particularly spear-grasses *Austrostipa* spp. or Kangaroo Grass *Themeda australis*. • Adults are short-lived (one to four days) and do not feed - having no functional mouthparts; the larvae are thought to feed exclusively on the roots of wallaby grasses. • Males spend their entire adult life patrolling the grassland in search of females; once mated, the females spend their time laying eggs at the bases of wallaby grass	CE	E	***The potential habitat on site for this species is generally of low quality. It was not detected during the surveys which were undertaken.*** **Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**

Name	Preferred Habitat	EPBC	TSC	Potential to Occur/Likely Impacts
	tussocks. • Females have reduced hind wings and are reluctant to fly, even when disturbed, though males are capable of active and prolonged flight. However, males will not fly long distances (no greater than 100 m) away from areas of suitable habitat. Thus populations separated by distances of greater than 200 m can be considered effectively isolated and populations which have gone extinct, or vacant patches of suitable habitat, are highly unlikely to be recolonised. • The flight period is relatively short, typically lasting from six to eight weeks (during November and December in the ACT region, possibly earlier or alter in other regions). Males fly only in bright sunshine during the warmest part of the day (1000 - 1400 hrs). Adults emerge continuously throughout the flying season. • Larvae feed on the roots of the wallaby grass plant. The larval development time (and thus generation time) is unknown - it possibly varies between one and three years.			

Key: CE= Critically Endangered, E= Endangered, V=Vulnerable.

Table 12: Potential Threatened Fauna Species and Analysis - Mammals

Name	Preferred Habitat	EPBC	TSC	Potential to Occur/Likely Impacts
Large-eared Pied Bat *(Chalinolobus dwyeri)*	**Distribution** Found mainly in areas with extensive cliffs and caves, from Rockhampton in Queensland south to Bungonia in the NSW Southern Highlands. It is generally rare with a very patchy distribution in NSW. There are scattered records from the New England Tablelands and North West Slopes. **Habitat and ecology** • Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the	V	V	EPBC search states species or species habitat may occur within Upper Lachlan LGA and Oberon LGA. ***No caves were detected on site to form the breeding habitat of this species. They were not detected during the Anabat surveys which were undertaken. This species would not be significantly impacted by the Project as its breeding habitat would not be impacted and it has a broad***

Name	Preferred Habitat	EPBC	TSC	Potential to Occur/Likely Impacts
	Fairy Martin (Hirundo ariel), 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. They remain loyal to the same cave over many years. • Found in well-timbered areas containing gullies. • The relatively short, broad wing combined with the low weight per unit area of wing indicates maneuverable flight. This species probably forages for small, flying insects below the forest canopy. • Likely to hibernate through the coolest months. • It is uncertain whether mating occurs early in winter or in spring.			***range of foraging habitat in the local area. This species would not be significantly impacted and no further consideration is deemed necessary.***
Tiger Quoll *(Dasyurus maculatus maculatus (SE mainland population))*	**Distribution** The range of the Spotted-tailed Quoll has contracted considerably since European settlement. It is now found on the east coast of NSW, Tasmania, eastern Victoria and north-eastern Queensland. Only in Tasmania is it still considered common. **Habitat and ecology** • Mostly nocturnal, although will hunt during the day; spends most of the time on the ground, although also an excellent climber and may raid possum and glider dens and prey on roosting birds. • 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. • Use 'latrine sites', often on flat rocks among boulder fields and rocky cliff-faces; these may be visited by a number of individuals; latrine sites can be	E	V	EPBC search states species or species habitat may occur within Upper Lachlan LGA and Oberon LGA. ***No signs of this species were detected in the form of den or latrine sites. Potential den sites are very few on the Project Site. This species generally favours large tracts of bushland with dense vegetated creeklines which form its connecting pathways in the landscape. This habitat is present on site around the Abercrobmie River however foxes may be making this species less numerous. It is assumed that this species would occur however it would not be significantly impacted due to the nature of the Project. No further consideration is deemed necessary for this species.***

Name	Preferred Habitat	EPBC	TSC	Potential to Occur/Likely Impacts
	recognised by the accumulation of the sometimes characteristic 'twisty-shaped' faeces deposited by animals. • Consumes a variety of prey, including gliders, possums, small wallabies, rats, birds, bandicoots, rabbits and insects; also eats carrion and takes domestic fowl. • Females occupy home ranges up to about 750 hectares and males up to 3500 hectares; usually traverse their ranges along densely vegetated creeklines. • Average litter size is five; both sexes mature at about one year of age.			
Greater Long-eared Bat *(Nyctophilus timoriensis (south-eastern form))*	**Distribution** Overall, the distribution of the south eastern form coincides approximately with the Murray Darling Basin with the Pilliga Scrub region being the distinct stronghold for this species. **Habitat and ecology** • Inhabits a variety of vegetation types, including mallee, bulloak *Allocasuarina leuhmanni* and box eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine vegetation that occurs in a north-south belt along the western slopes and plains of NSW and southern Queensland. • Roosts in tree hollows, crevices, and under loose bark. • Slow flying agile bat, utilising the understorey to hunt non-flying prey - especially caterpillars and beetles - and will even hunt on the ground. • Mating takes place in autumn with one or two young born in late spring to early summer.	V	V	EPBC search states species or species habitat may occur within Upper Lachlan LGA and Oberon LGA. ***This species was not detected during the Anabat surveys which were undertaken. As this species forages over a large area and since negligible potential breeding or sheltering habitat would be removed this species is unlikely to be significantly impacted by the Project.*** **Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**
Brush-tailed Rock Wallaby *(Petrogale penicillata)*	**Distribution** The range of the Brush-tailed Rock-wallaby extends from south-east Queensland to the Grampians in western Victoria, roughly following the line of the Great Dividing Range. However the distribution of the species across its original range has declined significantly in	V	E	EPBC search states species or species habitat may occur within Upper Lachlan LGA and Oberon LGA. ***There is general habitat for this species present along the Abercrombie River. Specifically***

Name	Preferred Habitat	EPBC	TSC	Potential to Occur/Likely Impacts
	the west and south and has become more fragmented. In NSW they occur from the Queensland border in the north to the Shoalhaven in the south, with the population in the Warrumbungle Ranges being the western limit. **Habitat and ecology** • Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges 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. • Shelter or bask during the day in rock crevices, caves and overhangs and are most active at night. • Highly territorial and have strong site fidelity with an average home range size of about 15 ha. • Live in family groups of 2 – 5 adults and usually one or two juvenile and sub-adult individuals. • Dominant males associate and breed with up to four females. • Breeding is likely to be continuous, at least in the southern populations, with no apparent seasonal trends in births.			***the habitat on the Project Site is not this species preferred habitat. No signs of this species were detected and the rocky outcrop types are not extensive or steep enough to avoid potential predation from foxes. This species would not be impacted and no further consideration is deemed necessary.***
Long-nosed Potoroo *(Potorous tridactylus tridactylus)*	**Distribution** The Long-nosed Potoroo is found on the south-eastern coast of Australia, from Queensland to eastern Victoria and Tasmania, including some of the Bass Strait islands. There are geographically isolated populations in western Victoria. In NSW it is generally restricted to coastal heaths and forests east of the Great Dividing Range, with an annual rainfall exceeding 760 mm. **Habitat and ecology** • 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	V	V	EPBC search states species or species habitat may occur within Upper Lachlan LGA and Oberon LGA. ***This species preferred habitat of heaths is not present on this site. This species is highly unlikely to occur and requires no further consideration.***

Name	Preferred Habitat	EPBC	TSC	Potential to Occur/Likely Impacts
	melaleucas. A sandy loam soil is also a common feature. • The fruit-bodies of hypogeous (underground-fruiting) 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. • Often digs small holes in the ground in a similar way to bandicoots. • Mainly nocturnal, hiding by day in dense vegetation - however, during the winter months animals may forage during daylight hours. • Individuals are mainly solitary, non-territorial and have home range sizes ranging between 2-5 ha. • Breeding peaks typically occur in late winter to early summer and a single young is born per litter. Adults are capable of two reproductive bouts per annum.			
Grey-headed Flying Fox *(Pteropus poliocephalus)*	**Distribution** Grey-headed Flying-foxes are found within 200 km of the eastern coast of Australia, from Bundaberg in Queensland to Melbourne in Victoria. **Habitat and ecology** • 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. • Individual camps may have tens of thousands of animals and are used for mating, birth and the rearing of young. • Annual mating commences in January and a single young is born each October or November. • Site fidelity to camps is high with some caps being used for over a century. • Travel up to 50 km to forage.	V	V	EPBC search states foraging, feeding or related behaviour known to occur within Upper Lachlan LGA. ***No camps were detected for this species. The potential foraging resources and potential camp sites are not preferred by this species. This species would not be impacted and requires no further consideration.***

Name	Preferred Habitat	EPBC	TSC	Potential to Occur/Likely Impacts
	• Feed on the nectar and pollen of native trees, in particular Eucalyptus, Melaleuca and Banksia, and fruits of rainforest trees and vines. • Also forage in cultivated gardens and fruit crops and can inflict severe crop damage.			
Eastern False Pipistrelle (*Falsistrellus tasmaniensis*)	**Distribution** The Eastern False Pipistrelle is found on the south-east coast and ranges of Australia, from southern Queensland to Victoria and Tasmania. **Habitat and ecology** • 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.	-	V	***There are potential roost and foraging areas on the Project Site. This species was not detected during the Anabat surveys. Generally very few potential roost and breeding trees would require removal as part of the Project. If this species were to occur avoiding the removal of hollow trees would reduce any potential impacts as potential breeding sites are important for its survival. Microchiropteran bat species do however change roosts every few days to avoid predation.*** **<u>Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.</u>**
Eastern Bent Wing Bat (*Miniopterus schreibersii oceanensis*)	**Distribution** Eastern Bent-wing Bats occur along the east and north-west coasts of Australia. **Habitat and ecology** • Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. • Form discrete populations centered on a maternity cave that is used annually in spring and summer for the birth and rearing of young. • Maternity caves have very specific temperature and humidity regimes. • At other times of the year, populations disperse within about 300 km range of maternity caves. • Cold caves are used for hibernation in southern Australia. • Breeding or roosting colonies can	-	V	***No caves were detected on site to form the breeding habitat of this species. They were not detected during the Anabat surveys which were undertaken. This species would not be significantly impacted by the Project as its breeding habitat would not be impacted and it has a broad range of foraging habitat in the local area. This species would not be significantly impacted and no further consideration is deemed necessary.***

Name	Preferred Habitat	EPBC	TSC	Potential to Occur/Likely Impacts
	number from 100 to 150,000 individuals. • Hunt in forested areas, catching moths and other flying insects above the tree tops.			
Large Footed Myotis (*Myotis macropus (formally Myotis adversus)*)	**Distribution** The Large-footed Myotis is found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. It is rarely found more than 100 km inland, except along major rivers. **Habitat and ecology** • 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. • In NSW females have one young each year usually in November or December.	-	V	***This species has potential habitat on the Project Site along the Abercrobmie River. This species would utilise this habitat however this habitat would not be impacted by the proposal and as such it would not be impacted. It was not detected during the Anabat surveys despite potential stream and dam habitat being targeted. Generally there would no disturbance to the waterbodies on the Project Site and as such this species is unlikely to be impacted by the Project.*** **Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**
Greater Broad-nosed Bat (*Scoteanax rueppellii*)	**Distribution** The Greater Broad-nosed Bat is found mainly in the gullies and river systems that drain the Great Dividing Range, from north-eastern Victoria to the Atherton Tableland. It extends to the coast over much of its range. In NSW it is widespread on the New England Tablelands, however does not occur at altitudes above 500 m. **Habitat and ecology** • Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. • Although this species usually roosts in tree hollows, it has also been found in buildings. • Forages after sunset, flying slowly and directly along creek and river corridors at an altitude of 3 - 6 m. • Open woodland habitat and dry open forest suits the direct flight of this species as it searches for beetles and other large, slow-	-	V	***There are potential roost and foraging areas on the Project Site. This species was not detected during the Anabat surveys. Generally very few potential roost and breeding trees would require removal as part of the Project. If this species were to occur avoiding the removal of hollow trees would reduce any potential impacts as potential breeding sites are important for its survival. Microchiropteran bat species do however change roosts every few days to avoid predation.*** **Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**

Name	Preferred Habitat	EPBC	TSC	Potential to Occur/Likely Impacts
	flying insects; this species has been known to eat other bat species. • Little is known of its reproductive cycle, however a single young is born in January; prior to birth, females congregate at maternity Sites located in suitable trees, where they appear to exclude males during the birth and raising of the single young.			
Squirrel Glider (*Petaurus norfolcensis)*	**Distribution** The species is widely though sparsely distributed in eastern Australia, from northern Queensland to western Victoria. **Habitat and ecology** • Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. • Prefers mixed species stands with a shrub or Acacia midstorey. • Live in family groups of a single adult male one or more adult females and offspring. • Require abundant tree hollows for refuge and nest sites. • Diet varies seasonally and consists of Acacia gum, eucalypt sap, nectar, honeydew and manna, with invertebrates and pollen providing protein.	-	V	***This species generally prefers more highly productive forest than is present on this site. Generally there will be low levels of potential impacts on this species potential habitat. No signs of this species were detected in the form of Glider Chews on eucalypts or scats. None were located during the targeted surveys.*** **<u>Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.</u>**
Yellow-bellied Sheath-tailed Bat (*Saccolaimus flaviventris)*	**Distribution** The Yellow-bellied Sheathtail-bat is a wide-ranging species found across northern and eastern Australia. 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. There are scattered records of this species across the New England Tablelands and North West Slopes. **Habitat and ecology** • Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal	-	V	***There are potential roost and foraging areas on the Project Site. This species was not detected during the Anabat surveys. Generally very few potential roost and breeding trees would require removal as part of the Project. If this species were to occur avoiding the removal of hollow trees would reduce any potential impacts as potential breeding sites are important for its survival. Microchiropteran bat species do however change roosts every few day to avoid predation. This species,***

Name	Preferred Habitat	EPBC	TSC	Potential to Occur/Likely Impacts
	burrows. • When foraging for insects, flies high and fast over the forest canopy, but lower in more open country. • Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory. • Breeding has been recorded from December to mid-March, when a single young is born. • Seasonal movements are unknown; there is speculation about a migration to southern Australia in late summer and autumn.			***although being the only high flier of the microchiropteran bats is unlikely to be impacted by bat strike from the blades of the turbines as although it flies high it only generally flies above the tree canopy which is below the blade impact height.*** **Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**

Key: CE= Critically Endangered, E= Endangered, V=Vulnerable.

Table 13: Potential Threatened Fauna Species and Analysis - Fish

Name	Preferred Habitat	EPBC	TSC	Potential to Occur/Likely Impacts
Murray Cod *(Maccullochella peelii peelii)*	**Distribution** The Murray Cod is found extensively throughout the Murray Darling Basin in the south-eastern region of Australia. Its range throughout the Basin includes South Australia, Victoria, NSW, ACT and Queensland. Historically the species occurred throughout the entire Basin, with the exception of the upper reaches of some tributaries. It still occurs throughout most of the Basin with the exception of some localised extinctions. The Murray Darling Basin contains approximately 13 245 km of waterways that may encompass areas of suitable habitat for the Murray Cod. The estimated extent of occurrence is 660 km². Some translocated populations exist outside the species' natural distribution in impoundments and waterways in NSW and Victoria. **Habitat and ecology** 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,	V	-	EPBC search states species or species habitat may occur within Upper Lachlan LGA. ***This species has potential to occur in the Abercrombie River. This species would not be impacted and no further consideration is deemed necessary.***

Name	Preferred Habitat	EPBC	TSC	Potential to Occur/Likely Impacts
	overhanging vegetation and other woody structures. The Murray Cod is considered a main channel specialist as it is frequently found in the main river channel and larger tributaries. It is found in floodplain channels when they contain water; although this usage appears limited. Juveniles are most commonly found in the main river channel until about one year of age, after which they branch out (National Murray Cod Recovery Team 2009).			
Macquarie Perch *(Macquaria australasica)*	**Distribution** The natural geographical range of the Macquarie Perch was once widespread through the cooler upper reaches of the southern tributaries of the Murray-Darling river system; however, its distribution did not usually extend to the source of these rivers. Although rare downstream in the Murray River, this species occurred in the Barmah Lakes region and nearby tributaries such as Broken Creek and the upper reaches of the Macquarie River system. Prior to 1970, this species was recorded at 52 localities within its natural geographical range in the Murray-Darling Basin, however, since then it has been recorded at only 20 localities. Macquarie Perch was a popular and abundant angling and food species and strong populations existed in the 1950s in rivers and lakes such as the Goulburn River and tributary streams, including the Yea River and Lake Eildon in Victoria. Populations existed in east flowing waterways in the Hawkesbury and Shoalhaven River catchments including the Nepean and Avon Rivers, and also in some of Sydney's water supply dams. The species also occurs in the upper reaches of the Murrumbidgee and Lachlan Rivers catchments in NSW and the Murrumbidgee, Molonglo, Paddys and Cotter Rivers of the ACT. Fish from coastal catchments are morphologically and genetically distinct from fish in the Murray-Darling Basin. Although some experts consider these differences warrant taxonomic differentiation, no such separation has occurred. Although it has been suggested that coastal populations were translocated from the Murray-Darling Basin, no records of translocation to coastal rivers have been	E	-	EPBC search states species or species habitat may occur within Upper Lachlan LGA. ***This species is known to occur in the Abercrombie River. This species would not be impacted and no further consideration is deemed necessary.***

Name	Preferred Habitat	EPBC	TSC	Potential to Occur/Likely Impacts
	documented for the Hawkesbury or Shoalhaven populations. Of the many recorded translocations of this species from within and outside its natural range, few translocated populations remain or have self-sustaining breeding populations. Macquarie Perch were translocated from the upper Murrumbidgee River near Cooma to two locations in the Snowy River, however, since then, no fish have been recorded at that location. The populations in Cataract Dam (NSW) and the Yarra River (Victoria) were translocated from the Murray River. **Habitat and ecology** 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 (shallow running water). Populations may survive in impoundments if able to access suitable spawning sites. Spawning sites used by the Macquarie Perch in the rivers flowing into Lake Eildon (between 1966–69) consisted of rubble substrate of small boulders, pebbles and gravel. Water depth was 0.2–0.9 m (usually 0.4–0.6 m) and water velocity was 0.3–0.6 m/s. There was also a pool (usually 15–30 m long and at least 1.5 m deep) immediately upstream and fast-flowing broken water immediately downstream. Although this species can tolerate temperatures of < 9 °C (the temperature of the water at the bottom of Lake Eildon) they appear to require a temperature of at least 16.5 °C for spawning to occur. Newly hatched yolk sac larvae shelter amongst pebbles. In Seven Creeks, this species occurred in deep pools and riffles above falls where the substrate was gravel and boulders.			

Key: CE= Critically Endangered, E= Endangered, V=Vulnerable.

Table 14: Potential Threatened Fauna Species and Analysis - Reptiles

Name	Preferred Habitat	EPBC	TSC	Potential to Occur/Likely Impacts

Name	Preferred Habitat	EPBC	TSC	Potential to Occur/Likely Impacts
Pink-tailed Worm Lizard *(Aprasia parapulchella)*	**Distribution** The Pink-tailed Worm Lizard is only known from the Central and Southern Tablelands, and the South Western Slopes. There is a concentration of populations in the Canberra/Queanbeyan Region. Other populations have been recorded near Cooma, Yass, Bathurst, Albury and West Wyalong. This species is also found in the Australian Capital Territory. **Habitat and ecology** • Inhabits sloping, open woodland areas with predominantly native grassy groundlayers, particularly those dominated by Kangaroo Grass (*Themeda australis*). • Sites are typically well-drained, with rocky outcrops or scattered, partially-buried rocks. • Commonly found beneath small, partially-embedded rocks and appear to spend considerable time in burrows below these rocks; the burrows have been constructed by and are often still inhabited by small black ants and termites. • Feeds on the larvae and eggs of the ants with which it shares its burrows. • It is thought that this species lays 2 eggs inside the ant nests during summer; the young first appear in March.	V	V	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA. ***There is some negligible potential habitat present for this species of low quality. It was not detected during the surveys which were undertaken.*** **Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**
Striped Legless Lizard *(Delma impar)*	**Distribution** The Striped Legless Lizard occurs in the Southern Tablelands, the South West Slopes and possibly on the Riverina. Populations are known in the Goulburn, Yass, Queanbeyan, Cooma and Tumut areas. Also occurs in the ACT, Victoria and south-eastern South Australia. **Habitat and ecology** • Found mainly in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component. • Also found in secondary grassland near Natural Temperate Grassland and occasionally in open Box-Gum Woodland. • Habitat is where grassland is	V	V	EPBC search states species or species habitat likely to occur within Upper Lachlan LGA. ***There is some potential habitat present for this species however this is very limited and is of low quality. The surveys which were undertaken did not detect this species.*** **Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**

Name	Preferred Habitat	EPBC	TSC	Potential to Occur/Likely Impacts
	dominated by perennial, tussock-forming grasses such as Kangaroo Grass *Themeda australis*, spear-grasses *Austrostipa* spp. and poa tussocks *Poa* spp., and occasionally wallaby grasses *Austrodanthonia* spp. • Sometimes present in modified grasslands with a significant content of exotic grasses. • Sometimes found in grasslands with significant amounts of surface rocks, which are used for shelter. • Actively hunts for spiders, crickets, moth larvae and cockroaches. • Two papery eggs are laid in early summer. • Goes below ground or under rocks or logs over winter.			
Little Whip Snake (*Suta flagellum*)	**Distribution** The Little Whip Snake is found within an area bounded by Crookwell in the north, Bombala in the south, Tumbarumba to the west and Braidwood to the east. **Habitat and ecology** • Occurs in Natural Temperate Grasslands and grassy woodlands, including those dominated by Snow Gum *Eucalyptus pauciflora* or Yellow Box *E. melliodora*. • Also occurs in secondary grasslands derived from clearing of woodlands. • Found on well drained hillsides, mostly associated with scattered loose rocks. • Most specimens have been found under rocks or logs lying on, or partially embedded in the soil. • Little is known about the habits of this small snake as it is primarily nocturnal. • Feeds on lizards and frogs. • Up to seven live young are born between September and February.	-	V	***There is some potential habitat present for this species however this is very limited and is of low to moderate quality. This species was not detected during the surveys which were undertaken.*** **<u>Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.</u>**
Grassland Earless Dragon	**Distribution** Historically, the Grassland Earless Dragon	E	E	***There is some potential habitat present for this species however***

Name	Preferred Habitat	EPBC	TSC	Potential to Occur/Likely Impacts
(*Tympanocryptis pinguicolla)*	ranged from Bathurst to Cooma, including the ACT region. The only populations now known are in the ACT and adjacent NSW at Queanbeyan, and on the Monaro Basalt Plains between Cooma and south-west of Nimmitabel. Formerly known from Victoria, though no recent records. **Habitat and ecology** • Restricted to a small number of Natural Temperate Grassland sites dominated by wallaby grasses *(Nothodanthonia spp.)*, spear grasses *(Austrostipa spp.)*, Poa Tussock *(Poa sieberiana)*, Red Grass *(Bothriochloa macra)*, and occasionally Kangaroo Grass *(Themeda australis)*. Introduced pasture grasses occur at many of the Project Sites supporting this species, which has also been captured in secondary grassland. • Within its habitat, apparently prefers areas with a more open structure, characterised by small patches of bare ground between the grasses and herbs. • In addition to tussocks, partially embedded surface rocks, and spider and insect holes are used for shelter. These are important micro-habitat elements within the grassland habitat. Rocks and arthropod holes provide important thermal refuges during temperature extremes. • Feeds on small invertebrates, including ants and spiders. • Tends to be inactive beneath rocks or in arthropod burrows during the winter months. • Lays up to five eggs in shallow nests or burrows, (sometimes those dug by spiders or other arthropods), between late spring and late summer. • Young hatch in late summer and autumn.			***this is very limited and is of low quality. This species was not detected during the surveys which were undertaken.*** **Potential impacts on this species and its potential habitat is examined in the impact analysis section of this report.**
Broad-headed Snake	**Distribution** The Broad-headed Snake is largely	V	E	***The preferred habitat for this species is not generally present***

Name	Preferred Habitat	EPBC	TSC	Potential to Occur/Likely Impacts
(Hoplocephalus bungarioides)	confined to Triassic and Permian sandstones, including the Hawkesbury, Narrabeen and Shoalhaven groups, within the coast and ranges in an area within approximately 250 km of Sydney. **Habitat and ecology** • Nocturnal. • Shelters in rock crevices and under flat sandstone rocks on exposed cliff edges during autumn, winter and spring. • Moves from the sandstone rocks to shelters in hollows in large trees within 200 m of escarpments in summer. • Feeds mostly on geckos and small skinks; will also eat frogs and small mammals occasionally. • Females produce four to 12 live young from January to March, which is a relatively low level of fecundity.			***and the Project would cause no disturbance to potential habitat for this species. No further consideration is deemed necessary.***

Key: CE= Critically Endangered, E= Endangered, V=Vulnerable.

5.2. HABITATS AND POTENTIAL IMPACTS

The main habitats on the Project Site are inter-related in relation to the distribution of vegetation, and as such, the habitats are grouped for discussion purposes in relation to habitat features and vegetation communities. Generally the remnant vegetation communities are avoided by Project infrastructure and, as a result, the potential for impacts has been significantly reduced.

Overall there are 3 turbines and their associated infrastructure proposed in the remnant D area, being turbines P10, P13 and P14. In general, it is likely that these turbines can be erected using minimal impact and removal of vegetation. In total 0.65 hectares would be cleared of which 0.14ha would be rehabilitated.

There is also a proposed access track over an existing farm track that will traverse through remnant C area, the potential widening of the track and laying of underground cables may require up to 0.1 hectare of vegetation removal in this area that will be rehabilitated after the construction phase is completed.

The construction phase of the Project creates the most potential disturbance, however, once the construction is complete the access tracks and temporary crane hard stands are reduced in area to the size required for operation and maintenance and all other areas disturbed by construction which are not required for operation and maintenance can and will be

rehabilitated.

As discussed in section 2.4.2 the amount of clearing is estimated at approximately 0.75 hectares of these forest vegetation remnants. Some of these areas are required for construction access tracks and crane hard stands for the erection of the turbines and would be rehabilitated post construction. This is estimated to be 0.24 hectares to be rehabilitated post construction.

Given the habitat available on the Project Site, no JAMBA or CAMBA migratory species are likely to be impacted.

The proposal will not result in the breaking of any biodiversity or wildlife corridors and there will be no interruption to gene flow or wildlife movements. The proposal is based largely within cleared farming paddock and will result in no significant impacts or breaks to natural vegetation or fauna habitat.

5.3. POTENTIAL IMPACTS BIRD AND BAT STRIKE

There is potential for bird and bat strike to turbines as part of any proposed wind farm development. Generally birds and bats do not impact with the upright part of the turbines so the main threat is from the turbine blades themselves as they spin. For bats that forage at night moderate to high wind conditions significantly reduce their foraging behaviour. When this is combined with the cooler months of May to August, when many bats are in torpor (a form of hibernation), foraging behaviour is impacted (significantly reduced). This behaviour is important as the main risk to microchiropteran bats is from blade strike (including barotrauma) and, during conditions when the blades are spinning at high speeds, bat activity is significantly reduced. Therefore, the amount of time that bats are potentially exposed to this risk is reduced. Microchiropteran bats which have potential to be impacted are high fast flyers.

Microchiropteran bats are excellent at echolocation and can fly in crowded environments and catch and eat insects on the wing. As such, they are highly unlikely to not detect the movement of a wind turbine and it is likely that these would be totally avoided by these species. As such the potential losses of bats as a result of impacts with turbines are likely to be extremely low. Monitoring should however be undertaken of collisions within the first year of operation. Monitoring of any dead birds or bats under each turbine should be monitored on a weekly basis with specimens collected by an Ecologist for identification.

The heights at which various birds and bats fly varies considerably with the main risk of collision being when the rotors are in motion, within the rotor sweep area. Species most at risk are species where individual's home ranges intersect with wind farm areas or where wind farms occur on migratory paths of annual species migrations. There are no known annual migration paths for birds through the site of the Paling Yards Wind Farm.

The "birds of prey" group has generally a low potential to be impacted. This is outlined in modelling by Biosis Research of eight existing and proposed wind farms in the range of the Tasmanian Wedge-tailed Eagle. This research indicated that there is only likely to be a 0.001

per cent increase in the mortality rate, for the species which is not significant. In relation to birds of prey most deaths are caused from vehicle collisions, electrocutions and collisions with wire, fencing and shootings (The Australia Institute – Wind Farms, The Facts and Fallacies, (2006). None of the raptors which have potential to use the local area are threatened species.

Overall the biodiversity impact risks in relation to wind turbine collisions are usually insignificant compared to the threats associated with other activities and processes. Erickson et. Al. (2001) found that wind turbine collision deaths probably represent 0.001% to 0.02% (1 out of every 5000 to 10000 avian fatalities) of the annual collision fatalities in the United States. Australian studies of wind farms such as Pacific Hydro's Codrington Wind Farm – Victoria which opened in 2001 recorded very low numbers of bird and bat fatalities (4 birds and one bat between 2001 and 2003). Behavioural studies undertaken for this wind farm also indicated that water birds are adept at avoiding the wind farm sites (Fact Sheet 8 – Wind Farms and Bird and Bat Impacts, AusWEA's).

The first recording of Barotrauma was by Erin Baerwald of the University of Calgary in Canada who found that wind farms in southern Alberta were causing impacts to long range migratory bats through changes in air pressure at the turbines. Bats could not detect these changes and this lower air pressure at the blade tips causes damage to the lungs of these migratory bats (Baerwald et al 2008). The study found that birds do not suffer the same fate and that their deaths are from direct collision with blades or the uprights of turbines.

In Australia there are limited species that migrate long distances other than the Common Bent-wing Bat, Yellow-bellied Sheath-tailed Bat and Eastern False Pipistrelle. These species are not known to migrate in large groups and research from other wind farms in Australia does not indicate that these species are at significant risk from wind farms.

In regard to a solution (if bats were found to be impacted significantly by the proposed wind farm) the Canadian research recommends that the minimum wind speed to set the turbines in motion (be increased) as this would reduce potential impacts on bats. This is because bat activity reduces significantly as wind speed increases. A threshold would have to be set in regard to modification of operation of the proposed wind farm in order to indicate when losses were unacceptable and when minimum wind speed would have to be increased. Research by Bat Conservation International (2009), (Austin Texas – Effectiveness of changing wind turbine cut in speed to reduce bat fatalaties at wind facilities) indicates that changes from 12.6 km/h to 23.4 km/h minimum cut-in speed appears effective at significantly reducing bat mortality at wind turbines. As such if bat losses for threatened species were found through monitoring to be significant (greater than 1 bat per week, every week) then turbine cut in speed should be increased to reduce the risk of this mortality.

Baseline monitoring is however proposed so further data will be collected prior to the wind farm operating and as such if significant numbers of threatened species are found at turbine sites then consideration should be given to setting a higher cut-in speed to reduce the risk from turbines from the outset.

In relation to potential bird strike the main species with the potential to be impacted are high

flying species such as raptors, waterbirds, owls and migratory species. There are no significant habitats for waterbirds present within the Project Site and only low quality potential habitat for migratory birds. The site forms no known migratory route for waterbirds or other migratory species which could be impacted. As such the risk of collisions to waterbirds and migratory species is unlikely to be significant. Indeed, no significant flocks of waterbirds were seen during the surveys undertaken.

Raptors, such as the Whistling Kite and Wedge-tailed Eagle, and owls have potential to be impacted as they spend much of their time on the wing in thermals at similar heights to the rotor swept area. These groups (raptors and owls) have excellent sight and can detect the smallest of movements at ranges of up to 500 metres as they forage on small to large native ground and arboreal mammals and birds (pers. obs). The likelihood of these species not detecting such a large movement as a turbine blade is extremely low and potential losses to these groups is unlikely to be significant. Low pressure air at the blade tips would be unlikely to impact these groups due to their high levels of sensory perception in relation to site and air pressure awareness as they utilise thermals.

The Wedge-tailed Eagle was detected on the Project Site and further surveys were undertaken to determine the nest location of this species. However, no nest site was detected within the Project area. The habitat usage targeted surveys for this species indicated that much of its time is spent foraging around the Abercrombie River, to the south of the Project Site. This species is unlikely to be impacted by any collisions as it has extremely good eyesight and sensory perception of air currents so would avoid the low-baropressure regions created by the turbines, these are not used in its foraging.

The targeted surveys for the Gang Gang Cockatoo did not detect any active nest sites of this species even through potential nesting habitat is available. Within the broader landscape nesting hollows are not a limiting factor and as hollows are planned to be avoided as far as possible through micrositing under guidance by an ecologist no significant impacts to this species potential nesting sites would occur.

In regard to the species with potential to be impacted by the Project none are likely to have their foraging areas or migratory patterns significantly disturbed by the proposal.

5.4. ASSESSMENT OF SIGNIFICANCE (EPBC ACT)

The EPBC Act Guidelines provide guidance as to the assessment required to determine whether an action is "likely to have a significant impact" on any matter of "national environmental significance" such that the action will be a controlled action which requires approval under the EPBC Act. Whilst no endangered threatened fauna species listed under the EPBC Act were identified during the surveys, this section of the report contains an assessment in accordance with the EPBC Act Guidelines of each threatened flora species listed under the EPBC Act which was considered likely to have the potential to both occur with the Project Site and to be impacted by the Project.

5.4.1. Significant Impact Criteria for Critically Endangered and Endangered Individual Threatened Species

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- **lead to a long-term decrease in the size of a population**

  The Project is unlikely to lead to any long-term decrease in the size of any population. No critically endangered or endangered populations were detected and based on the potential habitat none are likely to be disturbed. The proposed turbines in the forested areas would aim to avoid removing tree hollows and would rehabilitate areas disturbed by construction. Accordingly, it is considered that the Project is not likely to lead to a long term decrease in the size of any critically endangered or endangered species population.

- **reduce the area of occupancy of the species**

  It is unlikely that any area of occupancy of any species would be reduced.

- **fragment an existing population into two or more populations**

  It is unlikely that any population would be fragmented. The only species with potential for this to occur is the Golden Sun Moth which has only negligible quality habitat within the Project Site and was not detected during the surveys which were undertaken.

- **adversely affect habitat critical to the survival of a species**

  No habitat critical to the survival of any species would be impacted.

- **disrupt the breeding cycle of a population**

  The Project would not disrupt the breeding cycle of a population.

- **modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline**

  There would be no modification, destruction, removal, or isolation or reduction in the quality of habitat to the extent that a species is likely to decline.

- **result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat**

  No invasive species are likely to become established.

- **introduce disease that may cause the species to decline, or interfere with the recovery of the species.**

  It is highly unlikely that any disease would be introduced which would cause any species to decline.

5.4.2. Significant Impact Criteria for Vulnerable Individual Threatened Species

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- **lead to a long-term decrease in the size of an important population of a species**

  The Project will result in no long-term decrease in the size of any important population of any species. No vulnerable populations were detected and based on the potential habitat none are likely to be disturbed. It is considered that the Gang Gang Cockatoo will not be significantly impacted by the Project providing the recommended measures are implemented to avoid, where practicable, the removal of trees containing nesting hollows. The targeted surveys detected no further individuals of this species, and as such, the habitat within the Project Site appears to be potential habitat which was not used this breeding season.

- **reduce the area of occupancy of an important population**

  No area of occupancy of any important population would be reduced. In relation to the Gang Gang Cockatoo, there would be only a small area of potential habitat removed and this is not deemed to be significant. Mapping of the hollow locations in the vicinity of the areas of disturbance should be undertaken prior to the Project disturbing these areas and avoidance of potential nesting hollows where practicable, will mitigate most of the potential impacts.

- **fragment an existing important population into two or more populations**

  There would be no fragmentation to any population into two or more populations. The Project has aimed to avoid potential habitat for any threatened species. In relation to the Gang Gang Cockatoo the proposed turbine locations in the Forest areas would not fragment its habitat as the construction tracks are proposed to be reduced to access track width post construction and this species generally flies below blade height. The large forest area to the north of the Project Site forms a large area of potential habitat for this species.

- **adversely affect habitat critical to the survival of a species**

  There would be no impacts on habitat critical to the survival of any species. The Gang Gang Cockatoo would be protected by avoiding breeding hollows where practicable to limit impacts on this species. As such, no habitat critical to the survival of this species would be impacted.

- **disrupt the breeding cycle of an important population**

  There would be no disruption in the breeding cycle of any important population. The Gang Gang Cockatoo nesting sites and potential breeding hollows would be conserved. Construction within these forested areas should be undertaken outside this species breeding season. Mapping of any hollows near to the construction zones would enable micrositing of the works to avoid as far as practicable hollow removal.

- **modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline**

  There would be no modification, destruction, removal, or isolation or reduction in the quality of habitat to the extent that a species is likely to decline.

- **result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat**

  No invasive species are likely to become established.

- **introduce disease that may cause the species to decline, or interfere substantially with the recovery of the species.**

  It is highly unlikely that any disease would be introduced which would cause any species to decline.

In conclusion, the results of the assessment undertaken are that the Project is not likely to result in a significant impact on any fauna species listed under the EPBC Act. Accordingly, the Project is not considered, for this reason, to require referral or approval under the EPBC Act.

5.5. ASSESSMENT OF IMPACTS (TSC ACT)

As outlined at section 1.5.2 above, the DGRs prepared under Part 3A of the EP&A Act provide that the EA must include an assessment of all Project components on flora and fauna and their habitat consistent with the Draft Guidelines for Threatened Species Assessment (DEC, 2005). These provide guidance as to the matters which are to be taken into account in assessing the impacts of projects on species, populations and ecological communities. This includes the factors which are to be taken into account in applying the 7 Part Test of Significance contained in the TSC Act. The 7 Part Test of Significance entails the following points:

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

(d) in relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Whilst no endangered ecological communities or threatened flora species listed under the TSC Act were identified during the surveys, this section of the report contains an assessment in accordance with the Draft Guidelines for Threatened Species Assessment of each endangered ecological communities and threatened flora species listed under the TSC Act which was considered likely to have the potential to both occur with the Project Site and to be impacted by the Project.

5.5.1. Threatened Species 7 Part Tests of Significance

5.5.1.1. Birds

Regent Honeyeater - *(Anthochaera phrygia)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

This species has some moderate quality potential habitat within the Project Site. This species is migratory and forages over a very large range. While a small area of potential habitat would be disturbed for this species the level of impact is low and it is unlikely that a local viable population would be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
>
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction.

This species' potential habitat occurs largely in the vegetation remnants and scattered paddock trees which remain on the Project Site. This habitat will remain largely unaffected by the Project and, as such, this species is unlikely to be significantly impacted.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

Superb Parrot - *(Polytelis swainsonii)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

This species has some potential breeding and foraging habitat on site of moderate quality. While a small area of potential habitat would be disturbed, for this species the level of impact is low. Furthermore, this species often forages up to 10km from their nests. There would be no impacts such that a viable local population of this species would be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
>
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
>
> ***(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction. This species potential nesting habitat occurs in the vegetation remnants and scattered paddock trees which remain on the Project Site. This habitat will remain largely unaffected by the Project. This species forages over a large area

and since it would not have its nesting resources significantly impacted it is unlikely to be significantly impacted by the Project.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

Brown Treecreeper - *(Climacteris picumnus victoriae)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

This species was not detected during the surveys, which were undertaken, however there is good quality potential habitat within the vegetation remnants which remain on the Project Site. Generally these areas will remain largely unaffected by the Project. Turbines P10, P13 and P14 are the only turbines proposed to be located in woodland areas. While a small area of potential habitat would be disturbed for this species, the level of impact is low, and it is unlikely that a local viable population would be placed at risk of extinction.

The main disturbance would occur during the construction phase of the Project for proposed turbines P10, P13 and P14. The construction roads are proposed to be rehabilitated once construction is finalised. This will reduce the level of impact upon the potential habitat of this species.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
>
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
>
> ***(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a

result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction. This species' potential habitat occurs in the vegetation remnants which remain on the Project Site. This habitat will remain largely unaffected by the Project.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

Diamond Firetail - *(Stagonopleura guttata)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

There is potential habitat for this species in various parts of the Project Site. Generally the best quality habitat on the Project Site relates to the remaining areas of woodland which provide good quality sheltering and nesting resources for this species. Other areas of the Project Site including paddock areas represent potential foraging habitat although the species was not detected. If present, the species is unlikely to be significantly impacted as the Project is unlikely to significantly change the current levels of impacts for this species. As such, no local viable population of the species is likely to be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
>
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
>
> ***(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction. This species potential habitat occurs in the vegetation remnants which remain on the Project Site. This habitat will remain largely

unaffected by the Project. Of the vegetation remaining on the Project Site the vegetation within the remnants represents the most important potential habitat for this species. This habitat will remain largely undisturbed by the Project.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicible to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

Hooded Robin - *(Melanodryas cucullata cucullata)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

This species has some potential habitat on site. However, the understorey is largely cleared in the areas which represent lighted wooded country in the paddocks where paddock trees remain. This habitat lacks the perches of good fallen timber and stumps where this species perches and pounces on its prey. Generally this species' preferred habitat on this site is likely to be within the remnant vegetation and their immediate surrounds. The Project would cause minimal impact on areas of native vegetation and as such no viable local population is likely to be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
>
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
>
> ***(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction. This species potential habitat occurs in the vegetation remnants which remain on the Project Site. This habitat will remain largely

unaffected by the Project. Of the vegetation remaining on the Project Site the vegetation within the remnants represents the most important potential habitat for species. This habitat will remain largely undisturbed by the Project.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

Speckled Warbler - *(Pyrrholaemus saggitatus)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

This species has some potential habitat mainly on the woodland farmland interfaces. It utilises open areas, however, generally keeps close to the cover of woodland. The Project would cause minimal impact on areas of native vegetation and as such no viable local population is likely to be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
>
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
>
> ***(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction. This species potential habitat occurs in the vegetation remnants which remain on the Project Site. This habitat will remain largely unaffected by the Project. Of the vegetation remaining on the Project Site the vegetation within the remnants represents the most important potential habitat for species. This habitat will remain largely undisturbed by the Project.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed, as far as practicable, to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

Varied Sittella - (*Daphoenositta chrysoptera)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

This species has some potential habitat on site. However, the understorey is largely cleared in the areas which represent lighted wooded country such as in the paddocks where only paddock trees remain. This habitat lacks the perches of good fallen timber and stumps where this species perches and pounces on its prey. Generally this species' preferred habitat on the Project Site is likely to be within the remnant vegetation and their immediate surrounds. The Project would cause minimal impact on areas of native vegetation and as such no viable local population is likely to be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
>
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
>
> ***(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction. This species potential habitat occurs in the vegetation remnants, which remain on the Project Site. This habitat will remain largely

unaffected by the Project. Of the vegetation remaining on the Project Site, the vegetation within the remnants represents the most important potential habitat for species. This habitat will remain largely undisturbed by the Project.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

Scarlet Robin - *(Petroica boodang)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

The potential habitat for this species on site is generally in and around the remaining vegetation remnants and the scattered paddock trees (autumn and winter only). This species relies on woodland with good levels of fallen timber and these are not common within the proposed disturbance areas on the Project Site. The Project would cause minimal impact on areas of native vegetation and as such no viable local population is likely to be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
>
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
>
> ***(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction. This species potential habitat occurs in and around the vegetation remnants, which remain. This habitat will remain largely unaffected by the Project. Of the vegetation remaining on the Project Site the vegetation within the

remnants represents the most important potential habitat for this species. This habitat will remain largely undisturbed by the Project.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

Barking Owl – *(Ninox connivens)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

Diurnal roost sites are not abundant and generally the prey base is moderate for this species. This species hunts at night at generally low altitudes below the blades of the turbines and is therefore generally not at risk from blade strike. The level of proposed development would not significantly alter the current situation for this species and no viable local population is likely to be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
>
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
>
> ***(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction. This species potential habitat occurs in and around the vegetation remnants, which remain. This habitat will remain largely unaffected by the Project. Of the vegetation remaining on the Project Site the vegetation within the remnants represents the most important potential habitat for this species. This habitat will

remain largely undisturbed by the Project.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

Powerful Owl - *(Ninox strenua)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

Diurnal roost sites are not abundant nor are they potential nesting hollows. This species requires large nesting hollows and these are, in general, sparse. The prey base is moderate for this species. This species hunts at night at generally low altitudes below the blades of the turbines and is therefore generally not at risk from blade strike. This species forages over a large range of approximately 1000 hectares. Generally nest sites are the critical habitat resource for the survival of this species and areas of native vegetation are generally not being disturbed. The level of proposed development would not significantly alter the current situation for this species and no viable local population is likely to be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
>
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
>
> ***(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this

species would be placed at risk of extinction. This species potential breeding habitat occurs in and around the vegetation remnants, which remain. The level of development would not be significant in relation to the survival of this species.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

Gang Gang Cockatoo - *(Callocephalon fimbriatum)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

This species was detected around turbine P14 and additional targeted surveys were undertaken in September. The September surveys failed to detect any individuals of this species and potential nest hollows were at approximately 3 per hectare. As a result, there would be no viable local population to be disrupted such that it is likely to be placed at risk of extinction as a result of the Project. Potential nest hollows would be identified near to the disturbance zones so micrositing could avoid (as far as practicable) potential impacts.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
>
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
>
> ***(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction. This species potential breeding habitat occurs in and around the vegetation remnants and scattered overstorey eucalypts which remain. The level of development is unlikely be significant in relation to the survival of this species.

Potential nest sites would be mapped near to potential disturbance zones prior to construction to allow for hollow avoidance.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

Glossy Black Cockatoo - *(Calyptorhynchus lathami)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

This species was not detected during the targeted surveys which were undertaken. The level of proposed development is unlikely to significantly alter the current situation for this species and no viable local population is likely to be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
>
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
>
> ***(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction. This species potential breeding habitat occurs in and around the vegetation remnants, which remain. The level of development would not be significant in relation to the survival of this species.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

5.5.1.2. Amphibians

Booroolong Frog - *(Litoria booroolongensis)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

There is no preferred habitat on site for this species and none would be impacted. As such, no viable local population of this species would be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
>
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
>
> ***(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

Yellow-spotted Tree Frog - *(Litoria castanea)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

There is no preferred habitat on site for this species and none would be impacted. As such no viable local population of this species would be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat

disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

Littlejohn's Tree Frog - *(Litoria littlejohni)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

There is no preferred habitat on site for this species and none would be impacted. As such no viable local population of this species would be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat

abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

Growling Grass Frog - *(Litoria raniformis)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

There is no preferred habitat on site for this species and none would be impacted. As such no viable local population of this species would be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat

abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

5.5.1.3. Insects

Golden Sun Moth - *(Synemon plana)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

This species has generally low quality potential habitat on site due largely to the pasture improvement which has been undertaken. Targeted surveys did not detect this species. The level of potential habitat removal is small and relates to low quality habitat and so is unlikely to significantly impact this species. Populations tend to be discrete and only cover small areas with males not generally flying distances of greater than 100 metres. As such, populations separated by distances of greater than 200 metres can be considered to be isolated populations. If present under the current levels of agricultural based disturbance regimes, then this species is likely to remain as part of this Project Site as the Project would not significantly increase the current existing and potential impacts on this species potential habitat.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
>
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
>
> ***(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The extent of potential habitat removal/modification as a result of this Project is small. No

area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction. The Project would be modified to negate any impacts should this species be detected. No futher targeted surveys are required for this species.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

5.5.1.4. Mammals

Eastern False Pipistrelle - (*Falsistrellus tasmaniensis*)

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

This species was not detected during the Anabat surveys which were undertaken. The level of impact on microchiropteran bats, which shelter in tree hollows, is directly related to the level of hollow habitat tree removal. In general, few large hollow trees are likely to require removal as part of the Project. Sheltering habitat is abundant within the woodland remnants on the Project Site and they are also known to utilise isolated paddock trees for sheltering and breeding.

Foraging is generally within flyways within the forest and woodland, with the species often utilising the ecotone between forest and open areas. Farm dams often provide a useful foraging area for this species as they concentrate insect activity to provide a foraging base. Due to the relatively low number of potential hollow sheltering/breeding trees to be removed, this species is unlikely to be significantly impacted such that a local viable population would be placed at risk of extinction.

It is however recommended that, once the Project is approved and the final Project layout is finalized, habitat trees are avoided if possible in the micrositing of the roads. Additional stag watching (with anabat and infrared inspection of potential hollow trees) should be undertaken for any large hollow trees, which require removal to ensure that no members of this species are harmed during tree removal.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "a population specified in Part 2 of Schedule 1" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

Greater Long-eared Bat (*Nyctophilus timoriensis* SE form)

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

This species was not detected during the Anabat surveys which were undertaken. The level of impact on microchiropteran bats which shelter in tree hollows is directly related to the level of hollow habitat tree removal. In general, few large hollow trees are likely to require removal as part of the Project. Sheltering habitat is abundant within the woodland remnants on the Project Site and they are also known to utilise isolated paddock trees for sheltering and breeding. Foraging is generally within flyways within the forest and woodland, with the species often utilising the ecotone between forest and open areas. Farm dams often provide a useful foraging area for this species as they concentrate insect activity to provide a foraging base.

Due to the relatively low number of potential hollow sheltering/breeding trees to be removed, this species is unlikely to be significantly impacted such that a local viable population would be placed at risk of extinction. It is however recommended that, once the Project is approved and the final Project layout is finalized, habitat trees are avoided if possible in the micrositing of the roads. Additional stag watching (with anabat and infrared inspection of potential hollow trees) should be undertaken for any large hollow trees, which require removal to ensure that no members of this species are harmed during tree removal.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "a population specified in Part 2 of Schedule 1" of theAct.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

Greater Broad-nosed Bat - (*Scoteanax rueppellii*)

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

This species was not detected during the Anabat surveys which were undertaken. The level of impact on microchiropteran bats which shelter in tree hollows is directly related to the level of hollow habitat tree removal. In general, few large hollow trees are likely to require removal as part of the Project. Sheltering habitat is abundant within the woodland remnants on the Project Site and they are also known to utilise isolated paddock trees for sheltering and breeding. Foraging is generally within flyways within the forest and woodland, with the species often utilising the ecotone between forest and open areas. Farm dams often provide a useful foraging area for this species as they concentrate insect activity to provide a foraging base.

Due to the relatively low number of potential hollow sheltering/breeding trees to be removed, this species is unlikely to be significantly impacted such that a local viable population would be placed at risk of extinction. It is however recommended that, once the Project is approved and the final Project layout is finalized, habitat trees are avoided if possible in the micrositing of the roads. Additional stag watching (with anabat and infrared inspection of potential hollow trees) should be undertaken for any large hollow trees, which require removal to ensure that no members of this species are harmed during tree removal.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
>
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

Squirrel Glider - (*Petaurus norfolcensis)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

Due to the relatively low number of potential hollow sheltering/breeding trees to be removed this species is unlikely to be significantly impacted such that a local viable population would be placed at risk of extinction. This species more often uses slightly more productive forest areas. It was not detected during the targeted surveys which were undertaken. Due to the small levels of potential disturbance this species is unlikely to be impacted if it were to be present.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
>
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
>
> ***(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat relates to this site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

Yellow-bellied Sheath-tailed Bat - (*Saccolaimus flaviventris*)

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

This species was not detected during the Anabat surveys which were undertaken. The level of impact on microchiropteran bats which shelter in tree hollows is directly related to the level of hollow habitat tree removal. In general, few large hollow trees are likely to require removal as part of the Project. Sheltering habitat is abundant within the woodland remnants on the Project Site and they are also known to utilise isolated paddock trees for sheltering and breeding. Foraging is generally within flyways within the forest and woodland, with the species often utilising the ecotone between forest and open areas. Farm dams often provide a useful foraging area for this species as they concentrate insect activity to provide a foraging base.

Due to the relatively low number of potential hollow sheltering/breeding trees to be removed, this species is unlikely to be significantly impacted such that a local viable population would be placed at risk of extinction. It is however recommended that, once the Project is approved and the final Project layout is finalized, habitat trees are avoided if possible in the micrositing of the roads. Additional stag watching (with anabat and infrared inspection of potential hollow trees) should be undertaken for any large hollow trees, which require removal to ensure that no members of this species are harmed during tree removal.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
>
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction. Monitoring of blade strike incidents should be undertaken for this species in the first year of operation.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

5.5.1.5. Reptiles

Pink-tailed Worm Lizard - *(Aprasia parapulchella)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

This species was not detected during the targeted surveys which were undertaken. Overall the potential impacts on this species in relation to potential habitat disturbance are low and it is unlikely that a local viable population would be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
>
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
>
> ***(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either

directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

Striped Legless Lizard - *(Delma impar)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

This species was not detected during the targeted surveys which were undertaken. Overall the potential impacts on this species in relation to potential habitat disturbance are low and it is unlikely that a local viable population would be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat

abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

Little Whip Snake - (*Suta flagellum*)

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

This species was not detected during the targeted surveys which were undertaken. Overall the potential impacts on this species in relation to potential habitat disturbance are low and it is unlikely that a local viable population would be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as "*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

Grassland Earless Dragon - (*Tympanocryptis pinguicolla)*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

This species was not detected during the targeted surveys which were undertaken. Overall the potential impacts on this species in relation to potential habitat disturbance are low and it is unlikely that a local viable population would be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population is present at the Project Site. The TSC Act defines an endangered population to mean "*a population specified in Part 2 of Schedule 1*" of the Act.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

> ***(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
>
> ***(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable for individual threatened species.

(d) in relation to the habitat of a threatened species, population or ecological community:

> ***(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
>
> ***(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
>
> ***(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The extent of potential habitat removal/modification as a result of this Project is small. No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the Project. No significant potential habitat is likely to be removed, modified, fragmented or isolated as a result of the Project such that the long-term survival of this species would be placed at risk of extinction.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat is present at the Project Site. The TSC Act defines "*critical habitat*" as

"*habitat declared to be critical habitat under Part 3*" of the Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The action proposed is not inconsistent with the objectives of any recovery or threat abatement plans as the action aims at minimising potential habitat loss and minimises habitat disturbance.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation is recognised as a key threatening process however the Project has been designed as far as practicable to minimise the removal of native vegetation. The Project has been responsive to ecological issues and aims to minimise and mitigate against ecological impacts.

In conclusion, the results of the assessment undertaken are that the Project is not likely to result in a significant impact on any fauna species listed under the TSC Act. Accordingly, there is no requirement for a species impact statement to be prepared.

6. CONCLUSIONS

The findings of this report indicate that the Project is unlikely to have a significant impact on any communities, populations or threatened species listed under the EPBC Act or the TSC Act.

Following the removal of turbines P2, P6 and P7, the Project avoids and will not result in any disturbance to the conservation agreement areas for Box Gum Grassy Woodland. Subject to appropriate arrangements being put in place regarding the current conservation agreement, approval for turbines P2, P6 and P7 may be sought at a later date (either by way of a modification to the Project under section 75W of the EP&A Act or as a separate approval).

The project has been significantly revised to reduce impacts following a review by OEH and this has included the removal of proposed turbine P11 and its associated infrastructure, and the re-siting of turbines P10, P13 and P14 and their associated infrastructure. This has resulted in a significant avoidance of impacts.

The results of the field surveys only detected one Endangered Ecological Community, being the Box Gum Grassy Woodland which is listed under the EPBC Act and one listed species, being the Gang Gang Cockatoo which is listed under the TSC Act as "Vulnerable". Apart from these, the results of the field surveys detected no Endangered Ecological Communities or threatened flora or fauna species listed under either the EPBC Act or the TSC Act within the Project Site. The identified Endangered Ecological Community and Vulnerable species were further assessed in accordance with:

- the criteria contained in the EPBC Act in the case of species listed under the EPBC Act; and
- the 7-Part Tests of Significance criteria in the case of species listed under the TSC Act.

The same assessment was also carried out for each threatened species which was considered likely to have the potential to occur within the Project Site and to be impacted by the Project.

The results of this assessment concluded that:

- The Project is not likely to result in a significant impact on any endangered ecological community or species listed under the EPBC Act. Accordingly, the Project is not considered, for this reason, to require referral or approval under the EPBC Act.
- The Project is not likely to result in a significant impact on any species listed under the TSC Act. Accordingly, there is no requirement for a species impact statement to be prepared.

Overall the project had been designed since its inception to be situated mainly on cleared grazed paddock areas thus avoiding as far as possible potential ecological impacts.

The Project is proposing to utilise many of the existing farm access tracks to avoid and reduce the levels of impact and there would be no impacts on riparian or instream habitats. As the land is already cleared (causing the existing fragmentation) where the infrastructure is proposed, there are considered to be no biodiversity corridor impacts.

7. RECOMMENDATIONS

The following recommendations are made in relation to the implementation of the Project:

Bat Monitoring and Habitat Tree Inspections

Once the access roads and access tracks are pegged by surveyors potential hollow habitat trees (that require removal) should be identified by ecological survey. These trees should be stag watched at dusk using infra-red spotlights and Anabat detectors to determine usage by any threatened microchiropteran bats. Accessible tree hollows that require removal should be inspected for fauna by infrared telescopic camera prior to removal to ensure that no species present in the hollow are harmed during removal.

Bird Monitoring and Bat Strike Monitoring

An additional baseline pre-commissioning survey should be undertaken at each turbine site during the spring/summer season. This would provide baseline data for the bird and bat strike monitoring study which should be undertaken during the first year of the operation of the wind farm. The recording of calls utilising Anabat recorders would enable information such as time of flybys and also if any feeding buzzes are recorded. This would allow area usage data to be gained (by species) and also active use data through feeding buzz recording. Activity levels can then be used to modify wind farm management if required particularly in relation to cut in speed of the wind turbines

Vegetation / Ecological Restoration Management Plan

A vegetation / ecological restoration plan should be undertaken for the areas that are disturbed as part of the construction works so they can be rehabilitated once construction is finalised. This would include details for the management of any areas of native vegetation to be disturbed and the method and timing for their restoration along with specifics of habitat restoration for fauna and weed management. The areas should have detailed surveys before any vegetation is removed. This should record any microhabitat features and provide a detailed plan outlining areas of impacts at a micro level. This will allow for placing of sediment and erosion control fence designs to reduce any indirect impacts on vegetation.

Erosion and Sediment Control Plan

To avoid and reduce disturbance to drainage lines within the site, runoffs from work sites should be managed by appropriately designing the wind farm access tracks and other infrastructure by incorporating erosion and sediment control methods during the construction and operational stages. This would be undertaken as part of the engineering design for the implementation of the access and construction tracks. The erosion and sedimentation control plan would consider the soil types and potential for erosion.

Native Vegetation Management Plan

A native vegetation management plan should be prepared to ensure minimal removal of native vegetation for the construction of the wind farm infrastructure, and measures to ensure native vegetation in the vicinity of the development footprint are not affected. All

environmental controls should be audited for compliance regularly during construction and after commissioning. This would include micro mapping of vegetation around each turbine to avoid any un-necessary removal of vegetation and also the access tracks. This would also allow for vegetation planting species when the wind farm is decommissioned.

Weed Management Plan

A weed management plan should be prepared to ensure that the construction and operation of the wind farm does not contribute or cause an increase in the weed species within the site. The plan should put in place control measures for minising weeds during and after construction. Generally there are high levels of weeds on the site area however as a precaution wash bays should be sited so trucks and machinery can be washed down to prevent weed seed being spread both onto and off site.

Bat and Avifauna Management Plan

A bat and avifauna management plan should be prepared to manage and mitigate any bird and bat strikes resulting from the operation of the wind farm. Implementation of carcass search protocols to be able to identify more accurately the mortality rates of the bats and birds within the site. Identification of any species lost along with the data gained from Anabat recording would enable adaptive management of the wind farm if required.

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APPENDIX A - FLORA SPECIES RECORDED

Scientific Name	Common Name
Native	
Fern	
Asplenium flabellifolium	Necklace Fern
Cheilanthes sieberi	Narrow Rock Fern
Pteridium esculentum	Common Bracken, Gurgi (Cadigal), Austral Bracken, Bracken
Grass	
Agrostis capillaris *	Browntop Bent
Aristida muricata	Threeawn Grass
Aristida vagans	Threeawn Speargrass
Aristida ramosa	Purple Wiregrass, Kerosene Grass, Prickly Threeawn
Austrodanthonia caespitosa	Ringed Wallaby-grass, Common Wallaby-grass
Austrodanthonia laevis	Wallaby Grass
Austrodanthonia racemosa var racemosa	Clustered Wallaby-grass, Slender Wallaby Grass
Austrostipa bigeniculata	Tall Speargrass
Austrostipa scabra	Corkscrew, Corkscrew Speargrass, Rough Spear-grass, Rough Needle-grass, Speargrass
Bothriochloa macra	Redgrass, Redleg Grass
Brizia minor *	Shivery Grass
Chloris truncata	Windmill Grass
Chloris ventricosa	Tall Windmill Grass
Cymbopogon refractus	Barbed Wire Grass
Cynodon dactylon	Couch
Cynosurus echinatus *	Rough Dog's Tail
Dactylis glomerata *	Cocksfoot
Dichelachne micrantha	Short-hair Plumegrass
Echinopogon caespitosus	Tufted Hedgehog-grass
Echinopogon cheelii	Long-flowered Hedgehog Grass
Echinopogon ovatus	Forest Hedgehog-grass, Hedgehog Grass, Rough-bearded Grass
Elymus scaber	Common Wheat-grass, Wheatgrass, Rough Wheatgrass
Eragrostis leptostachya	Paddock Lovegrass
Hordeum sp.*	Barley Grass
Imperata cylindrica	Blady Grass
Lolium perenne *	Perrenial Rye Grass
Microlaena stipoides	Microlaena, Weeping Grass

Scientific Name	Common Name
Panicum dilatatum *	Paspalum
Panicum effusum	Hairy Panic, Poison Panic
Phalaris aquatica *	Phalaris
Poa labillardierei	Tussock Grass
Poa sieberiana	Snow Grass, Fine-leaved Tussock-grass
Sporobolus creber	Western Rat-tail Grass, Slender Rat's Tail Grass
Stipa verticillata	
*Themeda australis (*syn. *Themeda triandra)*	Kangaroo Grass
Trifolium camoestre *	Hop Clover
Tifolium arvense *	Haresfoot Clover
Trifolium sp.*	Clover
Typha orientalis	Broad-leafed Cumbungi
Herb	
Acaena agnipila	Sheep's Burr, Bidgee-widgee
Acaena echinata	Sheep's Burr
Asperula conferta	Common Woodruff
Brachyscome rigidula	Leafy Daisy
Calotis cuneifolia	Purple Burr-daisy
Calotis glandulosa	Mauve Burr-daisy
Calotis lappulacea	Yellow Burr-daisy, Yellow Daisy-burr
Calotis scabiosifolia	Rough Burr-daisy
Carex inversa	Knob Sedge, Common Sedge
Centella asiatica	Pennywort
Chenopodium pumilio	Clammy Goosefoot, Small Crumbweed
Chrysocephalum apiculatum	Yellow Buttons, Common Everlasting
Clematis microphylla	Small-leaved Clematis
Convolvulus erubescens	Australian Bindweed, Blushing Bindweed
Correa reflexa	Common Correa, Native Fuchsia
Desmodium varians	Slender Tick-trefoil
Dianella longifolia	Smooth Flax Lily
Dianella revoluta	Blueberry Lily, Black-Anther Flax Lilly, Spreading Flax Lily
Dichondra repens	Kidney Grass, Kidney Weed
Diuris sulphurea	Tiger Orchid
Drosera sp.	
Erodium crinitum	Native Crowfoot, Blue Storks-bill, Blue Crowfoot, Blue Herons-bill
Euchiton involucratus	Star Cudweed

Scientific Name	Common Name
Glycine clandestina	Twining Glycine
Glycine tabacina	Glycine Pea, Variable Glycine
Gonocarpus elatus	Hill Raspwort
Gonocarpus tetragynus	Common Raspwort
Goodenia hederacea	Forest Goodenia, Ivy Goodenia
Helichrysum collinum	Hill Daisy
Helichrysum scorpioides	Button Everlasting
Hydrocotyle laxiflora	Stinking Pennywort
Hypericum gramineum	Small St John's Wort
Hypericum japonicum	Small St John's Wort, Matted St John's Wort
Hypericum perforatum *	St Johns Wort
Kennedia prostrata	Running Postman, Scarlet Running Pea, Scarlet Coral-pea
Lomandra filiformis	Wattle Mat-rush
Lomandra longifolia	Spiny-headed Mat-rush, Honey Weed
Lomandra multiflora	Many-flowered Matrush
Opercularia diphylla	Stinkweed
Oxalis perennans	Grassland Wood Sorrel, Grass Wood-sorrel, Creeping Yellow Sorrel
Patersonia sericea	Silky Purple-flag
Plantago debilis	Shade Plantain, Slender Plantain
Plantago euryphylla	Plantain
Plantago lanceolata *	Plantain
Plantago varia	Variable Plantain, Small Plantain, Sago-weed
Pratia purpurascens	Whiteroot
Pseudognaphalium luteoalbum	Jersey Cudweed
Rumex acetosella *	
Rumex brownii	Swamp Dock, Slender Dock
Rumex dumosus	Wiry Dock
Rumex tenax	Shiny Dock
Rutidosis leiolepis	Monaro Golden Daisy
Rutidosis leptorhynchoides	Button Wrinklewort
Rutidosis multiflora	Small Wrinklewort
Scleranthus biflorus	Spiny Mat-plant, Knawel, Cushion-bush, Two-flowered Knawel
Senecio quadridentatus	Cotton Fireweed
Senecio tenuiflorus	Woodland Groundsel, Narrow Groundsel, Cotton Groundsel, Slender Fireweed
Urtica incisa	Stinging Nettle
Viola hederacea	Native Violet, Ivy-leaf Violet, Ivy-leaved Violet

Scientific Name	Common Name
Wahlenbergia luteolla	Native Bluebell
Sedge/Rush	
Isolepis inundata	Swamp Club-sedge, Swamp Club-rush
Juncus articulatus *	Jointed Rush
Juncus cognatus	Common Rush
Juncus subsecundus	Finger Rush
Lepidosperma laterale	Sword Sedge, Variable Swordsedge
Schoenus apogon	Common Bog Sedge, Fluke Bogrush
Shrub	
Acacia brownii	Prickly Moses, Golden Prickly Wattle, Heath Wattle
Acacia dealbata	Silver Wattle
Acacia decora	Western Silver Wattle, Showy Wattle, Western Golden Wattle, Pretty Wattle
Acacia decurrens	Black Wattle, Early Black Wattle, Green Wattle, Queen Wattle, Sydney Green Wattle
Acacia genistifolia	Spreading Wattle, Early Wattle, Wild Irishman
Acacia paradoxa	Prickly Acacia, Acacia Hedge, Kangaroo Thorn, Hedge Wattle, Kangaroo Acacia, Prickly Wattle, Paradoxa Wattle
Acacia parramattensis	Sydney Green Wattle, Parramatta Wattle, Parramatta Green Wattle
Acacia siculiformis	Dagger Wattle
Acacia ulicifolia	Prickly Moses, Juniper Wattle
Acrotriche serrulata	Honeypots
Astroloma humifusum	Native Cranberry, Cranberry Heath
Bossiaea buxifolia	Box-leaved Bitter-pea
Brachyloma daphnoides	Daphne Heath
Carthamus lanatus *	Saffron Thistle
Cassinia aculeata	Common Cassinia, Chinese-scrub, Sifton Bush, Dogwood, Dolly Bush
Cassinia arcuata	Drooping Cassinia, Chinese Tea-scrub, Sifton Bush, Chinese Shrub
Cassinia longifolia	Shiny Cassinia, Cauliflower Bush, Long-leaf Dogwood
Cirsium vulgare *	Thistle
Conyza bonariensis *	Fleabane
Daviesia ulicifolia	Gorse Bitter-pea
Dillwynia retorta	Heathy Parrot-pea
Echium plantagineum *	Patterson's Curse
Exocarpos cupressiformis	Cherry Ballart, Native Cherry, Wild Cherry, Cherry Wood
Exocarpos strictus	Pale Ballart, Pale-fruit Ballart, Dwarf Cherry

Scientific Name	Common Name
Hardenbergia violacea	False Sarsparilla, Purple Coral-pea, Native Lilac
Hibbertia obtusifolia	Hoary Guinea-Flower
Hirschfeldia incana *	Hairy Brassica
Hovea linearis	Creeping Hovea
Hypochoeris glabra *	Smooth Catsear
Hypochoeris radicata *	Catsear
Indigofera australis	Austral Indigo, Australian Indigo, Native Indigo, Hill Indigo
Jacksonia scoparia	Winged Broom-pea, Dogwood, Broom
Lepidium africanum *	Peppercress
Leptospermum myrtifolium	Swamp Myrtle, Swamp Tea-tree, Myrtle-leaved Tea-tree, Grey Tea-tree
Leucopogon attenuatus	
Leucopogon virgatus	Common Beard Heath
Lissanthe strigosa	Peach Heath
Melichrus urceolatus	Urn Heath
Monotoca scoparia	
Ozothamnus spp.	Everlastings
Pultenaea microphylla	Spreading Bush-pea
Rubus fruticosus *	Blackberry
Senecio madgascariensis *	Fireweed
Solanum brownii	Violet Nightshade
Solanum nigrum *	Blackberry Nightshade
Sonchus olearaceus *	Common Sowthistle
Styphelia triflora	Pink Five-corners
Tree	
Acacia dealbata	Silver Wattle
Acacia implexa	Lightwood, Hickory Wattle, Black Wattle, Hickory, Sally Wattle, Scrub Wattle, Screw-pod Wattle, Bastard Myall, Lignum Vitae, Fish Wattle, Broad-leaf Wattle
Acacia melanoxlyon	Blackwood, Black Wattle, Hickory, Mudgerabah, Paluma Blackwood, Sally Wattle
Allocasuarina littoralis	Black Sheoak
Brachychiton populneus	Kurrajong
Casuarina cunninghamia	River Sheoak
Eucalyptus blakelyi	Blakely's Red Gum
Eucalyptus bridgesiana	Apple Box, But-but
Eucalyptus dalrympleana	Mountain Gum
Eucalyptus dives	Broad-leaved Peppermint, Peppermint, Blue Peppermint (Vic)
Eucalyptus goniocalyx	Long-leaved Box, Bundy, Olive-barked Box

Scientific Name	Common Name
Eucalyptus macrorhyncha	Red Stringybark
Eucalyptus mannifera	Brittle Gum
Eucalyptus melliodora	Yellow Box, Yellow Jacket, Honey Box (Qld), Yellow Ironbark (Qld)
Eucalyptus pauciflora	Snow Gum, Cabbage Gum (Tas), Weeping Gum (Tas), White Sally
Eucalyptus rossii	Scribbly Gum, Snappy Gum, White Gum, Inland Scribbly Gum
Eucalyptus rubida	Candlebark, Ribbon Gum, White Gum
Eucalyptus sclerophylla	Hard-leafed Scribbly Gum
Eucalyptus stellulata	Black Sally
Eucalyptus viminalis	Manna Gum, Ribbon Gum
Exotic	
Grass	
Aira elegantissima	Delicate Hairgrass
Anthoxanthum odoratum	Sweet Vernal Grass, Sweet-scented Vernal-grass, Sweet Vernal
Avena barbata	Bearded Oats
Avena fatua	Wild Oats
Briza maxima	Quaking Grass, Blowfly Grass
Briza minor	Shivery Grass, Lesser Quaking Grass
Bromus diandrus	Great Brome
Bromus molliformis	Silky Brome, Soft Brome
Carduus nutans ssp nutans	Nodding Thistle
Carthamus lanatus	Saffron Thistle
Chondrilla juncea	Skeleton Weed
Cynosurus echinatus	Rough Dogstail
Dactylis glomerata	Cocksfoot, Orchard Grass
Holcus lanatus	Yorkshire Fog
Hordeum leporinum	Barley-grass
Hyparrhenia hirta	Coolatai Grass
Lolium perenne	Perennial Ryegrass
Lolium rigidum	Ryegrass
Lolium spp.	Ryegrass
Nassella neesiana	Chilean Needle-grass
Nassella trichotoma	Serrated Tussock
Paspalum dilatatum	Paspalum
Phalaris aquatica	Phalaris
Poa bulbosa	Bulbous Poa
Vulpia bromoides	Squirrel Tail Fescue, Silver Grass

Scientific Name	Common Name
Vulpia myuros	Rat's Tail Fescue
Herb	
Acetosella vulgaris *	Sorrel, Sheep Sorrel
Almaleea subumbellata	Wiry Bush Pea
Anagallis arvensis *	Scarlet Pimpernel, Blue Pimpernel, Pimpernel
Arctotheca calendula *	Cape Weed, African Marigold, Cape Dandelion
Carthamus lanatus	Saffron Thistle
Centaurium erythraean *	Common Centaury
Cerastium glomeratum	Broad-leaved Mouse-ear Chickweed, Sticky Mouse-ear Chickweed
Chondrilla juncea	Skeleton-weed
Cirsium vulgare	Spear Thistle
Echium plantagineum	Paterson's Curse, Salvation Jane, Murrumbidgee Bluebell, Riverina Bluebell
Geranium molle	Cranes-bill Geranium
Geranium solanderi	Australian Cranesbill
Geum urbanum *	Wood Avens
Hypericum perforatum	St John's Wort, Perforated St John's Wort
Hypochaeris glabra	Smooth Cat's-ear
Hypochaeris radicata	Flatweed, Cat's-ear
Lepidium africanum	Common Pepper-cress, African Pepper-cress, Rubble Pepper-cress
Linaria pelisseriana	Pelisser's Toadflax
Medicago lupulina	Black Medic, Hop Medic
Medicago polymorpha *	Burr Medic
Moenchia erecta	Erect Chickweed, Upright Moenchia
Myosotis discolor	Yellow and Blue Forget-me-not, Forget-me-not
Petrorhagia nanteuilii	Proliferous Pink, Childing pink
Plantago lanceolata	Ribwort, Ribgrass, Lamb's Tongue
Romulea rosea	Onion-grass, Guildford Grass
Salvia verbenaca	Wild Sage, Vervain
Sherardia arvensis	Blue Fieldmadder, Field Madder
Silybum marianum *	Variegated Thistle
Thelionema caespitosum	Tufted Blue Lily
Thysanotus juncifolius	Rush fringe lily
Trifolium angustifolium	Narrow-leaved Clover
Trifolium arvense	Hare's-foot Clover
Trifolium campestre	Hop Clover

Scientific Name	Common Name
Trifolium glomeratum	Clustered Clover
Trifolium scabrum	Rough Clover
Trifolium striatum	Knotted Clover
Trifolium subterraneum	Subterranean Clover, Sub Clover
Urtica urens	Small Nettle
Vicia sativa	Common Vetch, Narrow-leaved Vetch
Shrub	
Rosa rubiginosa *	Sweetbriar, Briar Rose, Eglantine

APPENDIX B - FAUNA SPECIES RECORDED

COMMON NAME	SCIENTIFIC NAME
BIRDS	
Australian Hobby	*Falco longipennis*
Australian Magpie	*Gymnorhina tibicen*
Australian Owlet-nightjar	*Aegotheles cristatus*
Australian Raven	*Corvus coronoides*
Australian White Ibis	*Threskiornis molucca*
Australian Wood Duck	*Chenonetta jubata*
Barn Owl	*Tyto alba*
Black Falcon	*Falco subniger*
Black Swan	*Cygnus aratus*
Black-faced Cuckoo Shrike	*Coracina novaehollandiae*
Brown Falcon	*Falco berigora*
Brown Goshawk	*Accipiter fasciatus*
Brush Cuckoo	*Cuculus variolosus*
Cattle Egret	*Ardea ibis*
Channel-billed Cuckoo	*Scythrops novaehollandiae*
Chestnut Teal	*Anas castenea*
Cockatiel	*Nymphicus hollandicus*
Collared Sparrowhawk	*Accipiter cirrocephalus*
Common Bronzewing	*Phaps chalcoptera*
Common Koel	*Eudynamis scolopacea*
Common Myna *	*Acidotheres tristis*
Common Starling *	*Sturnus vulgaris*
Crested Pigeon	*Ocyphaps lophotes*
Crested Shrike-tit	*Falcunculus frontatus*
Crimson Rosella	*Platycercus elegans*
Diamond Dove	*Geopelia cuneata*
Dollarbird	*Eurystomus orientalis*
Ducky Woodswallow	*Artamus cyanopterus*
Dusky Moorhen	*Gallinula tenebrosa*

COMMON NAME	SCIENTIFIC NAME
Eastern Rosella	*Platycercus eximius*
Eastern Yellow Robin	*Eopsaltria australis*
Emu	*Dromaius novaehollandiae*
European Goldfinch *	*Cardeulis carduelis*
Fairy Martin	*Hirundo ariel*
Fan-tailed Cuckoo	*Cocomantis flabelliformis*
Feral Pigeon *	*Columba livia*
Galah	*Cacatua roseicapilla*
Glossy Ibis	*Plegadis falcinellus*
Great Egret	*Ardea alba*
Grey Fantail	*Rhipidura fuliginosa*
Grey Shrike-thrush	*Colluricincla harmonica*
Grey Teal	*Anas gracilis*
Hardhead	*Aythea australis*
House Sparrow *	*Passer domesticus*
Laughing Kookaburra	*Dacelo novaeguineae*
Little Corella	*Cacatua sanguinea*
Magpie-lark	*Grallina cyanoleuca*
Masked Lapwing	*Vanellus miles*
Nankeen Kestrel	*Falco cenchroides*
Nankeen Night Heron	*Nycticorax caledonicus*
New Holland Honeyeater	*Phylidonyris novaehollandiae*
Noisy Friarbird	*Philemon corniculatus*
Noisy Minor	*Manorina melanocephala*
Pacific Black Duck	*Anas superciliosa*
Pallid Cuckoo	*Cuculus pallidus*
Peaceful Dove	*Geopelia placida*
Pied Butcherbird	*Cracticus nigrogularis*
Pied Currawong	*Strepera graculina*
Rainbow Bee-eater	*Merops ornatus*
Red Wattlebird	*Anthochaera carunculata*
Restless Flycatcher	*Mylagra inquieta*
Richard’s Pipit	*Anthus novaeseeiandiae*

COMMON NAME	SCIENTIFIC NAME
Rufus Whistler	*Pachycephala rufiventris*
Sacred Ibis	*Threskiornis aethiopica*
Sacred Kingfisher	*Todiramphis sancta*
Satin Flycatcher	*Myiagra cyanoleuca*
Silvereye	*Zosterops lateralis*
Singing Bushlark	*Mirafra javanica*
Spotted Pardalote	*Pardalotus punctatus*
Spotted Turtle Dove	*Streptopelia chinensis*
Straw-necked Ibis	*Threskiomis spiniollis*
Striated Pardalote	*Pardalotus striatus*
Sulphur –crested Cockatoo	*Cacatua galerita*
Superb Fairy Wren	*Malurus cyaneus*
Tawny Frogmouth	*Podargus strigoides*
Tawny Grassbird	*Megalurus timoriensis*
Tree Martin	*Hirundo nigricans*
Wedge-tailed Eagle	*Aquila audax*
Welcome Swallow	*Hirundo neoxena*
Whistling Kite	*Halistur sphenurus*
White-browed Scrubwren	*Sericomis frontalis*
White-browed Woodswallow	*Artamus superciliosus*
White-faced Heron	*Egretta novaehollandiae*
White-winged Chough	*Corcorax melanochamphos*
Willie Wagtail	*Rhipidura leucophrys*
Yellow-billed Spoonbill	*Platalea flavipes*
Yellow-rumped Thornbill	*Acanthiza chrysorrhoea*
Yellow-tailed Black Cockatoo	*Calyptorhynchus funereus*
MAMMALS	
Common-brushtail Possum	*Trichosurus vulpecula*
Brushtail Possum	*Trichosurus vulpecula*
Eastern Grey Kangaroo	*Macropus giganteus*
Common Walaroo	*Macropus robustus*
Common Wombat	*Vombatus ursinus*

COMMON NAME	SCIENTIFIC NAME
Chocolate Wattlet Bat	*Chalinolobus morio*
Gould's Wattled Bat	*Chalinolobus gouldii*
Large Forest Bat	*Vespadelus darlingtoni*
Lesser Long-eared Bat	*Nyctophilus geoffroyi*
Little Forest Bat	*Vespadelus vulturnus*
Southern Forest Bat	*Vespadelus regulus*
Gould's Long-eared Bat	*Nyctiphilus gouldi*
White-striped Mastiff Bat	*Nyctinomus australis*
European Rabbit *	*Oryctolagus cuniculus*
Fox *	*Vulpes vulpes*
Sheep *	*Ovis aries*
REPTILES	
Bearded Dragon	*Pogona barbata*
Copper-tailed Skink	*Ctenotus taeniolatus*
Cunnigham's Skink	*Egernia cunninghami*
Eastern Blue-tongued Lizard	*Tiliqua scincoides*
Eastern Brown Snake	*Pseudonaja textilis*
Jacky Lizard	*Amphibolurus muricatus*
Red-bellied Black Snake	*Pseudechis porphyriacus*
Striped Skink	*Ctenotus robustus*
AMPHIBIANS	
Common Eastern Froglet	*Crinia signifera*
Peron's Tree Frog	*Litoria peronii*
Smooth Toadlet	*Uperoleia laevigata*
Spotted Grass Frog	*Limodynastes tasmaniensis*

* = Exotic Species

APPENDIX C - DIRECTOR GENERALS REQUIREMENTS

Director-General's Requirements

Section 75F of the *Environmental Planning and Assessment Act 1979*

Project	Construction and operation of a wind farm that will have a generation capacity of up to 180 megawatts. The project includes up to 60 wind turbines and associated infrastructure, including access tracks, local road infrastructure upgrades, underground electrical and communication network, temporary concrete batching plant, possible obstacle lighting, control room/facilities building, and substation and connection to the adjacent TransGrid transmission line or 132kV connection to the Crookwell 2 Wind Farm.
Site	Approximately 60km south of Oberon and about 60km north of Goulburn, in the Oberon local government area.
Proponent	Union Fenosa Wind Australia
Date of Issue	6 May 2010
Date of Expiration	6 May 2012
General Requirements	The Environmental Assessment (EA) must include: • an **executive summary**; • a **detailed description** of the project for both the wind farm and transmission line including: → construction, operation and decommissioning details; → the location and dimensions of all project components including the wind turbines (including map coordinates and AHD heights), underground cabling between turbines, electrical substation and transmission line linking the wind farm to the grid (adjacent TransGrid line or to the Crookwell 2 Wind Farm substation, including easement width and height), on site control room and equipment storage, temporary concrete batching plant(s), construction compounds, access roads/road upgrades (including access tracks) and obstacle lighting; → a timeline identifying the proposed construction and operation of the project components, their envisaged lifespan and arrangements for decommissioning and staging; → supporting maps/plans clearly identifying existing environmental features (e.g. watercourses, vegetation), infrastructure and landuse (including nearby residences and approved residential developments or subdivisions) and the location/ siting of the project (including associated infrastructure) in the context of this existing environment; and → resourcing requirements (including, but not limited to, water supply and gravel). • consideration of any **relevant statutory provisions** including the consistency of the project with the objects of the *Environmental Planning and Assessment Act 1979* and the relevant matters within the Upper Lachlan Wind Power Generation Development Control Plan and the Oberon Development Control Plan (Part O) - Wind Power Generation; • an **assessment of the key issues** outlined below, during construction, operation and decommissioning (as relevant). The Environmental Assessment must assess the worst case as well as representative impact for all key issues considering cumulative impacts, as applicable. This should include the cumulative effect of the transmission line on the landscape in the vicinity of the existing Crookwell 1, approved Crookwell 2 and proposed Crookwell 3 wind farms; • a **draft Statement of Commitments** detailing measures for environmental mitigation, management and monitoring for the project; • a **conclusion justifying the project** taking into consideration the environmental, social and economic impacts of the project; the suitability of the site; and the public interest; and • **certification by the author** of the EA that the information contained in the Assessment is neither false nor misleading.

	Given the length of the grid connection transmission line to Crookwell 2, the EA should present, with respect to each relevant transmission line impact, a considered screening of potential impacts along the length of the line, to identify areas of potentially significant impact for further, more detailed assessment. In addition to detailed assessment of areas of potentially significant impact, other areas along the length of the line should be assessed in a more general manner, with a particular focus on the development of frameworks for the mitigation, management and monitoring of more minor and generic environmental issues.
Key Assessment Requirements	The EA must include assessment of the following key issues for both the wind farm and transmission line: • **Strategic Justification** - the EA must: → include a strategic assessment of the need, scale, scope and location for the project in relation to predicted electricity demand, predicted transmission constraints and the strategic direction of the region and the State in relation to electricity supply, demand and electricity generation technologies; → include a clear demonstration of quantified and substantiated greenhouse gas benefits, taking into consideration sources of electricity that could realistically be replaced and the extent of their replacement; → include an analysis of the suitability of the project with respect to potential land use conflicts with existing and future surrounding land uses (including rural residential development, land of significant scenic or visual value, land of high agricultural value, mineral reserves and conservation areas), taking into account local and strategic landuse objectives; and → describe the alternatives considered (location and/or design) for all project components, and provide justification for the preferred project demonstrating its benefits including community benefits (for example community enhancement programmes) on a local and strategic scale and how it achieves stated objectives. • **Visual Impacts** - the EA must: → provide a comprehensive assessment of the landscape character and values and any scenic or significant vistas of the area potentially affected by the project, including both the wind farm and the transmission line. This should describe community and stakeholder values of the local and regional visual amenity and quality, and perceptions of the project based on surveys and consultation. Consideration must be given to impacts on the values of the adjacent national parks, including impacts on wilderness and Greater Blue Mountains World Heritage area values; → assess the impact of shadow "flicker", blade "glint" and night lighting from the wind farm; → identify the zone of visual influence of the wind farm (no less than 10 kilometres) and assess the visual impact of all project components on this landscape; → include an assessment of the visual impacts associated with the transmission line, including impacts on local and regional views. Alternative pole designs should be presented and assessed and the potential for undergrounding in sensitive locations should also be assessed; → include photomontages of the project taken from potentially affected residences (including approved but not yet developed dwellings or subdivisions with residential rights), settlements and significant public view points, and provide a clear description of proposed visual amenity mitigation and management measures for both the wind farm and the transmission line; → provide an assessment of the feasibility, effectiveness and reliability of proposed mitigation measures and any residual impacts after these measures have been implemented. • **Noise Impacts** - the EA must: → include a comprehensive noise assessment of all phases and components of the project including, but not limited to turbine operation, the operation of the

electrical substation, corona and / or aeolian noise from the transmission line, construction noise (focusing on high noise-generating activities and any works proposed outside of standard construction hours), traffic noise during construction and operation, and vibration generating activities (including blasting) during construction and/ or operation. The assessment must identify noise/ vibration sensitive locations (including approved but not yet developed dwellings), baseline conditions based on monitoring results, the levels and character of noise (e.g. tonality, impulsiveness etc) generated by noise sources, noise/ vibration criteria, modelling assumptions and worst case and representative noise/ vibration impacts;

→ in relation to wind turbine operation, determine the noise impacts under operating meteorological conditions (i.e. wind speeds from cut in to rated power), including impacts under meteorological conditions that exacerbate impacts (including varying atmospheric stability classes and the van den Berg effect for wind turbines). The probability of such occurrences must be quantified;

→ include monitoring to ensure that there is adequate wind speed/profile data and ambient background noise data that is representative for all sensitive receptors;

→ provide justification for the nominated average background noise level used in the assessment process, considering any significant difference between daytime and night time background noise levels;

→ identify any risks with respect to low frequency or infra-noise;

→ if any noise agreements with residents are proposed for areas where noise criteria cannot be met, provide sufficient information to enable a clear understanding of what has been agreed and what criteria have been used to frame any such agreements;

→ clearly outline the noise mitigation, monitoring and management measures that would be applied to the project. This must include an assessment of the feasibility, effectiveness and reliability of proposed measures and any residual impacts after these measures have been incorporated; and

→ include a contingency strategy that provides for additional noise attenuation should higher noise levels than those predicted result following commissioning and/or noise agreements with landowners not eventuate.

The assessment must be undertaken consistent with the following guidelines:

→ Wind Turbines - the South Australian Environment Protection Authority's *Wind Farms - Environmental Noise Guidelines* (2003);

→ Substation – *NSW Industrial Noise Policy* (EPA, 2000);

→ Site Establishment and Construction – *Interim Construction Noise Guidelines* (DECC, 2009);

→ Traffic Noise – *Environmental Criteria for Road Traffic Noise* (NSW EPA, 1999); and

→ Vibration – *Assessing Vibration: A Technical Guideline* (DECC, 2006).

- **Flora and Fauna** - the EA must:
  → include an assessment of all project components on flora and fauna (both terrestrial and aquatic, as relevant) and their habitat consistent with the *Draft Guidelines for Threatened Species Assessment* (DEC, 2005), including details on the existing site conditions and likelihood of disturbance (including quantifying the worst case extent of impact on the basis of vegetation type and total native vegetation disturbed);
  → The EA must specifically consider impacts to threatened species and communities listed under both State and Commonwealth legislation that have been recorded on the site and surrounding land, impacts to riparian and/ or instream habitat in the case of disturbance of waterways, and to biodiversity corridors. In addition, impact of the project on birds and bats from blade strikes, low air pressure zones at the blade tips (barotrauma), and alteration to movement patterns resulting from the turbines must be assessed, including demonstration of how the project has been sited to avoid and/ or minimise such impacts;

- → details of how flora and fauna impacts would be managed during construction and operation including adaptive management and maintenance protocols (including the mitigation and/or management of weeds); and
- → measures to avoid, mitigate or offset impacts consistent with "improve or maintain" principles. Sufficient details must be provided to demonstrate the availability of viable and achievable options to offset the impacts of the project.

- **Indigenous Heritage** - the EA must include an assessment of the potential impact of the project components on indigenous heritage values (archaeological and cultural). The EA must demonstrate effective consultation with indigenous stakeholders during the assessment and in developing mitigation options (including the final recommended measures) consistent with *Guidelines for Aboriginal Cultural Impact Assessment and Community Consultation* (DEC, July 2005).

- **Traffic and Transport** – the EA must assess the construction and operational traffic impacts of the project including:
  - → details of the nature of traffic generated, transport routes, traffic volumes and potential impacts on local and regional roads (including impacts on the structural integrity of the road network), bridges and intersections, including any proposed road upgrades and repairs;
  - → details of measures to mitigate and/or manage the potential impacts, including measures to control soil erosion and dust generated by traffic volumes;
  - → details of site access roads including how these would connect to the existing road network and any operational maintenance or handover requirements.

- **Hazard/Risks**– the EA must include an assessment of the potential impacts on aviation safety including the need for aviation hazard lighting considering nearby aerodromes and aircraft landing areas, defined air traffic routes, aircraft operating heights, radar interference, communication systems, and navigation aids. In addition, the EA must assess the impact of the turbines on the safe and efficient aerial application of agricultural fertilisers and pesticides in the vicinity of the turbines and transmission line. Possible effects on telecommunications systems must be identified. Potential hazards and risks associated with electric and magnetic fields (EMFs) (with reference to Australian Radiation Protection and Nuclear Safety Agency standards) and bushfires must be assessed. The EA should demonstrate the application of the Principles of Prudent Avoidance in relation to EMFs. The EA must also detail measures to contain any hazardous substances to prevent the contamination of pasture and dams.

- **Water Supply and Waterways** – The EA must determine whether an adequate and secure water supply is available for the life of the project including the statutory (licensing) context of the water supply sources, and assess potential environmental impacts associated with the identified sources, including impacts on groundwater. Where the project would cross significant waterways, the EA must identify likely impacts to the waterways and measures to minimise impacts. Details of the design of waterway crossings where such crossings are to be located in third order or higher streams are to be provided. Particular consideration should be given to the Abercrombie River. The EA must also assess the potential for water pollution impacts, including the risks to the environment and human health, consistent with the heads of consideration provided in *Drinking Water Catchments Regional Environmental Plan No. 1*, including determining whether the project will have a neutral or beneficial effect on water quality.

- **General Environmental Risk Analysis** – notwithstanding the above key assessment requirements, the EA must include an environmental risk analysis to identify potential environmental impacts associated with the project, proposed mitigation measures and potentially significant residual environmental impacts after the application of proposed mitigation measures. Where additional key environmental impacts are identified through this environmental risk analysis, an appropriately detailed impact assessment of the additional key environmental

	impact(s) must be included in the EA.
Consultation Requirements	The Proponent must undertake a consultation program as part of the environmental assessment process, including consultation with, but not necessarily limited to, the following parties: • Oberon Council; • Upper Lachlan Shire Council; • Department of Environment, Climate Change and Water; • NSW Office of Water; • Department of Industry and Investment; • NSW Roads and Traffic Authority; • NSW Rural Fire Service; • Land and Property Management Authority; • Sydney Catchment Authority; • Lachlan CMA; • TransGrid • Commonwealth Department of Defence; • Civil Aviation Safety Authority; • Airservices Australia; • Aerial Agricultural Society of Australia; • relevant minerals stakeholders (including exploration and mining title holders); and • the local community and landowners. The consultation process shall include measures for disseminating information to increase awareness of the project as well as methods for actively engaging stakeholders on issues that would be of interest/concern to them. The EA must: → demonstrate effective consultation with stakeholders, and that the level of consultation with each stakeholder is commensurate with their degree of interest/concern or likely impact; → clearly describe the consultation process undertaken for each stakeholder/group including details of the dates of consultation and copies of any information disseminated as part of the consultation process (subject to confidentiality); and → describe the issues raised during consultation and how and where these have been addressed in the EA.

Relevant Guidelines - For Reference

General

Wind Energy Facilities draft Environmental Impact Assessment Guidelines (Planning NSW, June 2002)

Draft EIS Guideline "Network Electricity Systems and Related Facilities" (Planning NSW, February, 2002)

Best Practice Guidelines for Implementation of Wind Energy Projects in Australia (Auswind, 2006)

Visual

Wind Farms and Landscape Values: National Assessment Framework (Australian Wind Energy Association and Australian Council of National Trust, June 2007).

Ecology

Cumulative Risk for Threatened and Migratory Species (Commonwealth Department of Environment and Heritage, March 2006).

Wind Farms and Birds: Interim Standards for Risk Assessment, (Auswind, July 2005).

Assessing the Impacts on Birds – Protocols and Data Set Standards (Australian Wind Energy Association).

Threatened Biodiversity Survey and Assessment – Guidelines for Developments and Activities (Working Document) (DEC, 2004).

Aviation Hazard

Advisory Circular 139-18(0) Obstacle Marking and Lighting of Wind Farms (Civil Aviation Safety Authority, July 2007). Note: this advisory is currently withdrawn however a replacement has to date not been issued.

Windfarm Policy (Aerial Agricultural Association of Australia, December 2009)

Powerlines Policy (Aerial Agricultural Association of Australia, December 2009)

Water Quality

National Water Quality Management Strategy: Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC 2000).

The NSW State Groundwater Quality Protection Policy (DLWC, 1998).

The NSW State Groundwater Dependent Ecosystems Policy (DLWC, 2002).

Department of Water and Energy's Guidelines for Controlled Activities (February 2008):

- → Watercourse Crossings;
- → Instream Works;
- → Laying Pipes and Cables in Watercourses;
- → Outlet Structures; and
- → Riparian Corridors.

Managing Urban Stormwater: Soils and Construction, Volume 1, 4th edition (Landcom, 2004).

Managing Urban Stormwater: Soils and Construction, Volume 2C Unsealed roads (DECC).

APPENDIX D - SITE PLANS AND VEGETATION MAPPING

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ABERCROMBIE NATIONAL PARK

TEMPORARY CONCRETE BATCHING PLANT

On-Site Substation

Turbine relocated

Turbine removed in response to noise assessment findings

Turbines removed in response to flora and fauna assessment findings

Access tracks revised

Substation no longer proposed

Access track no longer proposed

ABERCROMBIE ROAD

Bannaby - Mt. Piper 500kV

ABERCROMBIE RIVER

Note: This plan shows the previous access and infrastructure proposed before changes were made in response to the community consultation findings

LEGEND

C — Vegetation remnant area

- Activity Area
- Transmission Line
- Transmission line option selected and proposed
- Assessed Transmission Line route options no longer proposed
- Access Track no longer proposed
- Proposed Access Track
- Access Track Relocated
- Proposed Turbines
- Turbines no longer proposed
- Turbines Relocated
- Proposed Substation Location
- Dwelling - Agreement
- Dwelling - No Agreement
- Dwelling - Non Identified
- Monitoring Mast

A3
SCALE 1:50000 @ A3

0 750 1500 3750m

VEGETATION SITE PLAN

PALING YARDS WIND FARM

PROJ./DRG.NO. 309254-20 DI-03 REV. 00 DRAWN J.D. APP'D. R.W. DATE 08.04.2013

Tract

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ABERCROMBIE
NATIONAL PARK

Turbines removed in response to
flora and fauna assessment findings

Turbine relocated

Turbine removed in response to
noise assessment findings

Substation no
longer proposed

Access track no longer proposed

ABERCROMBIE
NATIONAL PARK

P1 P2 P3 P4 P5 P6 P7 P8 P9 P10 P11 P12 P13 P14 P15 P16 P17 P18 P19 P20 P26 P28

A B C D

9A 9

Note: This plan shows the previous access and infrastructure proposed before changes were made in response to the community consultation findings

LEGEND

C Vegetation remnant area

Activity Area

Access Track no longer proposed
Proposed Access Track
Access Track Relocated
Crown Road

Proposed Turbines

Turbines no longer proposed

Turbines Relocated

Dwelling - Agreement

Dwelling - No Agreement

Dwelling - Non Identified

A3
Scale 1:12500 @ A3

0 187.5 375 937.5m

VEGETATION PLAN - CHANGED AREA

PALING YARDS WIND FARM PROJ/DRG.NO. 309254-20 DI-04 REV. 00 DRAWN J.D. APP'D. R.W. DATE 08.04.2013

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APPENDIX E - TARGETED SURVEY RESULTS, SURVEY EFFORT AND LOCATIONS

Species	Survey Season	Survey Effort	Dates	Weather Conditions	Locations Surveyed	AMG Co-ordinates	Target Species Detected
Pink Tailed Worm Lizard and Little Whip Snake	August to October (Rocky Slopes after Rain)	3 sessions of 1 day each.	12th September 2010 18th September 2010 25th September 2010	Fine Fine Fine	Remnants A, B, C, D, E, F, G, H.	A=748420/6213680 B=749240/6213970 C=749780/6214210 D=750120/6215840 E=752210/6218570 F=754320/6216150 G=754680/6220590 H=757050/6217280	No
Striped Legless Lizard *(Delmar impar)*	Nov-Dec (6 weeks of trapping). Trapping in dense Kangaroo Grassland is the preferred habitat however this habitat was not present on the site. Roof tiles to be placed in potential habitat 4 month prior to trapping (August to place roof tiles)	Trapping around remnant B.	8th November 2010 for 6 weeks	Fine	Near to Remnant B	B=749240/6213970	No
Grassland Earless Dragon *(Tympanocryptis pinguicolla)*	Spider Tubes for 10 weeks from February to April with tubes checked twice a week. Two tubes per hectare in Grassland Habitat. Note: there was not good grassland habitat present so trapping undertaken near to potential impact areas.	Trapping commenced in mid-January due to warm season.	10th December 2010 for 10 weeks	Fine during most of the survey period.	Near to Remnant B	B=749240/6213970	No
Squirrel Glider	Live Trapping in trees with traps 50-100 metres apart in potential habitat set for 3-4 consecutive nights. Traps checked in the morning and closed until dusk when they are re-opened. (No specific Season Required)	80 trap nights in remnant D. Cage traps covered with hessian on low tree branches.	2-6 December 2010	Fine during the whole period.	Remnant D.	D=750120/6215840	No

Species	Survey Season	Survey Effort	Dates	Weather Conditions	Locations Surveyed	AMG Co-ordinates	Target Species Detected
Regent Honeyeater	Call Playback in Spring-Summer in potential foraging or breeding habitats.	Remnants A, B, C, D, E, F, G, H. Slow walk for one hour in each remnant.	2-6 December 2010	Fine weather during both survey periods.	Remnant A, B, C, D, E, F, G, H.	A=748420/6213680 B=749240/6213970 C=749780/6214210 D=750120/6215840 E=752210/6218570 F=754320/6216150 G=754680/6220590 H=757050/6217280	No
Brown Treecreeper, Diamond Firetail, Hooded Robin, Speckled Warbler and Varied Sittella.	Early morning and or late afternoon on three occasions separated by a period of one week each. Three locations must be spread across the site. (No specific time of year required)	At ecotones between paddock and edges of remnants A, B, C, D, E, F, G, H.	2-6 December 2010	Fine on all days.	Remnant A, B, C, D, E, F, G, H.	A=748420/6213680 B=749240/6213970 C=749780/6214210 D=750120/6215840 E=752210/6218570 F=754320/6216150 G=754680/6220590 H=757050/6217280	No
Scarlet Robin	Diurnal bird census in early morning and or late afternoon on three occasions separated by one week each. Surveys to be conducted from July to January. Surveys to concentrate on ridges, hills and foothills.	1 hour census at each remnant on ecotone between timber and paddock	2-6 December 2010	Fine conditions on all days.	Remnant A, B, C, D, E, F, G, H.	A=748420/6213680 B=749240/6213970 C=749780/6214210 D=750120/6215840 E=752210/6218570 F=754320/6216150 G=754680/6220590 H=757050/6217280	No
Barking and Powerful Owls and Anabat.	1 site per 100 ha. Survey for potential nest trees. Surveys best undertaken in Winter over 3 nights.	Surveys undertaken in May at the same locations as anabat. Surveys over 3 nights.	2nd-5th 21st May 2010	Fine during all nights.	Remnants A, B, C, D, E, F, G, H	A=748420/6213680 B=749240/6213970 C=749780/6214210 D=750120/6215840 E=752210/6218570 F=754320/6216150 G=754680/6220590 H=757050/6217280	No

Species	Survey Season	Survey Effort	Dates	Weather Conditions	Locations Surveyed	AMG Co-ordinates	Target Species Detected
Gang Gang Cockatoo/ Glossy Black Cockatoo/ Superb Parrot	Diurnal surveys and nesting assessments using stagwatching and call identification in late afternoon. Gang Gang (Sept-January) Glossy Black (March to August) Superb Parrot (September to December)	Two days for each species separated by one month each.	10th July 2010 12th September 2011 12-15th December 2010	Fine during surveys	Remnants A, B, C, D, E, F, G, H	A=748420/6213680 B=749240/6213970 C=749780/6214210 D=750120/6215840 E=752210/6218570 F=754320/6216150 G=754680/6220590 H=757050/6217280	Yes Gang Gang Cockatoo Detected
Microchiropteran Bats Eastern False Pipistrelle, Eastern Bent Wing Bat, Large Footed Myotis, Greater Broad Nosed Bat, Yellow bellied Sheath Tailed Bat and Greater Long Eared Bat	Surveys have been completed last season. Surveys undertaken utilizing Anabat with recording continuous throughout the night. Calls analysed by Jason Anderson.	Four nights at each location	15 and 17th March 2010. 10th and 12th January 2011.	Fine with no wind.	Remnants A, B, C, D, E, F, G, H on edge of remnant ecotones	A=748420/6213680 B=749240/6213970 C=749780/6214210 D=750120/6215840 E=752210/6218570 F=754320/6216150 G=754680/6220590 H=757050/6217280	No
Golden Sun Moth	October to December. Hand netting during known flight periods in > 40% *Austrodanthonia* in the groundcover. Note: no good habitat was located for this species on the site.	Surveys during October, November and December. Undertaken while doing other surveys for extensive coverage.	Undertaken while doing other surveys as potential habitat on site was low.	Mainly Fine	Coverage over much of the site.	Most of site whilst undertaking other surveys	No
Swainsonia sericea, Swainsonia recta, Prasophyllum petilum, Austral Toad Flax. *Diuris aequalis* (Oct-Nov)	Transects 10 metres apart through all areas of woodland /grassland.	October 2010 to mid-January 2011. 3 days during each month – total of 12 days.	1-3rd November 2010 10-14th December 2010 10th-14th January 2011	Fine and Dry.	Surveys around proposed turbine sites and along interconnection corridors. Random meander transects undertaken due to the linear nature of the proposed development.	Turbine Sites and associated areas.	No

Species	Survey Season	Survey Effort	Dates	Weather Conditions	Locations Surveyed	AMG Co-ordinates	Target Species Detected
Spotlighting	Undertaken at Remnants A, B, C, D, E, F over two non-consecutive nights. Four nights total using Lightforce 100watt with infra-red filter. Each Remnant for 1 hour except for remnants C,D,E,F,G for 30 minutes.	Each Remnant for 1 hour Each remnant surveyed in May 2010 and January 2011	2nd-5th 21st May 2010 19th and 21st January 2011	Fine, no to light wind	Remnants A, B, C, D, E, F, G, H	A=748420/6213680 B=749240/6213970 C=749780/6214210 D=750120/6215840 E=752210/6218570 F=754320/6216150 G=754680/6220590 H=757050/6217280	No threatened species detected.
Amphibians	Amphibian surveys undertaken through call listening, active searching and spotlighting around Steeves Creek and First Creeks. Slow walks along each creek for the length of each property.	Two nights survey along Abercrombie River Area	10th December 2010 10th January 2011	Fine	Abercrombe River		No threatened species detected.

Species	Survey Season	Results
Pink Tailed Worm Lizard and Little Whip Snake	August to October (Rocky Slopes after Rain)	Not detected.
Striped Legless Lizard *(Delmar impar)*	Nov-Dec (6 weeks of trapping). Trapping in dense Kangaroo Grassland. Roof tiles to be placed in potential habitat 4 month prior to trapping (August to place roof tiles)	Not detected.
Grassland Earless Dragon *(Tympanocryptis pinguicolla)*	Spider Tubes for 10 weeks from February to April with tubes checked twice a week. Two tubes per hectare in Grassland Habitat.	Not Detected
Squirrel Glider	Live Trapping in trees with traps 50-100 metres apart in potential habitat set for 3-4 consecutive nights. Traps checked in the morning and closed until dusk when they are re-opened. (No specific Season Required)	Not detected.
Regent Honeyeater	Call Playback in Spring-Summer in potential foraging or breeding habitats.	Not detected.
Brown Treecreeper, Diamond Firetail, Hooded Robin, Speckled Warbler and Varied Sittella.	Early morning and or late afternoon on three occasions separated by a period of one week each. Three locations must be spread across the Project Site. (No specific time of year required)	Not detected.
Scarlet Robin	Diurnal bird census in early morning and or late afternoon on three occasions separated by one week each. Surveys to be conducted from July to January. Surveys to concentrate on ridges, hills and foothills.	Not detected.
Barking and Powerful Owls	1 site per 100 ha. Survey for potential nest trees. Surveys best undertaken in Winter over 3 nights.	Not detected.
Gang Gang Cockatoo/ Glossy Black Cockatoo/ Superb Parrot	Diurnal surveys and nesting assessments using stagwatching and call identification in late afternoon. Gang Gang (Sept-January) Glossy Black (March to August) Superb Parrot (September to December)	Gang Gang Cockatoo Detected. Additional September 2011 Surveys did not re-detect this species.

Species	Survey Season	Results
Microchiropteran Bats Eastern False Pipistrelle, Eastern Bent Wing Bat, Large Footed Myotis, Greater Broad Nosed Bat, Yellow bellied Sheath Tailed Bat and Greater Long Eared Bat	Surveys have been completed	Not detected.
Golden Sun Moth	October to December. Hand netting during known flight periods in > 40% *Austrodanthonia* in the groundcover.	Not detected.
Swainsonia sericea, Swainsonia recta, Prasophyllum petilum, Austral Toad Flax. *Diuris aequalis*	(Oct-Nov) Transects 10 metres apart through all areas of woodland /grassland. Flowering times to be confirmed with OEH	Not detected.