



**Planning &
Environment**

**STATE SIGNIFICANT DEVELOPMENT
ASSESSMENT
Yass Valley Wind Farm
(SSD-6698)**



Assessment Report
Section 89E of the
Environmental Planning and Assessment Act 1979

February 2016

Cover Photograph: Sourced from NGH Environmental, Environmental Assessment: Proposed Wind Farm, Yass NSW, November 2009.

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EXECUTIVE SUMMARY

Epuron Projects Pty Ltd (Epuron) is proposing to construct and operate the Yass Valley Wind Farm (the project), a new wind farm located approximately 16 kilometres (km) west of Yass in the Yass Valley and Harden Shire local government areas (LGAs).

The project involves the development of a wind farm comprising up to 124 wind turbines (and associated operating infrastructure) across 3 precincts – the Marilba and Conroy's Gap Extension precinct to the east, and the Coppabella precinct to the west (see Figure E1). If all the wind turbines proceed across the 3 precincts, the total installed capacity of the project would be 482 megawatts (MW).

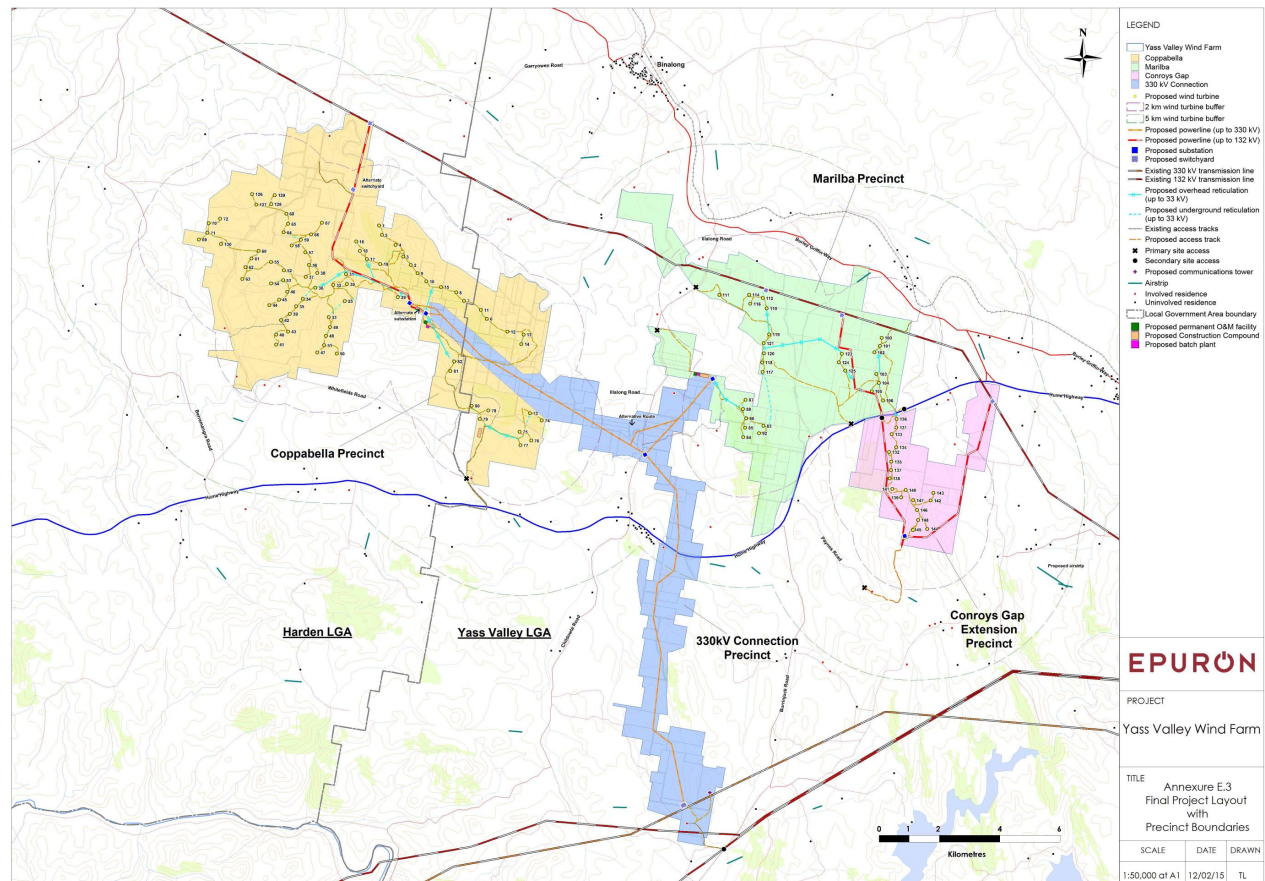


Figure E1: Yass Valley Wind Farm

The project was declared a major project under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) in October 2008. Although Part 3A was repealed in 2011, the project remains a 'transitional Part 3A project' under Schedule 6A of the EP&A Act. On 21 March 2014, the project was transitioned to the State Significant Development (SSD) process under Part 4 of the EP&A Act. The previous assessment actions undertaken under the Part 3A assessment process (including exhibition of the EA) were accredited under the SSD process.

As SSD, the project requires approval from the Minister for Planning. However, under the Minister's delegations the development application is to be determined by the independent NSW Planning Assessment Commission (the Commission).

The Department publicly exhibited the Environmental Assessment (EA) for the project from 13 November 2009 until 14 December 2009 and the Final Preferred Project Report from 14 December 2012 to 1 March 2013. The Department received 23 submissions in response to the exhibition of the EA, including 7 from public authorities and 16 from the community. The Department received a further 18 submissions (either as new submissions or as updates to previous submissions) in response to the Final Preferred Project Report, including 10 from public authorities and 8 from the community.

The Department also received advice from the Commonwealth Department of the Environment, as part of the accredited assessment process under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

None of the key government agencies have any significant residual concerns about the project, and support the project subject to conditions. However, the vast majority of the special interest group and general public submissions objected to or raised concerns about the project.

The key issues raised in the submissions and/or identified in the Department's assessment of the project include:

- *Visual amenity* – particularly the visual impact of the wind turbines on residences towards the eastern part of the site;
- *Operational noise and health* – including low frequency noise, infrasound and electro-magnetic interference;
- *Aviation* – including potential impacts on local aerodromes and Airservices Australia's radar facilities;
- *Biodiversity* – including bird and bat strike and potential impacts on threatened species and vegetation communities;
- *Socio-economics* – including depreciation of property values in the region, restrictions on future subdivision potential, and decommissioning responsibilities; and
- *Community consultation* – including the adequacy of community consultation undertaken by Epuron, and the lack of opportunities for the local community to provide input into the assessment process.

The Department has carefully assessed the development application, EA, submissions, Epuron's response to these submissions and additional information provided by Epuron in accordance with the requirements of the EP&A Act.

As part of this assessment, the Department commissioned independent expert reviews of the project's visual and aviation impacts. The Department also visited the site on a number of occasions at various stages during the assessment process, and met with a number of local residents to more fully understand their concerns about the project.

In summary, the Department considers that the impacts of the western part of the project comprising 79 turbines (i.e. the Coppabella precinct) can be effectively managed to achieve acceptable environmental and amenity outcomes for the local community, and should be approved, subject to conditions.

However, due to the significant landscape and visual impacts of the eastern part of the project, the Marilba and Conroy's Gap Extension precincts should not be approved.

The Department has also recommended that an associated high voltage transmission line (known as the 330 kV Connection precinct) should not be approved, as the remaining Coppabella precinct can connect to the network via an existing 132 kV transmission line.

While the removal of the Marilba precinct, Conroy's Gap Extension precinct and the 330 kV Connection precinct would not completely eliminate the landscape and visual impacts of the project, the Department considers that it would allow a viable wind farm to be developed while removing the most significant visual impacts of the project on the local community.

The reasons for the Department's findings are set out below.

Suitability of the Site

Based on its assessment, the Department considers that the project effectively comprises two wind farms – the Marilba and Conroy's Gap Extension precincts with its 45 turbines to the east, and the Coppabella precinct with its 79 turbines to the west.

The wind farm is located on elevated ridges and spans almost 25 km from east to west. The eastern and western precincts are separated by a distance of at least 6 km, with a 330 kV electricity transmission line being the only infrastructure located between these areas.

The sensitivity of the landscape and the proximity of residences, and hence the nature and extent of the impacts of the project, vary considerably across the site.

In this regard, the Department considers that the most significant impacts are largely confined to the eastern part of the site (i.e. the Marilba and Conroy's Gap Extension precincts).

While the Department acknowledges that Epuron's removal of a number of turbines as part of the project design has been effective in reducing the level of visual impact at some residences, the assessment found that the project would still result in significant visual impact at 11 non-associated residences, with 10 of these residences located within 2 km of the nearest turbines.

Where turbines are located within 2 km of non-associated residences, the *Draft NSW Wind Farm Planning Guidelines (2011)* recommends a process of further assessment and agreement with the owners of these residences.

In this case, Epuron has not reached agreement with any of the landowners of the residences predicted to experience high visual impacts. Furthermore, Epuron has yet to obtain agreements with a number of landowners whose land is proposed to be used for construction of the wind farm in the Marilba and Conroy's Gap Extension precincts.

In the absence of agreements with affected landowners, the Department examined the potential for deleting turbines to reduce the visual impacts to acceptable levels, in consultation with the Department's independent visual expert. However, the elevated location of wind turbines on prominent ridgelines and the proximity of residences meant that over half the turbines in the eastern precincts would need to be deleted to effectively reduce visual impacts.

The Department also considers that cumulative visual impacts are an issue in the eastern portion of the site with the proximity of the approved (but not yet built) Conroy's Gap Wind Farm. Many of the residences predicted to experience high visual impacts as a result of the project would also be able to see the Conroy's Gap turbines once they are constructed.

In contrast, the residual impacts of the turbines in the Coppabella precinct are comparatively low with no non-associated residences predicted to experience high visual impacts. The Department considers that the impacts to the west of the site can be managed to achieve acceptable environmental and amenity outcomes for the local community as discussed below.

The intensity of impacts in the eastern part of the site, combined with the cumulative impacts of the Conroy's Gap Wind Farm, would effectively transform the current rural character of the landscape in the locality. Accordingly, the Department considers that in the absence of agreements with the most affected landowners, this draws into question the suitability of the eastern portion of the site for a wind farm of this scale.

Public Submissions

The Department is also required to consider submissions made on the project.

The majority of submissions were made by residents living in close proximity to the eastern side of the site. This is not to say that objectors do not have concerns about the Coppabella precinct, but it is clear from the Department's consultation that the focus of community concerns relates to the visual impacts of the proposed turbines in the Marilba and Conroy's Gap Extension precincts, and the cumulative impacts associated with the adjacent Conroy's Gap Wind Farm, in the eastern part of the site.

Accordingly, the Department believes that removing the eastern parts of the project would address (or at least partially address) many of the concerns raised in public submissions on the project.

Residual Environmental Impacts

To mitigate the residual visual impacts of the remaining Coppabella precinct, the Department has recommended conditions requiring Epuron to offer visual impact mitigation measures (such as vegetation screening) to the owners of the identified moderately affected residences, and any other residence within 5 km of the nearest wind turbines that would have significant views of the proposed turbines.

The Department considers that this, together with the Department's other recommended conditions (including minimising reflective surfaces), would adequately address the residual visual impacts from the project.

With regard to noise and health, both the Department and the NSW Environment Protection Authority (EPA) consider that the project would be able to comfortably comply with the applicable noise criteria.

In order to protect the amenity of surrounding residents, the Department has recommended conditions requiring Epuron to:

- comply with noise limits at non-associated residences surrounding the project for noise generated by the project; and
- undertake noise monitoring following commissioning of the wind turbines to determine compliance with the noise limits.

The Department also notes Epuron would be required to obtain an environment protection licence (EPL) from the EPA for the project.

Potential health impacts associated with low frequency noise and infrasound were identified as concerns in a number of community submissions. However, the assessment predicts that subject to the Vestas V90 turbine model not being operated on the site, low frequency noise from the project would be well below the limits considered acceptable in the *Draft NSW Wind Farm Planning Guidelines*.

In regard to infrasound, the National Health and Medical Research Council (NHMRC) recently released a statement on wind farms and human health confirming that *'there is currently no consistent evidence that wind farms cause adverse health outcomes in humans'*, and that any further health based studies should be limited to consideration of residences in close proximity to wind farms (i.e. less than 1.5 km).

The Department notes that with the removal of the Marilba and Conroy's Gap Extension precincts there would be no turbines closer than 2.03 km from non-associated residences. Consequently, the Department considers that the risk of any residual health effects at these residences would be negligible.

With regard to aviation, the Department has undertaken extensive consultation with Airservices Australia to address its concerns about potential impacts on the radar systems that support Canberra and Albury airports.

The Department and Airservices Australia are now satisfied these risks can be appropriately managed, and have agreed on stringent conditions. The agreed conditions require Epuron to prepare a detailed report on all the potential impacts on the radar systems, and to implement at its cost, any mitigation measures recommended in the report, to the satisfaction of Airservices Australia.

With regard to biodiversity values, the project site and surrounds predominantly comprises cleared grazing land with some patches of remnant native woodland. The majority of this native vegetation is degraded due to historic grazing and is of limited conservation value, although the site does provide habitat for some threatened species and ecological communities.

With the removal of the Marilba precinct, Conroy's Gap Extension precinct and 330 kV Connection precinct, the clearing of native vegetation associated with the project would reduce from 226 to 83 hectares, with the majority of the residual clearing comprising derived grassland associated with the Box Gum Woodland endangered ecological community (EEC).

The Department's assessment found that the project would not result in any significant impacts on threatened species or ecological communities, and would not pose a significant or unacceptable level of risk to bird and bat species in the vicinity of the proposed turbines.

The biodiversity values of the locality would be maintained over the medium to long term through the retirement of the required biodiversity credits in accordance with the *NSW Biodiversity Offsets Policy for Major Projects*.

Overall, the Department considers that the recommended conditions requiring Epuron to avoid areas of endangered ecological communities and vulnerable flora, implement a Bird and Bat Adaptive Management Plan and retire the required biodiversity credits, would adequately address the residual biodiversity impacts of the project.

The assessment found the project would not result in any significant impacts on the road network, with the increased traffic generated by the project not expected to compromise the capacity, efficiency or safety of the local and State road network. The removal of the Marilba precinct, Conroy's Gap Extension precinct and 330 kV Connection precinct would reduce these impacts further.

The Department is satisfied that the transport route is suitable for construction traffic subject to the implementation of some minor road upgrades, and any damage caused by project-related traffic would be required to be rehabilitated and/or made good by Epuron in consultation with the relevant road authority.

Socio-Economic Impacts

The project would result in a range of social and economic benefits for the wider community. This includes helping to meet Australia's energy requirements as well as addressing future electricity demand without the production of additional greenhouse gases.

The project would also stimulate economic investment in renewable energy and would provide associated flow-on benefits to the region through job creation, capital investment, and Epuron's proposed community funding contributions of almost \$200,000 a year to local councils.

A number of submissions raised concerns about potential adverse impacts on property values in the area.

In 2009 the NSW Valuer-General released a report on the impacts of wind farms on land values in Australia. The report was based on primary investigations and analysis of previous studies, and concluded that the majority of wind farms in Australia appear to have no quantifiable effect on land values.

Further, the Department notes that as a SSD for electricity generating works, the project is permissible with consent under applicable planning instruments, and the assessment demonstrates that the project would be able to comply with applicable amenity criteria established by the NSW Government for wind farm developments.

Where significant visual amenity impacts are predicted, the Department has recommended that these aspects of the project do not proceed. The Department has also recommended that the landowner of any residence within 5 km of a wind turbine be entitled to request screening to further minimise visual impacts.

The Department considers that at this stage there is no clear evidence that wind farms reduce property values, and that with the significant reduction in the scale of the development in this case, the project would not result in any significant or widespread reduction in land values in the areas surrounding the wind farm.

Summary

The Department considers that with the removal of the Marilba, Conroy's Gap Extension and 330 kV Connection precincts, the project achieves a reasonable balance between maximising the utilisation of the wind resource and minimising the potential impacts on the local community and the environment.

Importantly, while the removal of these precincts would reduce the number of wind turbines to 79, the project would still provide an installed capacity of up to 285 MW, with all the associated benefits to the wider community including job creation, capital investment, reductions in greenhouse gases, and community funding contributions.

The Department's recommended conditions use a risk-based approach that focus on performance-based outcomes. This reflects current government policy and the fact that wind farms require relatively limited ongoing environmental management once the wind turbines have been commissioned.

The Department has carefully considered the potential impacts of the project on the site and surrounds in its assessment, and concluded that subject to its recommended conditions, the impacts of the project on the environment and the local community can be adequately minimised, managed, or compensated for, to achieve an acceptable standard.

While there is opposition to the project from some local landowners and special interest groups, the project is considered to be in the wider public interest, particularly as it would:

- be consistent with the NSW Government's plan for a secure, reliable, affordable and clean energy future for the state;
- assist in meeting Australia's renewable energy targets as well as future electricity demands without the production of additional greenhouse gases; and
- facilitate employment for up to 167 people during construction and 34 people during operations.

On balance, the Department believes that even with the removal of the Marilba precinct, Conroy's Gap Extension precinct and 330 kV Connection precincts, there remain significant residual benefits that outweigh the residual costs of the project. Consequently, the Department recommends that the project should be approved, subject to stringent conditions.

1. PROPOSED PROJECT

1.1 Introduction

Epuron Projects Pty Ltd (Epuron) is proposing to construct and operate the Yass Valley Wind Farm (the project), a new wind farm located approximately 16 km west of Yass in the Yass Valley and Harden Shire (LGAs (see Figure 1 and 2).

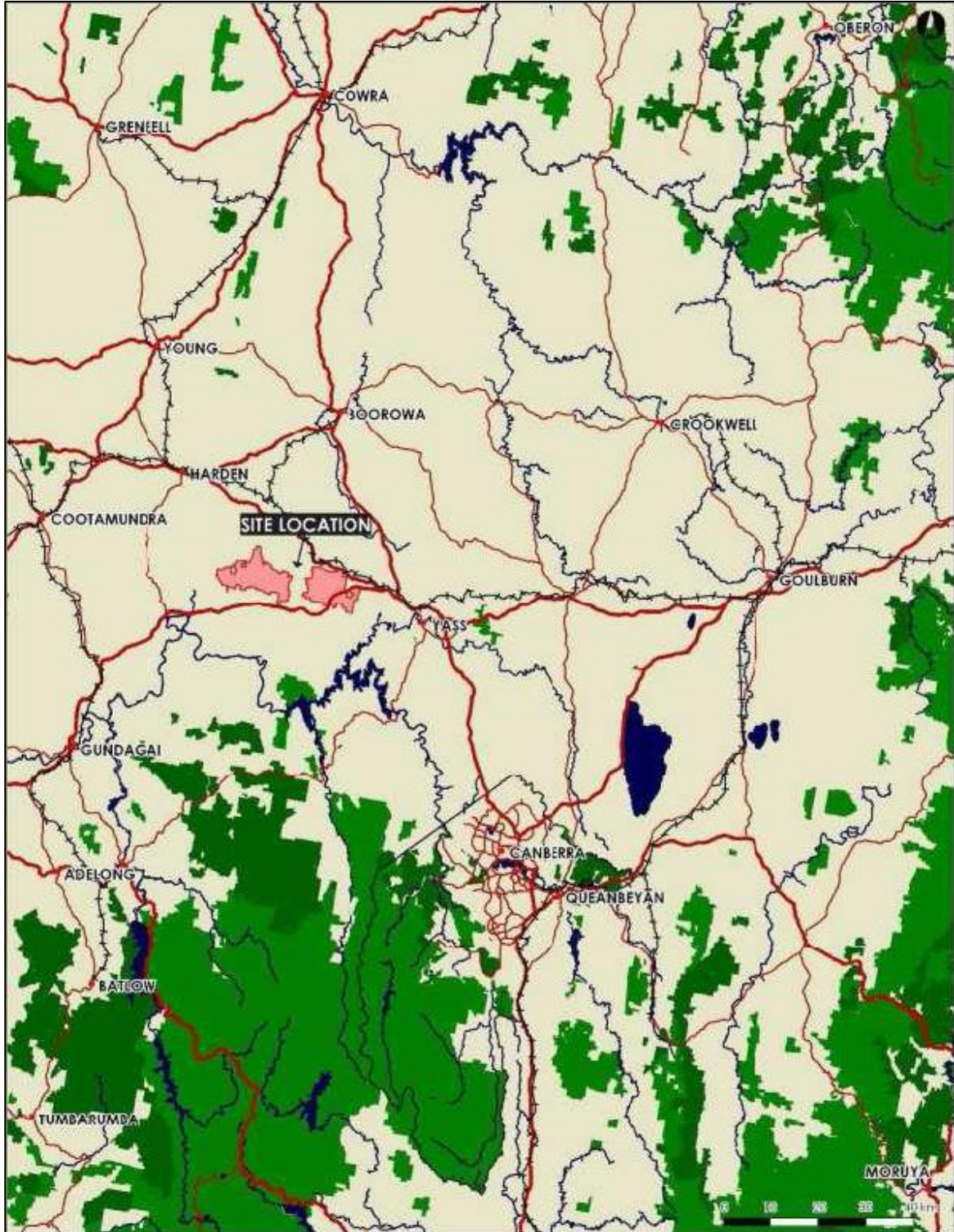


Figure 1: Regional Context

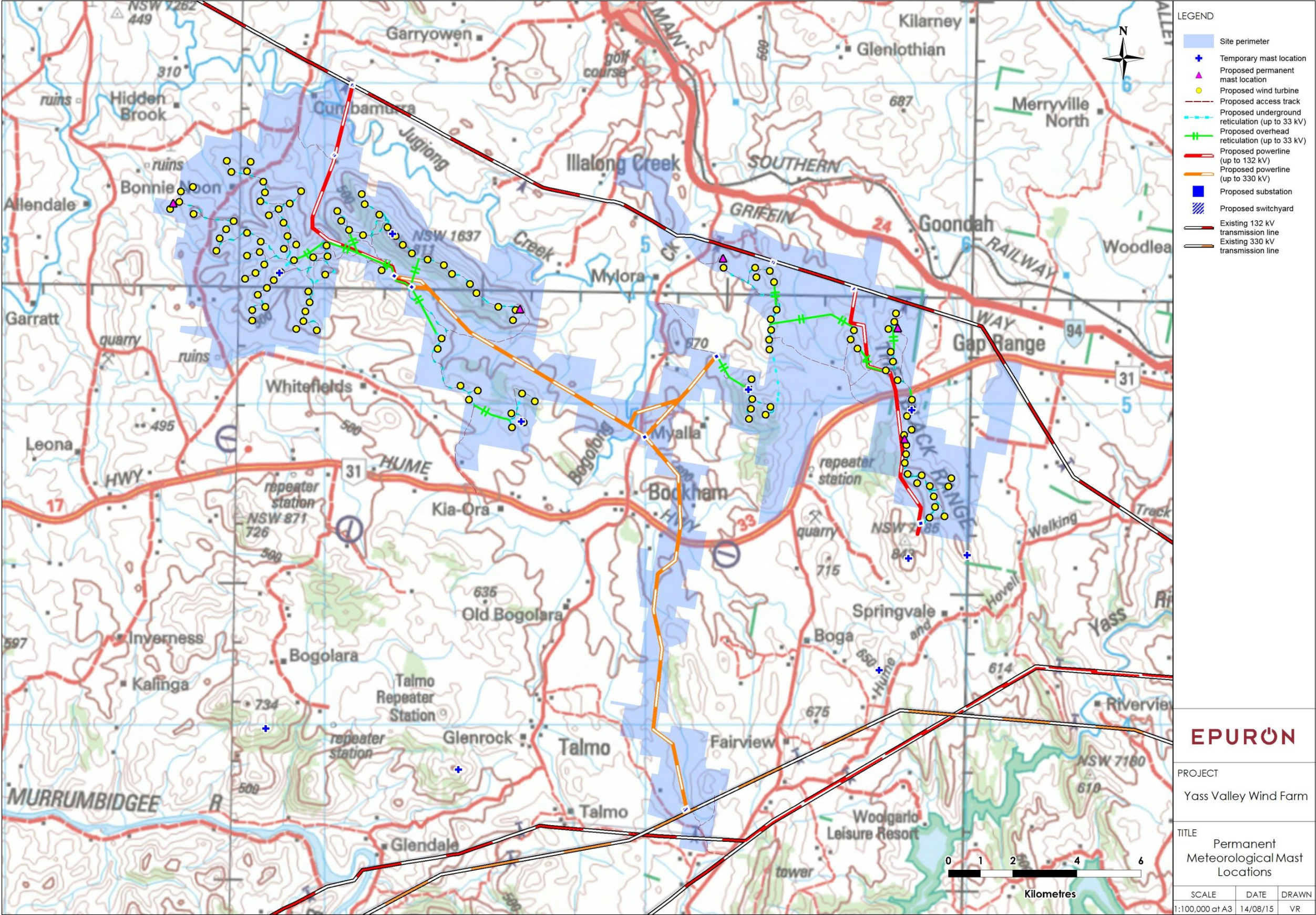


Figure 2: Project Location Plan

The assessment of the Yass Valley Wind Farm has been continuing for some years. The Environmental Assessment (EA) for the project was initially lodged by Epuron and publicly exhibited by the Department in late 2009. At that time, government authorities and the general public raised a number of significant concerns with the proposal, particularly in relation to aviation, visual, biodiversity, noise, and traffic impacts.

Epuron subsequently sought to address these concerns through a number of responses and Preferred Project Reports, which were lodged in a number of iterations between November 2012 and September 2014. However, these responses did not adequately address some of the key issues associated with the project, including:

- access to, and assessment of, a number of properties on which infrastructure is proposed to be located;
- potential conflicts with Airservices Australia's aviation radar systems; and
- assessment and offsetting of biodiversity impacts, particularly the Box Gum Woodland EEC.

Given Epuron's failure to adequately address these issues, the Department finalised its assessment of the project in February 2015 based on the information available at the time. The Department's assessment report was referred to the the Commission recommending that the development application be refused.

However, prior to the Commission's determination of the project, Epuron provided a range of additional information to address the residual issues. The Commission subsequently referred the application to the Department for further consideration.

Epuron has also provided additional information to the Department to address a range of residual matters since the application was referred back to the Department.

The Department has now considered all of the additional information and believes that it provides an adequate level of detail on the key issues identified in the Department's initial assessment report. The Department has also undertaken additional consultation with key stakeholders (particularly Airservices Australia).

Consequently, the Department believes that it now has sufficient information to enable a detailed assessment of the project. This consideration is the basis for this final assessment report, which supercedes and replaces the initial assessment report.

A brief chronology of the key events relevant to this assessment report is presented in Table 1.

Table 1: Chronology of Events

Date	Event
Nov 09	EA lodged with the Department
19 Nov 09 – 14 Dec 09	EA exhibited
Nov 12	Preferred Project Report lodged by Epuron with the Department
14 Dec 12 – 1 Mar 13	Preferred Project Report exhibited
July 13, Dec 13, May 14, Sept 14	Preferred Project Report Revisions 2, 3, 4 and 5 lodged with the Department
16 Sept 14	Epuron provided proposed approach on radar assessment to the Department
22 Jan 14	Yass Valley Wind Farm Community Survey sent to the Department
3 Feb 15	Initial assessment report referred to the Commission
13 Feb 15, 27 Feb 15, 26 Mar 15	Epuron provided additional information to the Commission
26 Mar 15	Application referred back to the Department by the Commission
10 June 15, 25 June 15	Epuron provided further information to the Department
13 August 15	Epuron removed the eastern most 132kV overhead powerline connection

1.2 Project Setting

The project is located in the Southern Tablelands and South Western Slopes region, and is characterised by low hills and ridges used predominantly for agriculture, particularly sheep grazing. The project site is located 16 km west of Yass and covers a 24 km span east to west along the Hume Highway, and extending 12 km north to south.

The project site comprises 25 privately-owned properties that would host the project infrastructure as shown in Figure 3. Note that properties 8, 9 and 16 have been removed from the project site since exhibition of the Preferred Project Report.

The Department understands final commercial agreements are still outstanding with the owners of 7 of these properties (i.e. properties 13, 14, 18, 20, 23, 24 and 25) located in the Marilba, Conroy's Gap Extension and 330 kV Connection precincts.

The Department notes that as SSD under Part 4 of the EP&A Act, the project would normally require consent from the owners of these properties for the lodgement of a development application. However, as a 'transitional Part 3A project' that was declared to be 'critical infrastructure' at the time, the application can be considered and determined under the EP&A Act without the need to obtain landowner's consent.

In regard to non-associated or non-host properties surrounding the site, all of the residences on these properties are located approximately 1 km or more from the nearest wind turbine, with 7 non-associated residences located within 2 km and a further 96 non-associated residences located between 2 and 5 km from the nearest wind turbine.

The project site is located within the Murrumbidgee River catchment, with the site approximately 13 km north of the Murrumbidgee River at the closest point. The Murrumbidgee River is a major catchment of the Murray-Darling Basin. The project site is located within the Jugiong Creek and Illalong Creek sub catchments of the Murrumbidgee River and contains a number of high order creeks, lower order creeks and drainage lines. The major creek within these catchments is Jugiong Creek, which is located approximately 1.8 km to the north of the project site at the closest point. Jugiong Creek flows generally in an east to west direction.

The main urban centres in the region include Canberra, Goulburn and Yass. The closest towns to the project site are Goondah, Binalong and Bookham. Goondah and Binalong are located on Burley Griffin Way, approximately 7 km and 2 km north of the project site, respectively. Bookham is located on the Hume Highway, approximately 2 km directly south of the project site.

There are a number of other operating, approved or proposed wind farms in the Southern Tablelands region surrounding the project site. Figure 4 shows the location of many of these wind farms, although it does not include more recent proposals such as the Jupiter Wind Farm, Biala Wind Farm and Crookwell 3 Wind Farm.

Most of the operating, approved or proposed wind farms are located to the east of the proposed Yass Valley Wind Farm, although the approved (but not yet built) Conroy's Gap Wind Farm comprising 15 wind turbines is located immediately to the south-east of the project site.

1.3 Project Description

Epuron's original proposal comprised up to 152 turbines. Following the exhibition of the EA in 2009, Epuron revised the project to delete a number of wind turbines and ancillary infrastructure to resolve a number of outstanding concerns in relation to aviation, biodiversity, visual, noise and traffic impacts.

The project is now comprised of a wind farm with up to 124 turbines and associated ancillary infrastructure. The project is described in full in the EA (see Appendix A) as amended by the Preferred Project Report (see Appendix C) and subsequent information provided by Epuron.

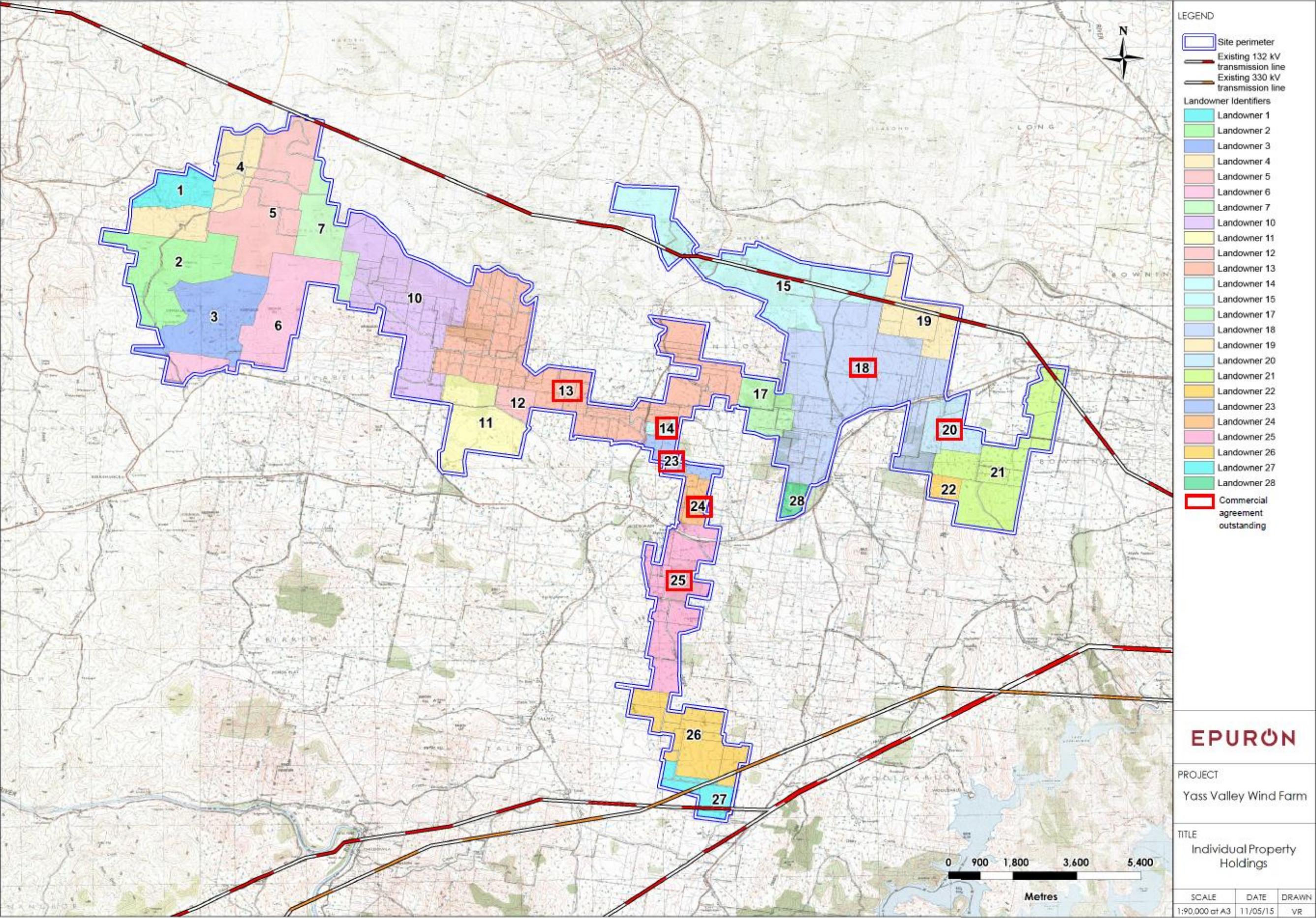


Figure 3: Landownership Plan

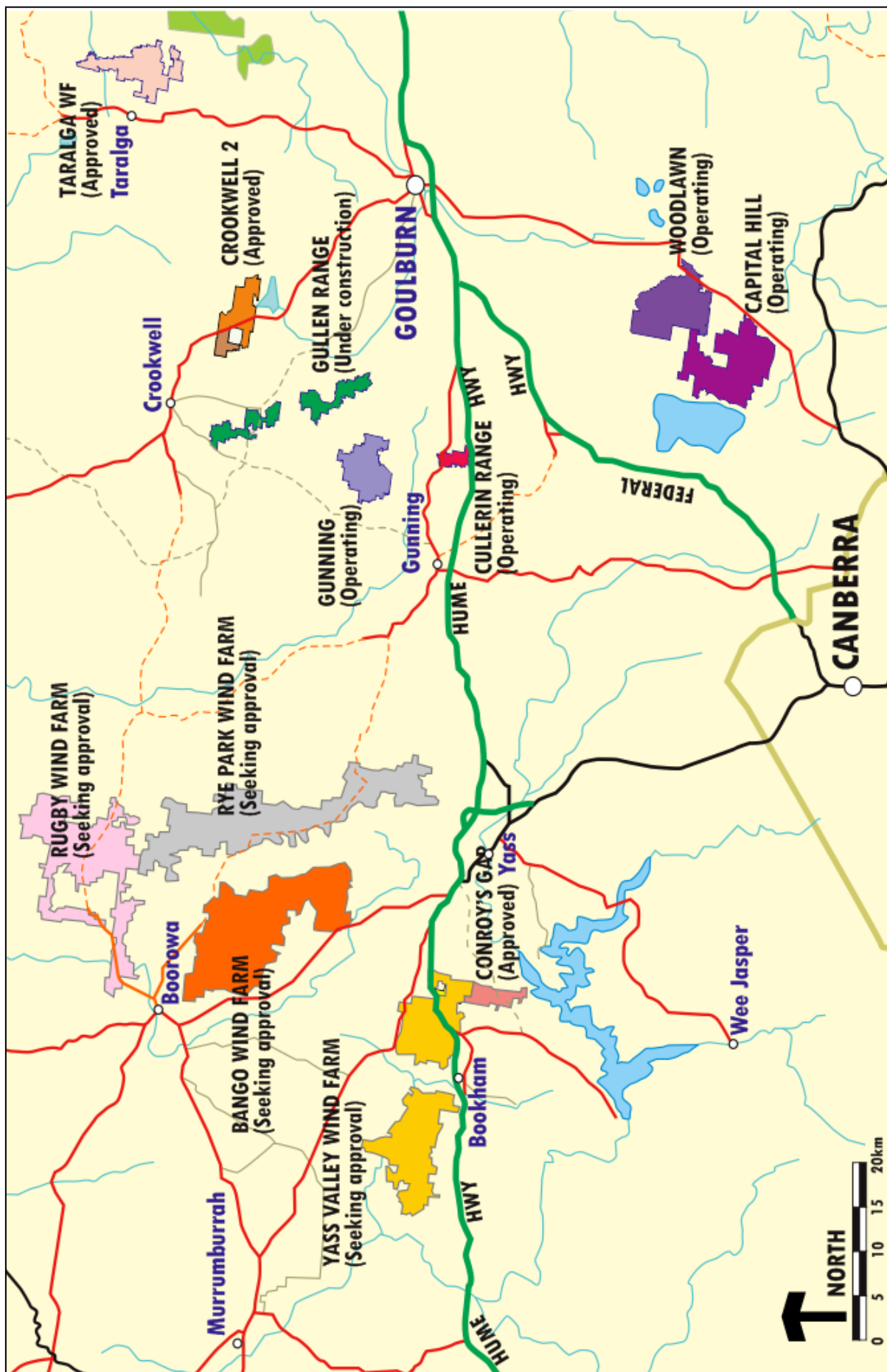


Figure 4: Existing and Proposed Wind Farms
(excludes Jupiter, Biala, and Crookwell 3 Wind Farm proposals)

A comparison of the key project changes since the EA are summarised in Table 2.

Table 2: Amendments to the project during assessment process

Detail	Exhibited EA November 2009	Exhibited Preferred Project Report November 2012	Current (Version 4) Preferred Project Report September 2014	Further Information March 2015	Revised Scope Letter August 2015
Number of wind turbines	152	148	134	124	124
Length of high voltage overhead power lines	>75 km	• 25 km (up to 330 kV) or • 22 km (132kV)	• Up to 25 km (up to 330 kV) • Up to 22 km (132 kV)	• Up to 25 km (up to 330 kV) • Up to 22 km (132 kV)	• Up to 25 km (up to 330 kV) • Up to 17 km (132kV)
Number of site substations	6	Up to 2	Up to 2	Up to 2	Up to 2
Maximum tip height	150 m	150 m	150 m	150 m	150 m

The major components of the project are summarised below in Table 3 and depicted in Figures 5 and 6.

Table 3: Major components of the project

Aspect	Description
<i>Project Summary</i>	Up to 124 wind turbines and associated infrastructure in 4 discrete precincts: • Coppabella precinct (79 wind turbines including those numbered 1 to 19, 25, 29 to 82, and 126 to 130); • Marilba precinct (27 wind turbines including those numbered 83 to 88, 92, 100 to 106, 110 to 112, 114, 116 to 121, and 123 to 125); • Conroy's Gap Extension precinct (18 wind turbines including those numbered 131 to 148); and • 330 kV Connection precinct (transmission infrastructure only).
<i>Wind Turbine Components</i>	• Construction and operation of up to 124 wind turbines, each with a nominal capacity of between 1.5 and 3.6 MW¹. • Maximum tower heights (to blade tip) of 150 m, with a hub height between 78 m and 100 m, and blade lengths between 45 m and 60.5 m. • Wind turbines would be grouped in to 3 clusters: ○ Coppabella precinct – up to 79 wind turbines; ○ Marilba precinct – up to 27 wind turbines; and ○ Conroy's Gap Extension precinct – up to 18 wind turbines². • Up to 124 crane hardstand areas. • 5 permanent meteorological masts.
<i>Infrastructure</i>	Key infrastructure includes up to: • 1 permanent operation and maintenance facility including offices, facilities, car parking and equipment storage; • Up to 2 temporary construction compounds, concrete batch plants, staging areas and storage. • 2 132/33kV substations, control rooms and maintenance facilities; • 18 km of 33kV overhead power lines; • 17 km of 132kV overhead power lines; • 25 km of 330kV overhead power lines³; and • 72 km of underground power lines (7 km not within access track easements).

¹ The project may use a mix of turbine models across the site to better utilise the on-site wind resource profile.

² The Conroy's Gap Extension precinct may be constructed and operated as an extension to the existing Conroy's Gap Wind Farm, given its proximity to this existing infrastructure. This is likely to require a separate modification to the Conroy's Gap Wind Farm approval.

³ Each of the project's three wind turbine precincts has an ability to connect at 132kV and the 330kV connection is not specifically required for any one precinct to move to construction. However, the 330 kV connection would allow larger capacity wind turbines to be used as it would increase the project's connection capacity.

Aspect	Description
<i>Disturbance Area</i>	Up to 226.4 hectares (ha) in four discrete precincts: • Coppabella precinct – 83.0 ha; • Marilba precinct – 43.7 ha; • Conroy's Gap Extension precinct – 27.6 ha; and • 330 kV Connection precinct – 72.1 ha.
<i>Construction Road Transport</i>	The major transport routes to the project site would be via the Hume Highway and Burley Griffin Way. Primary access routes into the project site involve: • Coppabella precinct – Whitefields Road; • Marilba precinct – Illalong Road and Marilba Station access on the Old Hume Highway; and • Conroy's Gap Extension precinct – Paynes Road. Secondary access routes into the project site involve: • Marilba precinct – Illalong Road and the Old Hume Highway; • Conroy's Gap Extension precinct – Conroy's Gap truck stop area; and • 330 kV Connection precinct – Burrinjuck Road.
<i>Road Works</i>	Key road works for the project include: • 106 km of internal access tracks; • Reconstruction and/or realignment of Whitefield's Road and Paynes Road to provide 6 m wide pavement; • Improve turning radii and advance signposting on the Whitefields Road, Paynes Road and Illalong Road junctions at the Hume Highway; • Check bridges and pavement condition on Illalong Road; and • Provide warning signs and guide posts on Whitefield's Road.
<i>Capital Investment Value</i>	\$670 million.
<i>Operational Life</i>	The expected operating life span of the wind farm is up to 30 years, at which point it would either be decommissioned or alternatively refurbished as necessary to extend the operational life of the wind farm.
<i>Employment</i>	167 full time equivalent construction jobs. 34 full time equivalent operational jobs.
<i>Hours of Operation</i>	Construction and decommissioning - Monday to Friday 7am to 6 pm, Saturday 8 am to 1 pm, no work on Sundays or public holidays. Operation - 24 hours, 7 days a week.
<i>Biodiversity Offsets</i>	The project would disturb up to 226.4 ha of land, including 200.6 ha of Box Gum Woodland and Box Gum Woodland derived grassland areas in four discrete precincts: • Coppabella precinct – 67.3 ha; • Marilba precinct – 38.3 ha; • Conroy's Gap Extension precinct – 24.7 ha; and • 330 kV Connection precinct – 70.3 ha. The biodiversity offset site would ultimately provide for the long term conservation of land to meet the following credit requirements: • 2,611 Box Gum Woodland ecosystem credits; • 103 Red Stringybark Grass Forest ecosystem credits; • 33 River Red Gum Forest ecosystem credits; • 2,318 Golden Sun Moth species credits; and • 4,012 Regent Honeyeater species credits.

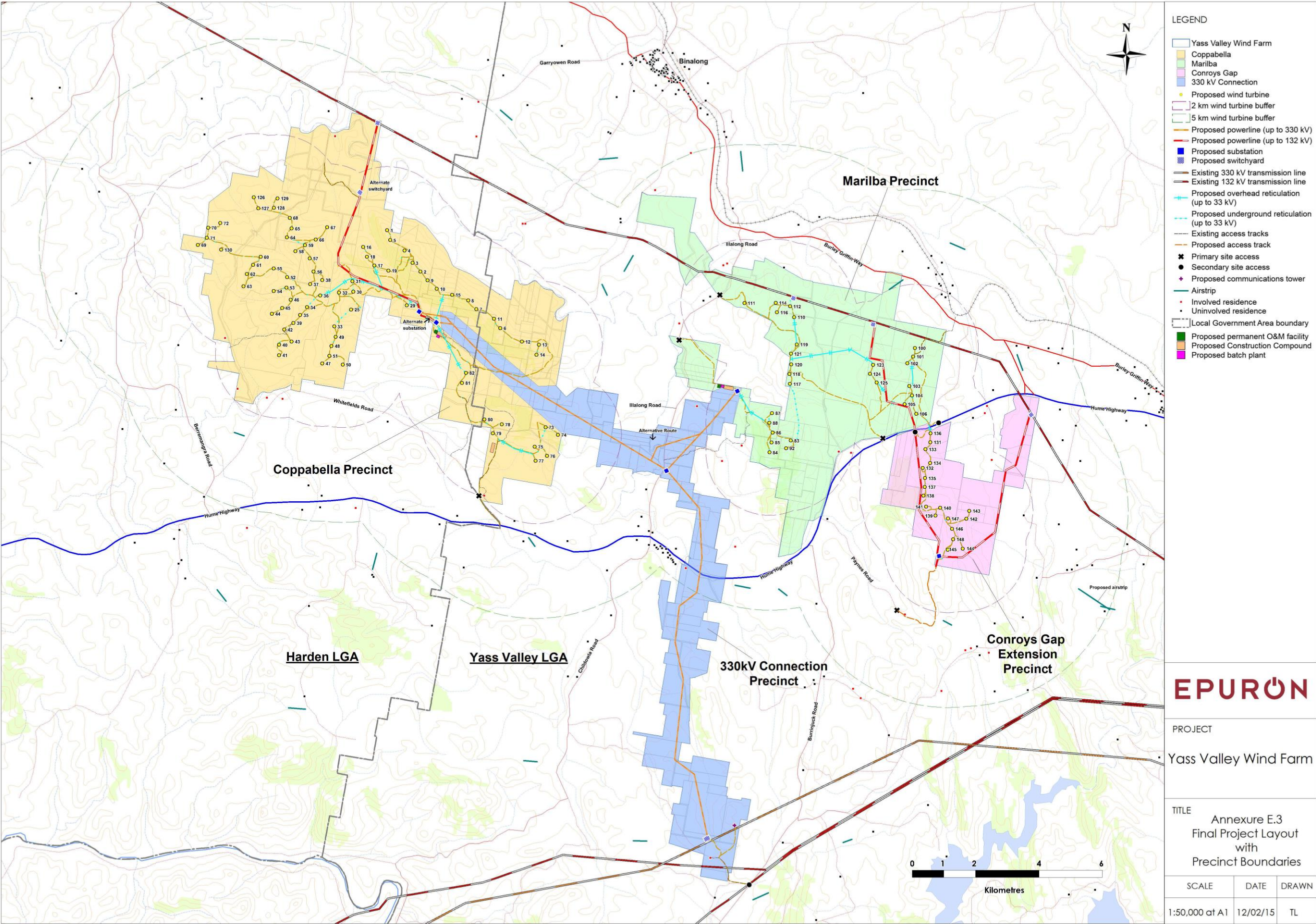


Figure 5: Project Layout Plan (with Precincts)

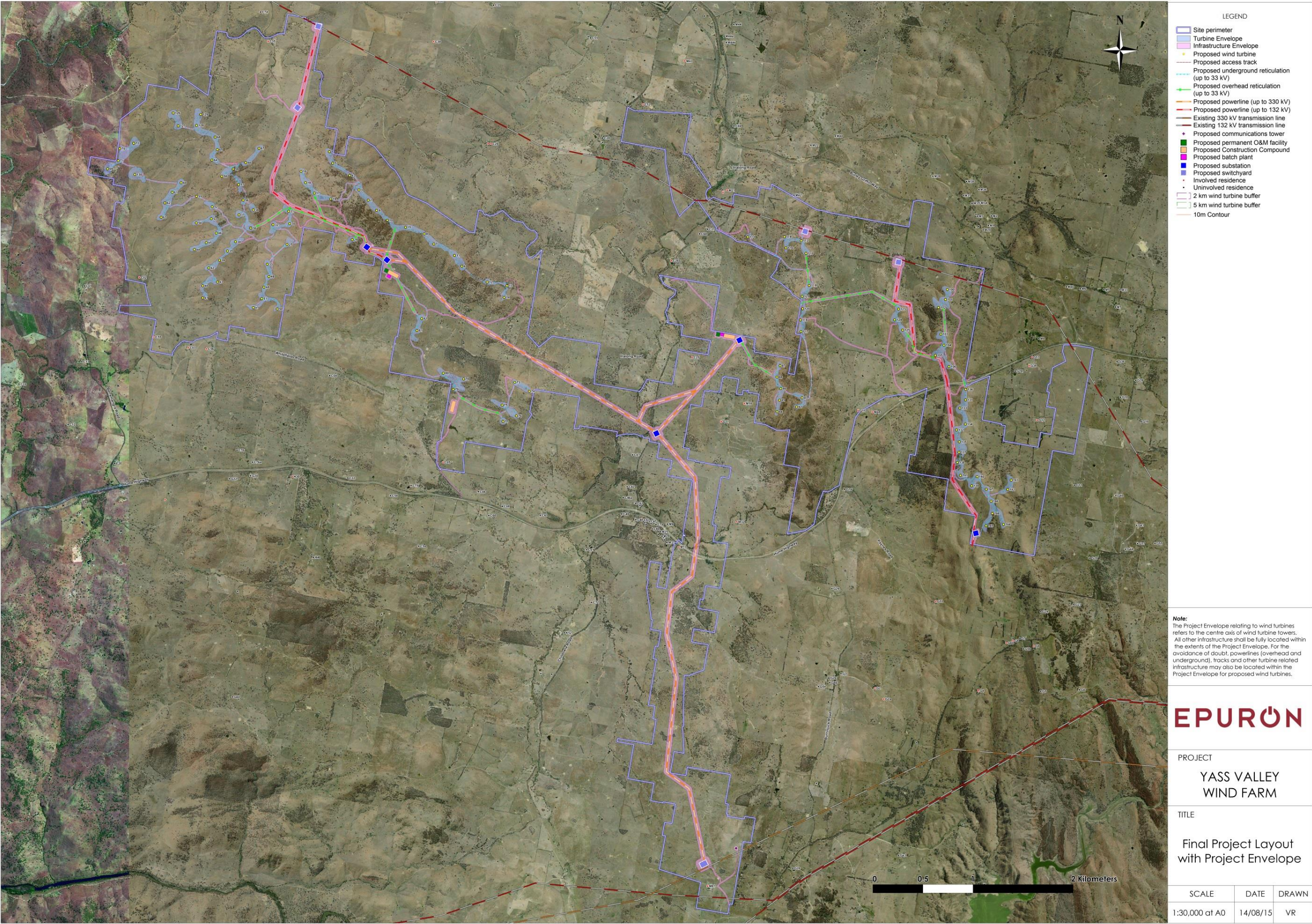


Figure 6: Project Layout Plan(with Assessment Corridors)

1.4 Micro-Siting of Turbines

To provide flexibility in the requirements for micro-siting of turbines, the Department requested that Epuron identify a development corridor (i.e. where turbines and ancillary infrastructure can be located). The purpose of the development corridor is to identify locations where turbines and ancillary infrastructure can generally be sited without materially changing the key environmental impacts of the project (i.e. visual impacts, noise impacts, biodiversity impacts).

Given concerns raised about micro-siting on other wind farm projects in NSW, the Department considers that to protect the interests of all stakeholders it is appropriate to provide further specificity in the conditions to guide the limits of micro-siting.

Accordingly, the Department has recommended conditions requiring Epuron to:

- locate the turbines and ancillary infrastructure within a development corridor (i.e. the project study area as shown on Figure 6);
- ensure that no turbine is moved more than 100 m from the approved location; and
- ensure that any micro-siting does not conflict with the avoidance and management measures proposed by Epuron.

The recommended conditions also require Epuron to provide detailed final project layout plans to the Department prior to construction.

With these measures in place, the Department believes this to be an adequate mechanism for providing greater flexibility for the siting of turbines without resulting in any material changes to the impacts of the project.

2. STRATEGIC CONTEXT

In September 2013, the NSW Government released the *Renewable Energy Action Plan* to guide the state's renewable energy development and support the national Renewable Energy Target (RET) of 20% renewable energy by 2020.

The plan aims to secure a reliable, affordable and clean energy future for NSW. To this end, the plan positions the state to increase energy from renewable sources at 'least cost' to the energy customer and with 'maximum benefits' to NSW. It includes a number of goals and actions to facilitate this development.

Wind is identified in the *Renewable Energy Action Plan* as one of the key sources of renewable energy for NSW, with the others including bioenergy, geothermal, hydro, solar, wave and tidal. The plan notes that large areas of NSW have excellent wind resources by international standards, with many of the best sites located close to existing electricity distribution infrastructure.

As indicated in , the best wind resources in NSW are generally located along the Great Dividing Range and the Western Slopes, including the Southern and Central Tablelands. The project is located within this region of moderate to high average wind speeds.

These high average wind speeds, together with the relatively sparsely populated nature of the locality and access to existing electricity distribution networks makes the Yass region a potentially suitable area for wind energy development.

The Department is satisfied that the proposed development is consistent with the goals of the *Renewable Energy Action Plan*, and that it would assist in meeting Australia's renewable energy targets. In this regard, based on an installed capacity of 482.4 MW, the project is expected to generate up to 1,056,000 MWh of electricity annually, which is enough to power about 132,000 homes. It would also save about 1,021,000 tonnes of greenhouse gas emissions each year and contribute towards the national RET. Even with an installed capacity of 285 MW associated with the Coppabella precinct, the benefits of the project in regard to generating renewable energy would be significant (see Section 3.6 for discussion about limiting the project to the Coppabella precinct.)

That said, the Department also recognises that these attributes and benefits must be weighed against the impacts of the development on the surrounding community and the environment. The Department has considered these issues carefully in Section 5 of this report.

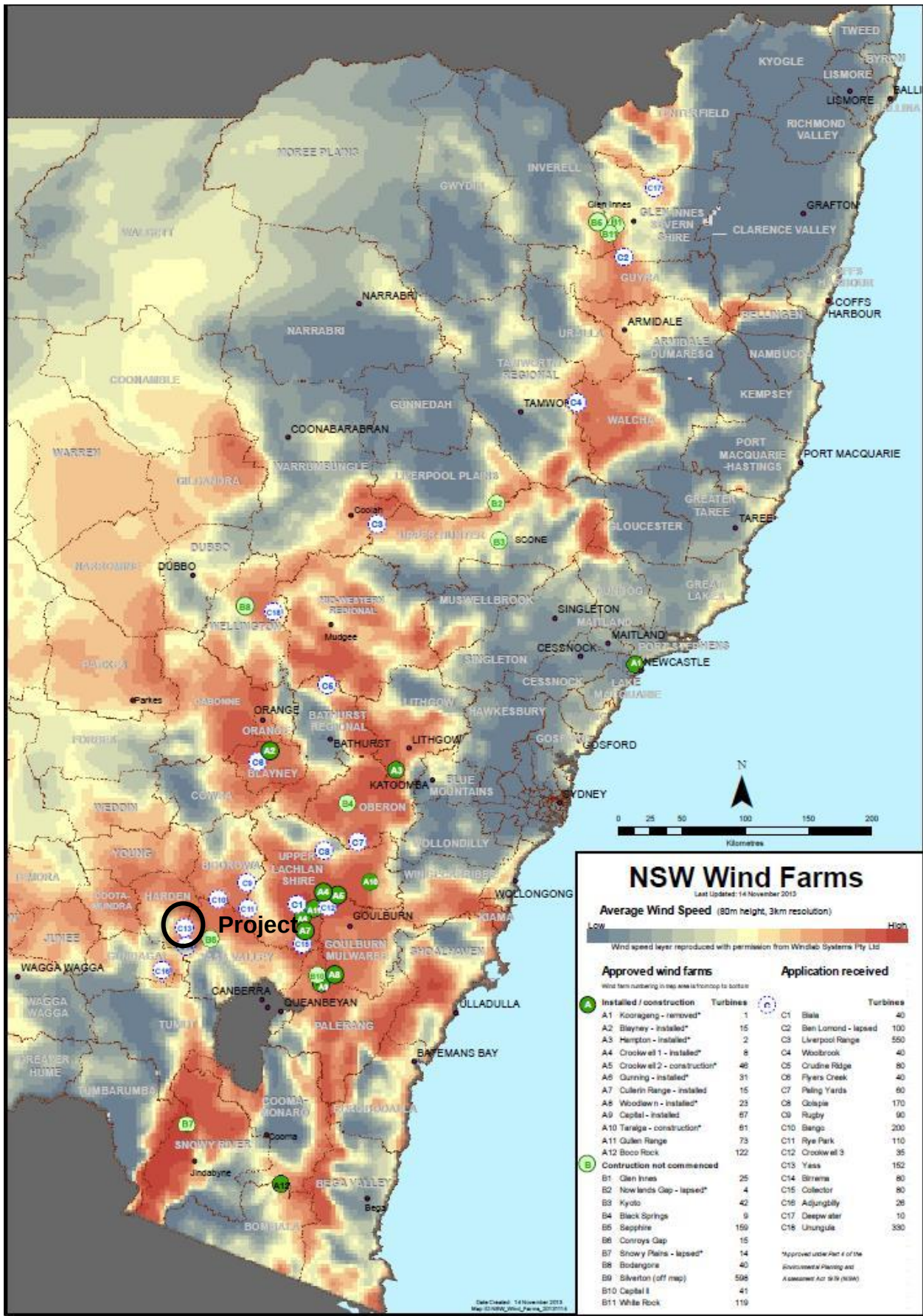


Figure 7: NSW Wind Farms

3. STATUTORY CONTEXT

3.1 State Significant Development

The project was declared a major project under Part 3A of the EP&A Act in October 2008.

Although Part 3A was repealed on 1 October 2011, the project remained a 'transitional Part 3A project' under Schedule 6A of the EP&A Act. On 21 March 2014, the project was transitioned to the SSD process under Part 4 of the EP&A Act. The previous assessment actions undertaken under the Part 3A assessment process (including exhibition of the EA) were accredited under the SSD process.

The project is classified as SSD under Section 89C of the EP&A Act as it is 'development for the purpose of electricity generating works or heat or their co-generation (using any energy source, including gas, coal, biofuel, distillate, waste, hydro, wave, solar or wind power) that has a capital investment value of more than \$30 million'. It therefore meets the criteria in clause 20 of schedule 1 to *State Environmental Planning Policy (SEPP) (State and Regional Development) 2011*.

Consequently, the Minister for Planning is the consent authority for the development. However, the development application falls within the Minister's delegation to the Commission, dated 14 September 2011, as the Minister announced in September 2014 that all wind farm development applications would automatically be referred to the Commission for determination. Consequently, the Commission is required to determine the application.

3.2 Permissibility

The proposed development is located within both the Yass Valley and Harden Shire LGAs. All land within the proposed disturbance area is zoned RU1 - Primary Production under both the *Yass Valley Local Environmental Plan (LEP) 2013* and the *Harden LEP 2011*.

Electricity generating works, which include a building or place used for the purpose of making or generating electricity, are prohibited within land zoned RU1 under both LEPs.

However, under *SEPP (Infrastructure) 2007*, development for the purposes of electricity generating works may be carried out by any person with consent on any land in a prescribed rural, industrial or special use zone. Zone RU1 is a prescribed rural zone. As the proposal is for electricity generating works within a prescribed rural zone it is therefore permissible under *SEPP (Infrastructure) 2007*.

3.3 Environmental Planning Instruments

In addition to the *Yass Valley LEP 2013*, *Harden LEP 2011* and *SEPP (Infrastructure) 2007*, several other environmental planning instruments apply to the project, including *SEPP (State and Regional Development) 2011*, *SEPP (Rural Lands) 2008* and *SEPP No.44 – Koala Habitat Protection*.

The Department has assessed the project against the relevant provisions of these instruments (see Section 3.2 and Appendix D), as well as Epuron's consideration of these matters in the EA.

Based on its assessment of these instruments and its broader environmental assessment in Section 5, the Department considers that the proposed development could be undertaken in a manner that is generally consistent with the aims, objectives and provisions of these instruments. However, this is subject to the implementation of a range of mitigation, monitoring and management measures as outlined in Section 5.

3.4 Integrated and Other NSW Approvals

Under Section 89J of the EP&A Act, a number of other approvals are integrated into the SSD approval process, and consequently are not required to be separately obtained for the proposal. These include:

- various approvals relating to heritage required under the *National Parks and Wildlife Act 1974* and the *Heritage Act 1997*;
- an authorisation under the *Native Vegetation Act 2003* for the clearing of native vegetation; and
- certain water approvals under the *Water Management Act 2000*.

Under Section 89K of the EP&A Act, a number of further approvals are required, but must be substantially consistent with any development consent for the proposal. These include:

- an EPL under the *Protection of the Environment Operations Act 1997*; and
- approvals for roads and intersection construction under the *Roads Act 1993*.

The Department has consulted with the relevant government authorities responsible for these integrated and other approvals (see Section 4), and considered the relevant issues relating to these approvals in its assessment of the project (see Section 5). None of the relevant authorities object to the project.

3.5 Commonwealth Approvals

The project has been declared to be a 'controlled action' under the EPBC Act as it may impact nationally-listed threatened species, communities and migratory species.

On 5 November 2014, Epuron received Commonwealth approval for the project, subject to conditions, under the EPBC Act. The Commonwealth conditions focus on avoiding Box Gum Woodland, minimising risks to nationally-listed threatened bird species and the Golden Sun Moth, and providing an appropriate offset to compensate for residual impacts on biodiversity values.

The Department has reviewed the EPBC Act approval, and considers that the conditions it has recommended to the Commission would achieve similar outcomes to those under the Commonwealth approval.

3.6 Objects of the EP&A Act

The Minister must consider the objects of the EP&A Act when making decisions under the Act. The objects of most relevance to the Minister's decision on whether or not to approve the project are found in Section 5(a)(i),(ii),(vi) and (vii) of the Act. They are:

To encourage:

- (i) *the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment;*
- (ii) *the promotion and co-ordination of the orderly and economic use and development of land;*
- (vi) *the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats; and*
- (vii) *ecologically sustainable development.*

The Department is satisfied that the proposed development is consistent with Object 5(a)(i) as the project would:

- make use of the wind resource on the site;
- not compromise the long term use of the land for agricultural purposes; and
- provide an additional source of income for the landowners of associated properties, whose land would be directly affected by the project.

The project is also consistent with the goals of the *NSW Renewable Energy Action Plan*, and would assist in meeting Australia's renewable energy targets while reducing greenhouse gas emissions compared to other sources of electricity generation.

However, as discussed in detail in Section 5 below, the Department considers that the Marilba precinct, Conroy's Gap Extension precinct and the 330 kV Connection precinct should not be approved.

In particular, the Department notes that Epuron is yet to reach agreement with the owners of 7 properties where turbines and other infrastructure are proposed. These properties comprise a significant proportion of the Marilba, Conroy's Gap Extension and 330 kV Connection precincts (see Figure 3).

Further, the Department considers that the visual impact on non-associated residences to the east of the site is significant, and draws into question the suitability of the eastern portion of the site for a wind farm of this scale. Many of the affected residences are within 2 km of the proposed turbines, and Epuron has yet to reach agreement with any of these landowners to accept the impacts of the project.

Given the absence of agreements with host and affected landowners, the Department considers that the eastern components of the project do not represent an orderly and economic use and development of land, and are therefore inconsistent with Object 5(a)(ii) of the Act.

In contrast, the residual impacts of the turbines in the Coppabella precinct in the western portion of the site are comparatively low, with no non-associated residences predicted to experience high visual impacts. The Department considers that the impacts to the west of the site can be managed to achieve acceptable environmental and amenity outcomes for the local community, and hence can be considered consistent with the objects of the Act.

Consideration of environmental protection (Object 5(a)(vi)) is also described in more detail in Section 5 of this report. Following its assessment, the Department considers that the Coppabella project is able to be undertaken in a manner that would not significantly impact threatened species and EECs in the locality, and would improve or at least maintain the biodiversity values of the locality over the medium to long term through the retirement of the required biodiversity credits, in accordance with the *NSW Biodiversity Offsets Policy for Major Projects*.

The Department has considered the encouragement of ecologically sustainable development (ESD) (Object 5(a)(vii)) in its assessment of the project. This assessment integrates all significant socio-economic and environmental considerations and seeks to avoid any potential serious or irreversible environmental damage, based on an assessment of risk-weighted consequences. Epuron has also considered the project against the principles of ESD. Following its consideration, the Department considers that the project is able to be carried out in a manner that is consistent with the principles of ESD.

4. CONSULTATION

4.1 Exhibition

Prior to the repeal of Part 3A of the EP&A Act on 1 October 2011, under Section 75H of the EP&A Act, the then Director-General was required to publicly exhibit the EA for the project for at least 30 days.

The Department:

- publicly exhibited the EA from 13 November 2009 until 14 December 2009 (32 days) at the:
 - Department's Information Centre in Sydney;
 - Yass Valley Council office in Yass;
 - Yass Library in Yass;
 - Harden Shire Council office in Harden;
 - Harden Library in Harden;
 - Binalong Post Office in Binalong; and
 - Nature Conservation Council's office in Sydney;
- notified relevant State government authorities and the Councils;
- notified relevant electricity supply and transmission authorities, in accordance with *SEPP (Infrastructure) 2007*;
- notified affected landholders; and
- advertised the exhibition in the Harden Murrumburrah Express and Yass Tribune.

In undertaking these processes, the Department has satisfied the notification requirements of Section 75H of the EP&A Act and the Infrastructure SEPP.

The Final Preferred Project Report was exhibited from 14 December 2012 to 1 March 2013 on the Department's website and at the same locations that the EA was exhibited. The Department also notified landholders who lodged a submission during the EA exhibition period as well as relevant state and local government authorities.

During the assessment process the Department also made other documents publicly available on its website, including:

- the project application;
- environmental assessment requirements;
- the EA;
- Epuron's responses to submissions, including the Preferred Project Reports;
- the Department's initial assessment report; and
- Epuron's responses to the Department's initial assessment report.

4.2 Submissions

The Department received 23 submissions in response to the exhibition of the EA, including:

- 7 from public authorities; and
- 16 from the general public.

Following exhibition of the Preferred Project Report, the Department received a further 18 submissions (either as new submissions or as updates to previous submissions), including:

- 10 from public authorities; and
- 8 from the general public.

Since the exhibition of the EA and Preferred Project Report, the Department has also consulted further with Epuron and key public authorities including Airservices Australia in order to get a better understanding of the key issues, and inform the assessment of the merits of the project.

The Department received further representations from a number of members of the general public both in support of and in objection to the project. Departmental representatives have also visited the project site and surrounds on several occasions.

A summary of the key issues raised in submissions is provided below. A full copy of the submissions to the EA is attached in Appendix B and the Preferred Project Report is attached in Appendix C.

4.3 Community Submissions

Based on the information available in the submissions, approximately 65% of public submissions were received from members of the public within 10 km of the project site. The remaining submissions were from the broader region, with one from Victoria. Submitters that supplied their addresses located in proximity to the project site are shown in Figure 8.

Of the 24 public submissions, one supported the project. The other 23 submissions objected to the project citing a range of issues, with the key issues as indicated in Figure 9. Key issues included:

- *Visual amenity* – particularly the visual impact of the wind turbines on residences towards the eastern part of the site;
- *Operational noise and health* – including low frequency noise, infrasound and electro-magnetic interference;
- *Aviation* – including potential impacts on local aerodromes and Airservices Australia's radar facilities;
- *Biodiversity* – including potential bird and bat strike and potential impacts on threatened species and vegetation communities;
- *Socio-economics* – including depreciation of property values in the region, restrictions on future subdivision potential, and decommissioning responsibilities; and
- *Community consultation* – including the adequacy of community consultation undertaken by Epuron, and the lack of opportunities for the local community to provide input into the assessment process.

The Department has considered these and other issues associated with the project in its assessment of the project.

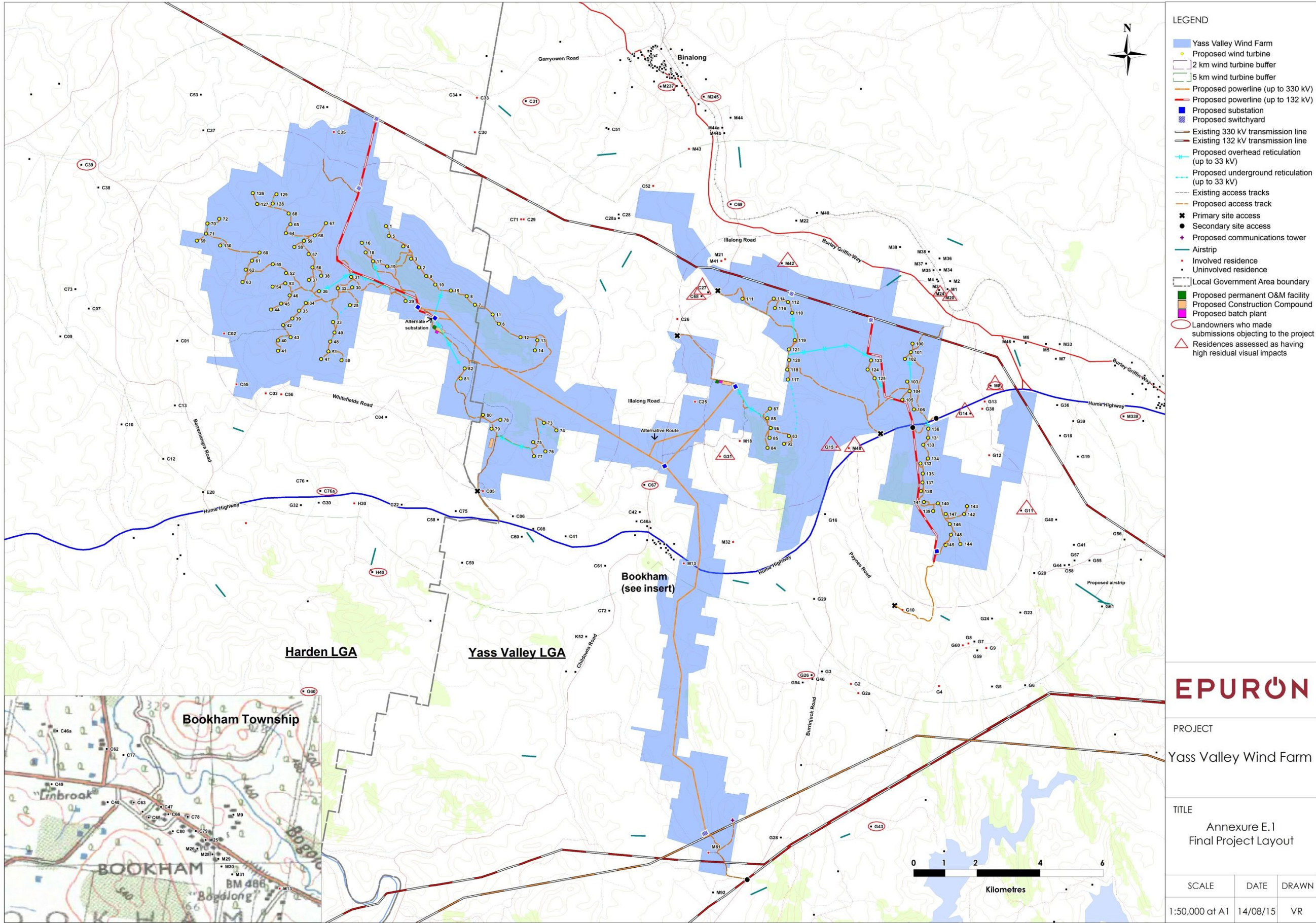


Figure 8: Location of Submission from Local Residents (and residences with high visual impacts)

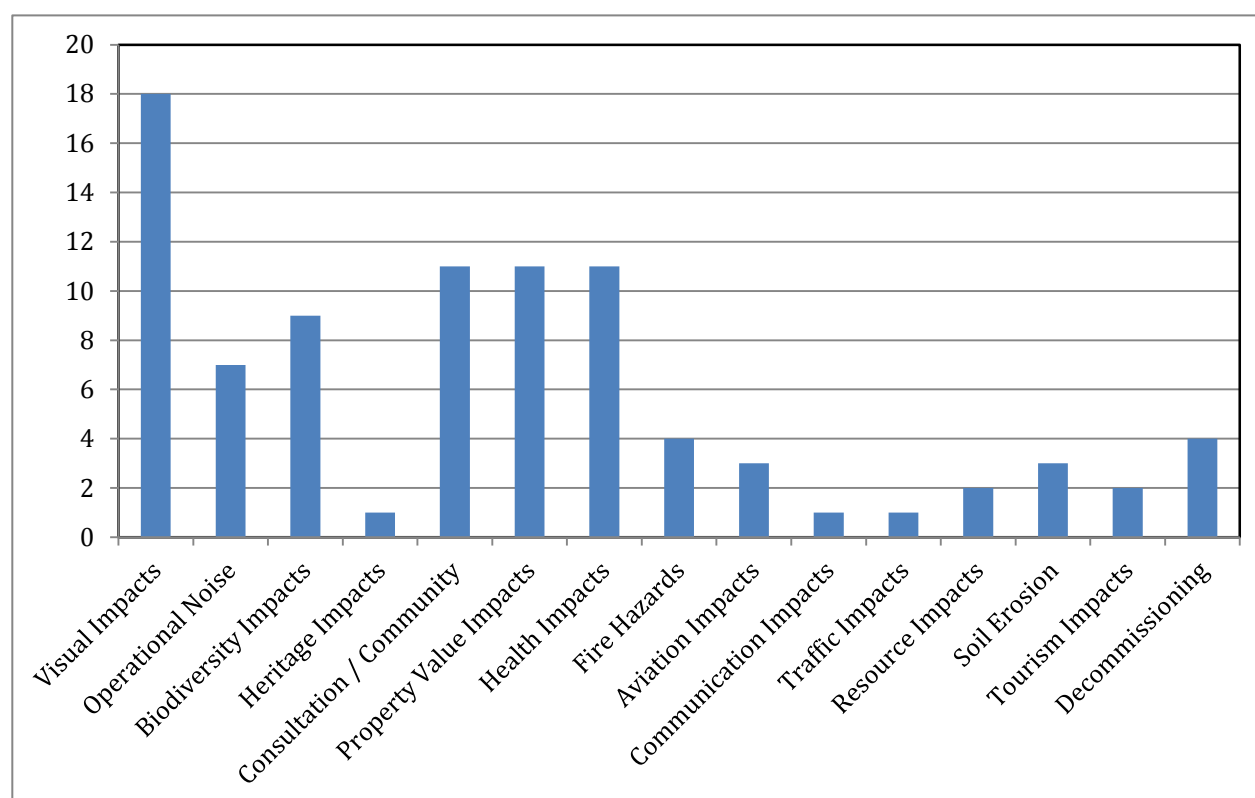


Figure 9: Key Issues Raised in Public Submissions

4.4 Public Authorities

While none of the public authorities object to the project, a number have sought additional information and clarification from Epuron during the assessment process. Following consideration of the additional information, none of the key public authorities have residual concerns with the project.

A summary of the public authority submissions is provided below and discussed, where relevant, in detail in Section 5.

Airservices Australia raised concerns regarding the potential impacts of the wind farm on the Mt Majura and Mt Bobbara radar systems that support Canberra and Albury airports. Following extensive consultation, Airservices Australia is satisfied that these risks can be appropriately managed and has provided its conditional endorsement of the project.

It provided a number of recommended conditions of approval that require the following to be undertaken prior to the commencement of construction:

- the preparation of a report on the potential impacts of the development on the operation of the Mt Majura Primary Surveillance Radar (PSR) / Secondary Surveillance Radar (SSR) and Mt Bobbara SSR radar systems;
- the preparation of a detailed management and mitigation plan to the satisfaction of Airservices Australia which outlines any measures to be undertaken to address the recommendations in the report (at Epuron's cost);
- notification of Airservices Australia, relevant aviation authorities and any operators located within 30 km of any wind turbine with the final design of the wind turbines and wind monitoring masts, with confirmation that the project complies with any Obstacle Limitation Surface (OLS) and details of obstacle lighting.

These recommendations have been incorporated in the Department's recommended conditions of consent, and Airservices Australia has advised it is satisfied with the conditions.

The **Civil Aviation Safety Authority (CASA)** listed various notification requirements for notifying aviation authorities and the operators of non-regulated aerodromes both before and after construction of the project. During the assessment process Epuron has undertaken the recommended consultation. The Department has also consulted with aviation authorities and operators of non-regulated aerodromes in the vicinity of the project, and has incorporated the various post-construction notification requirements in the recommended conditions of consent.

The **NSW Environment Protection Authority (EPA)** noted that the updated noise assessment correctly derives the applicable noise limits and predicts that the project would be able to comply with the applicable criteria apart from a minor exceedance of 0.4 dBA at one residence (C04), which it considered would be inaudible.

Accordingly, the EPA indicated its support for the project, subject to the imposition of recommended conditions relating to noise. It also advised that as wind farms are now a scheduled activity under the *Protection of the Environment Operations Act 1997*, Epuron would be required to obtain an EPL for both the construction and operational stages of the project.

The Department's recommended conditions of consent include the standard noise conditions for wind farms, which have been agreed with the EPA.

The **Office of Environment and Heritage (OEH)** noted it is satisfied with the additional information provided by Epuron, and that sufficient biodiversity offsets are available in the local area to adequately compensate for the biodiversity impacts of the project. OEH also noted that it supports the incorporation of the recommendations outlined within the Aboriginal archaeological and heritage assessments provided in the Preferred Project Report.

The Department's recommended conditions of consent require Epuron to retire biodiversity credits in accordance with the *NSW Biodiversity Offsets Policy for Major Projects* and also incorporate a number of the recommendations in regard to managing Aboriginal cultural heritage impacts.

The **Department of Primary Industries (DPI)**⁴ provided submissions on behalf of the Agriculture, Fisheries and the Water divisions of the Department of Primary Industries as well as the Department of Industry – Resources and Energy⁵. It identified a number of Crown roads within the project boundaries and advised that closure of affected segments of these roads is the preferred option. DPI Water identified a number of requirements should water be sourced from existing dams, creeks or bores and provided a number of recommended conditions of approval.

The Department's recommended conditions of consent require Epuron to ensure any Crown road reserves affected by the project are maintained for future use, and obtain the necessary water licences for the project.

The **Roads and Maritime Service (RMS)** recommended a number of conditions including the preparation of a detailed Traffic Management Plan, which if undertaken in consultation with the relevant local councils and RMS, it considered would appropriately address the issues relating to haulage of wind farm components and access points from the State road network.

These recommendations have been incorporated in the Department's recommended conditions of consent.

The **Murrumbidgee Catchment Management Authority (CMA)** provided a submission in response to the Preferred Project Report concurring that the revised project would reduce residual impacts of the development on the existing environment. It has no residual concerns with the project.

The **Department of Defence** has advised it has no residual concerns with the project.

⁴ Formerly known as NSW Trade and Investment.

⁵ Formerly known as DPI – Mineral Resources

Harden Shire Council raised concerns about:

- the proposal to access water from Burrinjuck Dam and the impacts on water availability in the area of the site should alternate sources be required;
- ensuring sufficient funds are available for the removal of turbines and rehabilitation of the site; and
- the details of the establishment and operation of the community fund, including its monetary value.

The Department's recommended conditions of consent address water supply, rehabilitation and decommissioning, and require Epuron to enter in to a voluntary planning agreement with the Councils, in accordance with the EP&A Act and the terms of the applicable offer.

Yass Valley Council recommended Epuron be required to complete a more detailed Traffic Impact Study in consultation with the relevant road authorities prior to the commencement of construction, as it is concerned that the project would have a detrimental impact on Council's road network. The Department's recommended conditions require Epuron to complete a Traffic Management Plan prior to the commencement of construction to address Council's concerns.

5. ASSESSMENT

In its assessment of the merits of the project the Department has considered the:

- EA, submissions, Preferred Project Report, and additional information provided by Epuron and public authorities;
- independent aviation and visual expert reviews commissioned by the Department;
- relevant environmental planning instruments, policies and guidelines; and
- relevant provisions of the EP&A Act, including the objects of the Act.

The Department's assessment process has also involved a number of site inspections and meetings with local landholders to discuss the project and obtain feedback regarding the key issues of concern. The following is a summary of the findings of this assessment.

5.1 Visual

Introduction

The proposal is located on elevated ridges and spans almost 25 km from east to west. The eastern and western precincts are separated by a distance of at least 6 km, with a 330 kV electricity transmission line being the only infrastructure located between these areas. The sensitivity of the landscape and the proximity of residences, and hence the nature and extent of the impacts of the project, vary considerably across the site.

Epuron has commissioned three visual impact assessments over the last 6 years:

- Landscape and Visual Impact Assessment, Environmental Resources Management Australia, July 2009;
- Supplementary Landscape and Visual Impact Assessment, Environmental Resources Management Australia, May 2014; and
- Landscape and Visual Impact Assessment, Environmental Resources Management Australia, March 2015.

A number of submissions regarding the landscape and visual impacts of the project were received from the public, expressing concern about the size and scale of the wind farm and a perceived underestimation of the visual impacts of the project in Epuron's assessment. Concerns were also expressed that there would be cumulative visual impacts due to the proximity of the project to the approved (but not yet built) Conroy's Gap Wind Farm.

In response to these concerns, the Department commissioned Richard Lamb and Associates (RLA) to undertake an independent review and verify the visual impact assessments commissioned by Epuron (see Appendix E).

Avoidance and Mitigation Measures

As discussed in Section 1, Epuron has reduced the maximum number of proposed turbines over the project's development. While this was not necessarily done for the purpose of reducing visual impact in all cases, the Department acknowledges that it would reduce visual impact on landscape values and some non-associated residences.

Epuron is also proposing to implement a range of mitigation measures to further minimise visual impacts, including:

- painting wind turbine generators off-white/grey and finishing the blades with a treatment that minimises potential for any glare or reflection;
- providing vegetation screening around substations and control buildings where they are visible from neighbouring residences;
- locating powerlines, substations and control buildings in areas which minimise the visual impact, where practical; and
- using building materials and treatments for associated infrastructure which visually complement the surrounding environment.

Importantly, Epuron has also committed to implementing appropriate visual mitigation (e.g. landscaping and screening) at any non-associated residences within 5 km of a wind turbine where an assessment shows that visual screening might improve visual amenity from the residence, and where the applicable landowner requests such mitigation.

The Department supports the proposed avoidance and mitigation measures and has recommended conditions formalising these measures.

Visual Impacts

Epuron adopted a zone of visual influence of 8.5 km to assess the visual impacts of the project in the final Preferred Project Report. Figure 10 shows the areas from which wind turbines would be visible in the surrounding area.

In addition to undertaking a quantitative analysis of visibility, a qualitative assessment of visual impact was undertaken from 77 viewpoints, including 34 public viewpoints, 14 sequential and cumulative viewpoints and 29 residential viewpoints. Of the 77 viewpoints, photomontages have been prepared for 42 locations to demonstrate the scale and impact of the development.

The Department, with the assistance of RLA, has undertaken an assessment of the visual impact of wind turbines on the key non-associated residences that could be impacted by the project. The outcome of this assessment is summarised in Tables 4 and 5.

Table 4: Visual Impact assessment - Marilba and Conroy's Gap Extension Precincts

Residence	Distance to closest turbine	Closest turbine	Level of impact
C25*	2.30 km	88	Low/Moderate
C26*	2.10 km	111	Low/Moderate
C27	0.92 km	111	High
C67	3.30 km	76	Moderate
C68	1.35 km	111	High
G11	1.70 km	143	High
G14	1.41 km	136	High
G15*	1.50 km	83	High
G16	2.64 km	92	Low/Moderate
G29	4.48 km	145	Low/Moderate
G31*	1.42 km	84	High
G41	3.56 km	144	Moderate
M8	2.30 km	104	High
M13*	4.46 km	84	Low
M20	1.88 km	100	High
M24	1.89 km	100	High
M32*	3.15 km	84	Low/Moderate
M42	1.48 km	114	High
M48*	1.90 km	83	High

Note: *Whilst assessed as non-associated residences, these properties have project-related infrastructure on them, and will therefore require an agreement with Epuron prior to construction of the infrastructure.

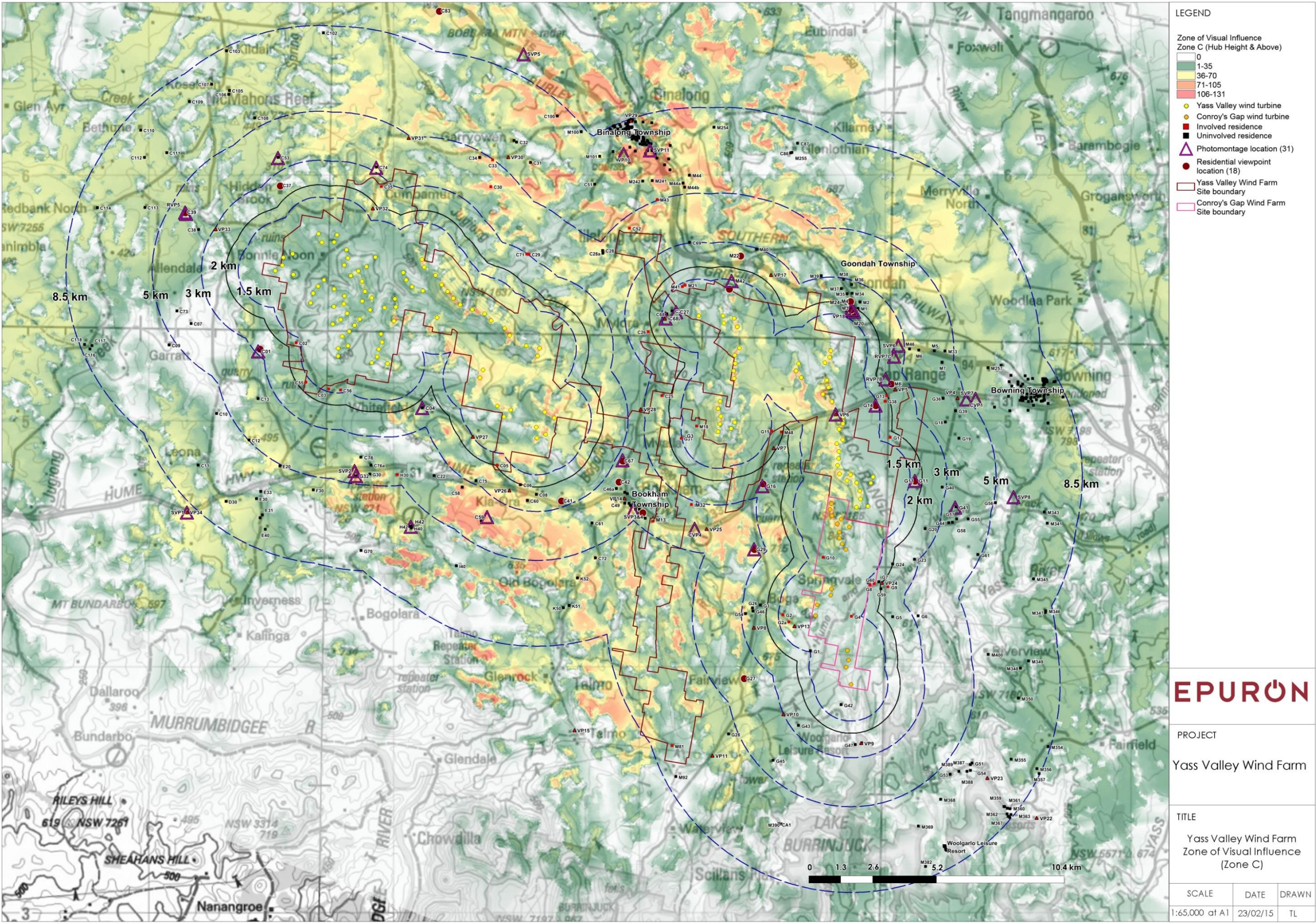


Figure 10: Zone of Visual Influence

The Department's assessment found that 11 non-associated residences located near the Marilba and Conroy's Gap Extension precincts have the potential to be highly visually impacted by the project (denoted by grey highlight in Table 4). Of these, 10 residences (C27, C68, G11, G14, G15, G31, M20, M24, M42, M48) are located within 2 km from the nearest turbine (denoted by grey highlight in Table 4). The remaining residence, M8, is located 2.30 km from the nearest turbine, but a large number of wind turbines would be visible from the residence.

Table 5: Visual Impact Assessment – Coppabella Precinct

Residence	Distance to closest turbine	Closest turbine	Level of impact
C01	2.73 km	63	Low
C04	2.28 km	50	Low/Moderate
C06	2.03 km	77	Moderate
C07	4.00 km	69	Low
C08	2.20 km	77	Low
C09	5.30 km	69	Low
C13	3.70 km	41	Low/Moderate
C37	2.50 km	126	Low
C38	3.50 km	69	Low
C39	4.38 km	69	Low/Moderate
C41	2.69 km	77	Low/Moderate
C53	3.54 km	126	Moderate
C60	2.55 km	77	Low
C73	4.30 km	69	Low
C74	3.21 km	129	Moderate
C75	3.02 km	79	Low/Moderate
C76	3.87 km	47	Low
C76a	4.15 km	47	Low
G32	4.64 km	47	Low
H40	5.90 km	79	Low
H42	5.83 km	79	Low

The highly affected residences are shown on Figure 8 (denoted by triangles). Figure 11 to 14 provide examples of the predicted views of the project looking to the Marilba precinct and Conroy's Gap Extension precinct in the eastern portion of the site (see Figure 10 for residence locations).

As indicated, the highly affected residences are all located in proximity to the Marilba and/or Conroy's Gap Extension precincts of the wind farm. No residences are predicted to experience high visual impacts to the west of the site in proximity of the Coppabella precinct.

The Department acknowledges that Epuron has already modified the project to reduce the visual impacts, particularly for residents along Illalong Road by removing 5 turbines (i.e. Turbine Nos. 107, 108, 109, 115 and 122). The Department also acknowledges that there are limited options available to Epuron to further reduce the visual impacts of the project through at-source mitigation alone, particularly given the scale and elevated position of the wind turbines in the landscape.

The Department considers that for the 11 highly visually impacted residences (C27, C68, G11, G14, G15, G31, M8, M20, M24, M42, M48), these mitigation measures would not adequately reduce the residual visual impacts to acceptable levels, taking into consideration the proximity to the nearest wind turbine, the relative height of the wind turbines and the degree of visual horizon that would likely be affected. This conclusion is supported by the independent review commissioned by the Department.

The Department also considers that cumulative visual impacts are an issue in the eastern portion of the site with the proximity of the approved (but not yet built) Conroy's Gap Wind Farm. Many of the residences predicted to experience high visual impacts as a result of the project would also be able to see the Conroy's Gap turbines once they are constructed.

In contrast, the residual impacts of the turbines in the Coppabella precinct would be comparatively low with no non-associated residences predicted to experience high visual impacts. The Department considers that the impacts to the west of the site can be managed to achieve acceptable environmental and amenity outcomes for the local community as discussed below.



Figure 11: Viewpoint C27 Photomontage, 0.92 km from the Nearest Wind Turbine No. 111



Figure 12: Viewpoint G31 Photomontage, 1.42 km from the Nearest Wind Turbine No. 84



Figure 13: Viewpoint M42 Photomontage, 1.48 km from the Nearest Wind Turbine No. 114



Figure 14: Viewpoint RVP7B/M8 Photomontage, 2.35 km from the Nearest Wind Turbine No. 104

Based on the visual assessment, and given the number of affected receivers and the number of wind turbines that would result in high visual impacts, the Department believes that the Marilba precinct and Conroy's Gap Extension precinct of the project should not be approved.

This key recommendation would significantly reduce the visual impacts of the project, resulting in only 4 non-associated residences having moderate visual impacts.

To mitigate the residual visual impacts of the Coppabella precinct, the Department has recommended conditions requiring Epuron to offer additional visual impact mitigation measures to the owners of these properties.

The Department has also recommended conditions requiring Epuron to undertake additional visual mitigation (upon request) at any residence within 5 km of the nearest wind turbine that would have significant direct views of the wind turbines at some stage during the development.

The Department considers that this, together with the Department's other recommended conditions (including minimising reflective surfaces), would adequately address the residual visual impacts from the project for residences within 5 km of the wind farm.

For residences located beyond 5 km from the nearest turbine, the Department is satisfied that it is unlikely that the wind turbines would dominate the landscape and/or have significant visual impacts.

With respect to road users, the Department notes that the Hume Highway and Burley Griffin Way are the only major roads near the project site with high volumes of traffic, and that any views of the project would be fleeting. Motorists on local unsealed roads, including Illalong Road, may experience views of the Coppabella precinct where open views exist. However, given the largely transient nature of views from moving vehicles and the low traffic volumes on these roads, potential impacts on road users would not be significant.

Ancillary Infrastructure

The Department has also undertaken an assessment of the visual impact associated with the 132 kV and 330 kV power line connections, substations and switchyards. Potential views of the project ancillary infrastructure would be limited to road users and a small number of rural residences, mostly on either side of the proposed electricity transmission lines.

The proposed 330 kV overhead power line traverses the valley in which Illalong Road is located and a proposed substation is located adjacent to the road near its southern end. While the Department is satisfied that the 330 kV overhead power line is unlikely to result in significant visual impacts, the Department has recommended the 330 kV Connection precinct not be approved, as the Coppabella precinct has the ability to connect to the existing transmission network via the proposed 132 kV transmission line to the north of the site.

While the remaining 132 kV power line connections, substations and switchyards in the Coppabella precinct would be visible to a limited number of non-associated residences and road users, they are unlikely to have a significant visual impact given there are existing transmission lines and agricultural infrastructure in the area, the limited size of the infrastructure and the relatively low visual sensitivity attributed to the existing land use.

With Epuron's proposed landscape treatments and selection of ancillary infrastructure components with low visual contrast, the Department is satisfied the visual impact of the project's ancillary infrastructure associated with the Coppabella precinct is likely to be low to negligible.

Other Visual Effects - Shadow Flicker and Blade Glint

Shadow flicker occurs when rotating blades momentarily block the sun's path. Epuron conducted a shadow flicker assessment having regard to the *Policy and Planning Guidelines for the Development of Wind Energy Facilities in Victoria* (Department of Planning and Community Development, July 2012), which recommends a maximum shadow flicker duration of 30 hours per year.

Epuron's assessment concluded that no non-associated residences would experience over 30 hours of shadow flicker per year. The Department has incorporated this limit in the recommended conditions.

Blade glint (reflection of sunlight off the turbine) could also have temporary effects at a given location, depending on the orientation of the blades and nacelle in relation to the sun. While there are no guidelines for blade glint, the 2012 Victorian guidelines recommend that blades are finished with a surface treatment of low reflectivity to ensure that glint is minimised.

The Department is satisfied that blade glint could be effectively managed through appropriate turbine treatments, such as the use of low sheen and matte finishes, to ensure negligible impacts.

Obstacle Lighting

Under the *National Airports Safeguarding Framework, Guideline D – Managing the Risk to Aviation Safety of Wind Turbine Installations (Wind Farms) / Wind Monitoring Towers*, National Airports Safeguarding Advisory Group (NASAG), 2012 (NASAG guidelines) CASA is required to be notified if a proposed wind turbine or wind monitoring tower is greater than 150 m in height or infringes on the Obstacle Limitation Surfaces of an aerodrome. CASA may determine, and subsequently advise a proponent and relevant planning authorities, whether obstacle lighting is required.

If such lighting is required, the guidelines recommend that to minimise visual impacts “*obstacle lights may be partially shielded, provided it does not compromise their operational effectiveness. Where obstacle lighting is provided, lights should operate at night, and at times of reduced visibility. All obstacle lights on a wind farm should be turned on simultaneously and off simultaneously.*”

Epuron is not proposing to install obstacle lighting, noting that most wind farms in Australia do not have obstacle lighting in order to reduce visual impacts. At this stage, CASA has not determined that such lighting is required. However, if obstacle lighting is required, Epuron has committed to ensuring such lighting is installed generally in accordance with the CASA advisory.

The Department is satisfied that any obstacle lighting, if required, is unlikely to result in any significant increase in visual impacts beyond those already assessed for the project

Notwithstanding, the Department has recommended conditions requiring Epuron to consult with CASA about this matter and ensure that any lighting is installed in accordance with CASA requirements and in a manner that minimises any adverse visual impacts on local residents.

Conclusion

The Department acknowledges that the project would change the visual landscape of the locality and that there would be some residual visual impacts to residences in areas where the topography, lack of intervening vegetation and relatively exposed views towards the ridgelines would increase the overall visibility of the project.

The intensity of visual impacts on 11 residences in the eastern part of the site, combined with the cumulative impacts of the Conroy's Gap Wind Farm, would effectively transform the current rural character of the landscape in the locality of the Marilba and Conroy's Gap Extension precincts. Accordingly, the Department considers that in the absence of agreements with the 11 most affected landowners, this draws into question the suitability of the eastern portion of the site for a wind farm of this scale.

As the remaining Coppabella precinct has the ability to directly connect to the electricity network via the northern 132 kV transmission line, the Department has also recommended the 330 kV Connection precinct not be approved.

With the removal of the Marilba and Conroy's Gap Extension precincts, the Department is satisfied that the overall level of visual impact of the remaining Coppabella precinct on the surrounding residences and communities is not significant, as it would be limited by the undulating and intervening topography, relatively low sensitivity of the existing rural landscape, and the distance to non-associated residences.

To minimise and manage other visual and lighting impacts as far as practicable, the Department has recommended conditions requiring Epuron to:

- implement visual impact mitigation measures, such as landscaping treatments or vegetation screens, at visual receptors within 5 km of the nearest wind turbine with significant direct views of the wind turbines;
- implement all reasonable and feasible measures to minimise the impacts of the visual appearance of the development;
- implement all reasonable and feasible measures to minimise the off-site lighting impacts of the development; and
- ensure that shadow flicker associated with wind turbines does not exceed 30 hours per annum at any non-associated residence.

Given that the Department has recommended that the Marilba and Conroy's Gap Extension precinct should not be approved, the remainder of the assessment report focuses on the Coppabella precinct and associated impacts (see Figure 15).

5.2 Noise

Introduction

Epuron commissioned a number of noise impact assessments during the assessment of the project. The EA includes:

- Marilba Hills Noise Impact Assessment, Marshall Day Acoustics, April 2009; and
- Coppabella Hills Noise Impact Assessment, Marshall Day Acoustics, September 2009.

A number of public submissions raised concerns about potential adverse noise impacts from the project. In consideration of these concerns, and at the request of the Department, Epuron undertook additional analysis including:

- Addendum Noise Impact Assessment, Marshall Day Acoustics, April 2014; and
- Yass Valley Wind Farm – Noise Assessment, Revised Layout and Landowner Status, March 2015.

The Department and the NSW EPA are satisfied that the noise impact assessments have been undertaken in accordance with the applicable guidelines, in particular the South Australian EPA's *Environmental Noise Guidelines – Wind Farms (2009)* and *Draft NSW Wind Farm Planning Guidelines (2011)*.

Wind Turbines

Noise monitoring was undertaken from 5 August to 28 August 2008 at 7 locations in proximity to the Coppabella precinct to determine background noise levels. The monitoring results were used to assign background noise levels for all receivers within 5 km of a proposed turbine. Background noise levels were found to be relatively quiet, as expected for receivers in a rural environment isolated from other extraneous noise sources (e.g. traffic noise).

The noise assessment modelled two turbine models, the Vestas V90 3 MW model, to provide a worst-case scenario noise impact, and the Repower MM92 2.05 MW model, to provide a representative noise impact. Both models were modelled with an 80 m hub height.

The predicted noise levels were found to comply with the applicable criteria at all non-associated residences across the range of assessable wind speeds for the Repower MM92 candidate turbine. With the exception of two integer wind speeds at residence location C04, the predicted noise levels of the Vestas V90 also comply with the applicable criteria at all other non-associated residences, including those residence associated with properties 13, 14, 18, 20, 23, 24 and 25 whose agreements are still outstanding. At residence C04, the applicable criteria would be exceeded marginally by up to 0.4 dB(A). The NSW EPA considers this minor exceedance to be inaudible.

The Department notes that the final noise assessment predictions, and ultimately the noise generated by the project, would be subject to the final turbine selection and layout. Should Epuron select more efficient wind turbines than those modelled in the EA, this would further reduce the noise levels generated by the wind turbines.

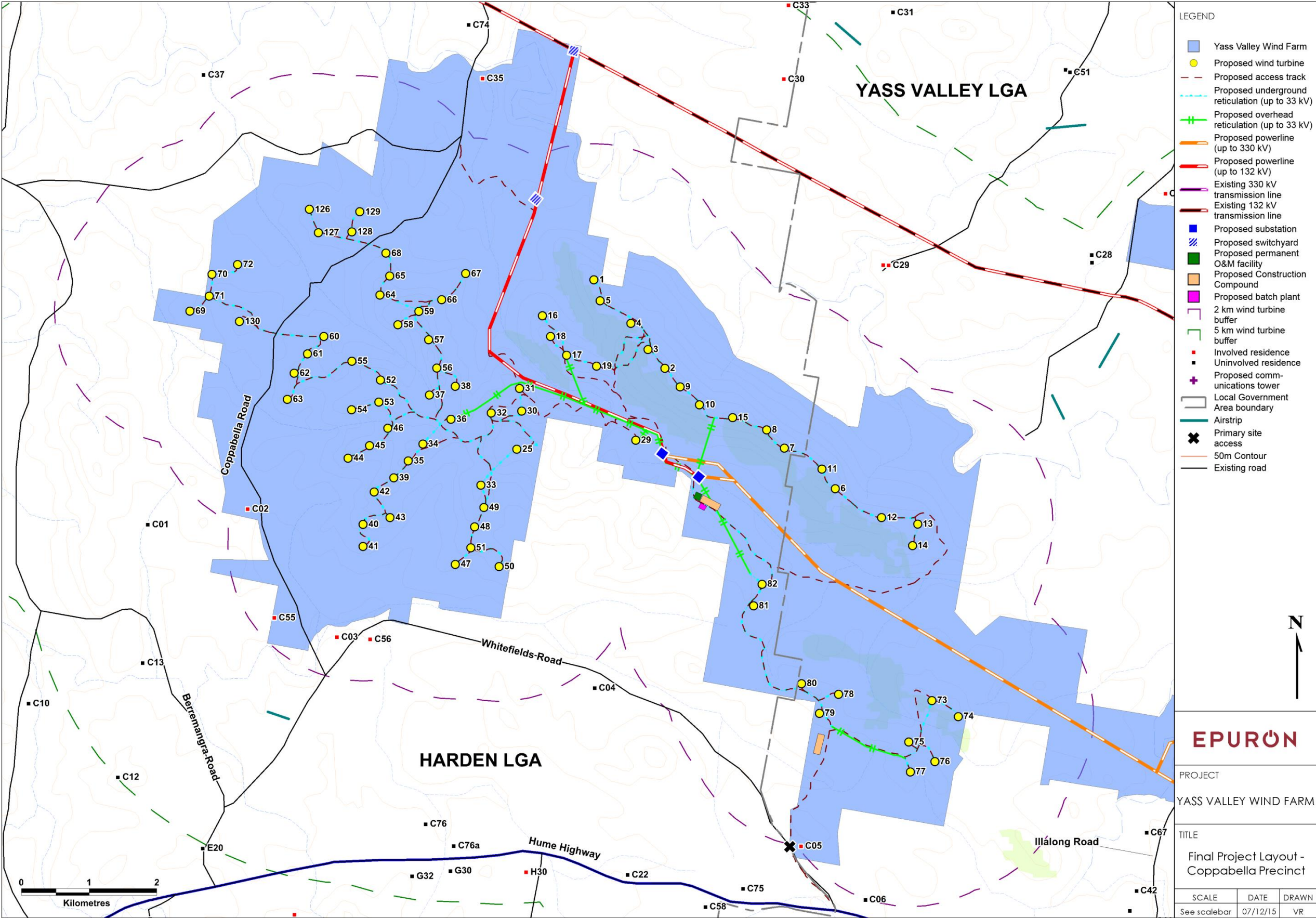


Figure 15: Coppabella Precinct Layout Plan

Epuron has proposed to verify the EA noise assessment predictions following selection of the final wind turbine model and layout design, and has committed to mitigation strategies to reduce the wind farm operational noise levels including:

- implementing noise reduction management strategies for turbines nearer to the residence location (i.e. switching off selected turbines for certain weather conditions, operating turbines in reduced noise modes); and
- including a sound power level performance requirement in the procurement contract to ensure that predicted noise levels are able to satisfy relevant noise limits at all applicable residences.

The Department is satisfied that the noise generated by the project is able to comfortably comply with the applicable noise criteria (provided that the Vestas V90 turbine model is not used on the site), and is unlikely to result in any significant noise impacts.

In order to protect the amenity of surrounding residents, the Department has recommended conditions requiring Epuron to:

- not use the Vestas V90 turbine model unless it can demonstrate that this model would meet the applicable noise criteria;
- comply with noise limits at non-associated residences surrounding the project for noise generated by the operation of both the wind turbines and ancillary infrastructure;
- comply with a range of standard noise conditions, including implementing all reasonable and feasible measures to minimise the noise impacts of the project; and
- undertake noise monitoring following commencement of operation of the wind turbines to determine compliance with the noise limits.

Low Frequency Noise

Potential health impacts from low frequency noise and infrasound (noise in the frequency range below 20 Hz, below human detection) were identified as concerns in a number of community submissions.

The noise assessments indicate that the aerodynamic noise from a wind turbine is not dominant in the low frequency range and is generally in the mid-frequency (200 Hz to 1,000 Hz).

With respect to low frequency noise, the *Draft NSW Wind Farm Planning Guidelines* require that if the C-weighted noise (measured from 20Hz upwards) from a wind farm is repeatedly greater than 65dB(C) during the daytime or 60dB(C) during the night time then a more detailed low frequency noise assessment should be undertaken.

The noise assessments indicate that low frequency noise would be no greater than the levels considered acceptable in the *Draft NSW Wind Farm Planning Guidelines* for the Repower MM92 candidate turbine model. However, the night-time low frequency noise levels would be marginally exceeded by 1 dB(C) at 2 non-associated residences (C01, C04) in the Coppabella precinct for the Vestas V90 turbine model.

Provided that the Vestas V90 model is not used on site, the Department is satisfied that the project would not result in the generation of excessive levels of low frequency noise or infrasound. Therefore, the risk of any health or other impacts is considered negligible.

Notwithstanding, to ensure that surrounding residents are protected from any potential impact from low frequency noise, the Department has recommended conditions such that if the presence of excessive low frequency noise from the wind farm is repeatedly greater than 65 dB(C) during the daytime or 60 dB(C) during the night time (for more than 10% of the assessment period) at any relevant receiver, a 5 dB(A) penalty would be added to the measured noise level for the project. Epuron would be required to undertake noise monitoring following the commencement of operations of wind turbines to determine if excessive low frequency noise is present.

Similarly, while tonality is not a feature of modern turbine designs, the Department has recommended conditions and associated penalties that are to be applied to the project if tonality is found to be excessive during noise monitoring.

In regard to infrasound, the Department acknowledges the community's concern regarding potential health effects from wind farms. However, the Department is guided by the literature reviews undertaken by the National Health and Medical Research Council (NHMRC) that uses a robust evidence-based approach, supported by NSW Health, regarding human health effects from wind farms.

The recently released NHMRC statement on wind farms and human health confirms that *'there is currently no consistent evidence that wind farms cause adverse health outcomes in humans'*, but acknowledges that the direct evidence on health effects is of poor quality. The statement also suggested that further health based studies should be limited to exposures in close proximity to wind farms (i.e. less than 1.5 km).

The Department notes that Epuron does not propose to construct any turbines in the Coppabella precinct closer than 2.03 km from non-associated residences.

Given the above, the Department is satisfied that the project would comply with applicable criteria, and that any exposure to low frequency noise, infrasound and tonality would be negligible. Consequently, there is minimal risk of any residual health effects from the project.

Ancillary Infrastructure

The noise assessments also considered potential noise generation from the proposed substations. The predicted levels indicate that the noise generated by the substations would be below the *NSW Industrial Noise Policy* intrusiveness criteria at all non-associated residences, and would most likely be inaudible at all times.

Corona (conductor induced noise under wet conditions) and aeolian noise (vortex shedding from the lines under specific wind conditions) are typically only associated with transmission lines rated 345 kV and above, which is higher than that proposed for the project. The closest non-associated residence would also be located more than 1.5 km from the proposed 132 kV transmission line in the Coppabella precinct. Notwithstanding, the Department has recommended conditions requiring the Epuron to ensure that the noise generated by the operation of ancillary infrastructure does not exceed 35 dB(A) LAeq(15 minute) at any non-associated residence.

Construction Noise and Vibration

The noise assessment indicates that construction noise associated with the project would be below the 'highly noise affected' criterion (ie. 75 dBA) in the EPA's *Interim Construction Noise Guideline* for all non-associated residences for construction works during standard hours (ie. 7 am to 6 pm Monday to Friday, and 8 am to 1 pm Saturday).

A small number of non-associated residences may be subject to temporary noise above the 'noise affected criterion' (ie. 40 dBA) for some construction activities during the day, but these exceedances would not be significant (ie. up to 5 dBA above the criteria).

Epuron is proposing to implement a number of standard measures to minimise construction noise from the project (including fixed noise sources such as the rock crushing and concrete batching plants), which may include construction of temporary acoustic barriers and use of proprietary enclosures around machines. One construction compound is proposed in the Coppabella precinct, with a concrete batching plant (see Figure 15). The compound is located approximately 3 km from the nearest residence.

The Department accepts that the proposed construction activities are unlikely to result in significant adverse impacts during daytime hours and consequently has recommended conditions restricting work to standard construction hours (ie. 7 am to 6 pm Monday to Friday, and 8 am to 1 pm Saturday) with no work on Sundays or NSW public holidays.

However, the Department acknowledges that there may be some instances where construction activities may be required to be undertaken outside of these hours (such as emergency works or other works that are inaudible at any non-associated residence) and has recommended conditions allowing for these activities to be undertaken in accordance with these pre-conditions.

The noise assessments also considered vibration impacts from construction with reference to *Assessing Vibration: A Technical Guideline* (DECC, 2006). The assessments found that the vibration levels for typical construction and demolition plant would comply with building conservation and human exposure to vibration limits at the nearest associated residence, which is located 700 m away from construction activities.

Notwithstanding, the Department has recommended conditions requiring Epuron to implement best management practice to minimise construction noise and vibration generated by the project.

Traffic Noise

Potential traffic noise impacts from increased project-related traffic were assessed against the *Environmental Criteria for Road Traffic Noise*⁶.

Both the Department and the EPA consider that any traffic noise impacts would be generally limited to the construction period. The predicted construction traffic noise levels indicate that at some residences the increase in traffic noise above existing background levels is greater than 2 dB. However, the predicted levels would comply with the criteria at all receivers.

In accordance with the general principles of dealing with temporary construction noise impacts, Epuron proposes to apply a range of mitigation measures to reduce construction-related traffic noise including scheduling of construction traffic deliveries, vehicle maintenance, restricting construction traffic to daytime operation hours, and notification of local residences in the event of night-time deliveries.

The Department is satisfied that Epuron's proposed mitigation measures would be adequate to minimise traffic noise impacts from the project. Notwithstanding, the Department has recommended conditions requiring Epuron to implement best management practice to minimise road traffic noise generated by the project.

5.3 Aviation

Introduction

Epuron has undertaken a number of aviation assessments to date. These include:

- Telecommunications and Aviation Navigation Services Assessment - Coppabella Hills Precinct, Epuron Projects Pty Ltd, May 2009;
- Telecommunications and Aviation Navigation Services Assessment - Marilba Hills Precinct, Epuron Projects Pty Ltd, May 2009;
- Preliminary Draft Report, Aeronautical Impact Assessment, Obstacle Lighting Review and Qualitative Risk Assessment, Ambidji Group Pty Ltd, 25 November 2010;
- Electro-Magnetic Compatibility (EMC) Study to evaluate the effect of the planned Yass Valley Wind Farm, NSW, on the Mt Bobbara Secondary Surveillance Radar (SSR) Air Traffic Control (ATC) radar and Mt Majura Primary Surveillance Radar (PSR)/SSR ATC Radar, Rev 1.1, Ingegneria Dei Sistemi (IDS) Australasia, 24 November 2011;
- Yass Valley Wind Farm: Aviation Impact Assessment, Osprey Consulting Services Ltd, 7 August 2013;
- Preliminary Draft Report Supplement, Aeronautical Impact Assessment and Qualitative Risk Assessment, Proposed Wind Farm Development at Yass Valley, New South Wales, Ambidji Group Pty Ltd, 19 May 2015; and
- Final Report, Yass Valley Wind Farm Radar Review Assessment, Ambidji Group Pty Ltd, 16 June 2015.

A number of submissions regarding the aviation impacts of the project have been received from Airservices Australia, CASA and the Department of Defence throughout the assessment process. These concerns particularly relate to the potential impacts on the operation of the Mt Majura radar and Mt Bobbara radars that support Canberra and Albury airports. The Mt Majura radar is located approximately 65 km south-east of the Conroy's Gap Extension precinct and the Mt Bobbara radar is located approximately 10 km north of the Coppabella precinct.

The Department commissioned an independent peer review by The Airport Group in September 2014 to review Epuron's assessments and undertake consultation on aviation matters with airstrip owners in the vicinity of the project site. The Airport Group's independent review is attached in Appendix F.

Aircraft Landing Areas

There are 23 airstrips located in the vicinity of the project site. Of these, 4 are no longer in use. The nearest airstrip to the Coppabella precinct in use is owned by non-associated residence (C61) and is located 2.5 km from the nearest wind turbine (Turbine No. 77) and 3.5 km from the nearest wind turbine that is in line with the take-off/landing direction (Turbine No. 79).

⁶ This policy has since been replaced by the NSW Road Noise Policy.

Both Epuron and the Department's consultant, The Airport Group, contacted the operators of the airstrips within the vicinity of the project to inform their aviation assessments.

Epuron's aviation assessments determined that the project risk is low to low/medium with respect to approved low flying operations for aerial applications, emergency service activity and firefighting activity. Given the airstrips are located at least 2 km from the nearest wind turbines, there is unlikely to be any material impact on the ability of local pilots to safely operate wind aircraft and carry out normal operations from any of the airstrips in the vicinity of the project.

The Department's independent peer review agreed the wind farm is not predicted to result in the low flying operations becoming unsafe provided pre-planning is undertaken in respect of aerial applications, the pilots are experienced operators, and the location of the wind farm is depicted in the relevant aeronautical publications.

All other aviation operations, including aerial bushfire fighting and military low flying operations, have been assessed as low risk. Both the Rural Fire Service and the Department of Defence agree with these conclusions, respectively, and have advised they have no concerns with the project.

The aviation assessments consider that the level of assessed risk does not trigger the requirement for installing obstacle lighting, and CASA has not required that such lighting be installed. Notwithstanding, the Department has recommended conditions requiring obstacle lighting be installed if CASA advises that lighting is required.

Radar Systems

With regard to the Mt Bobbara radar and Mt Majura radar, the aviation assessments determined that wind turbine echoes would be present around the wind farm. The large amount of energy reflected back by the wind turbines could cause radar desensitisation in the range-azimuth cell where the wind turbines are present and in some adjacent cells.

62 wind turbines in the Coppabella precinct would be visible by the Mt Bobbara radar. However, the assessments considered the radar shadowing effect due to the wind farm would be negligible, because the shadowing area is small and localised around each wind turbine and the maximum shadowing altitude is 827 m, which is lower than Canberra airport's class C lower altitude.

53 wind turbines in the Coppabella precinct would be visible by the Mt Majura radar. The aviation assessments consider that based on their preliminary analysis, the proposal has the potential to impact the Mt Majura radar by creating false targets. The assessments conclude that tuning works would adequately result in an acceptable performance outcome to meet the Mt Majura radar system requirements. The software based detection and filtering actions would not involve major hardware infrastructure changes or additions of new radars.

Airservices Australia, the operator of the radar systems, raised concerns about the potential for the wind farm to affect the operability of the radars because of the potential for false targets to be created, and for some time has recommended that Epuron be required to undertake a full aeronautical assessment in accordance with the EUROCONTROL *Guidelines on How to Assess the Potential Impact of Wind Turbines on Surveillance Sensors (2014)*.

Following extensive consultation between Airservices Australia and Epuron, Airservices Australia accepts that any impacts to the radar systems can be managed. However, this position is subject to a number of recommended conditions, including requirements of Epuron to:

- undertake a full aeronautical assessment in accordance with the EUROCONTROL guidelines prior to construction; and
- prepare and implement (at its cost) a management and mitigation plan to address the findings of the aeronautical assessment (including any modifications to the radar systems).

The Department agrees, and has recommended conditions consistent with Airservices Australia's recommendations.

The Department has also recommended conditions requiring Epuron to notify Airservices Australia, CASA and the Royal Australian Air Force – Aeronautical Information Services of the final design of the wind turbines and wind monitoring masts. This notification would also confirm that the project complies with any Obstacle Limitation Surface (OLS) and provide details of obstacle lighting.

Conclusion

To manage residual risks to aviation, the Department has recommended conditions requiring Epuron to:

- undertake a full aeronautical assessment in accordance with the EUROCONTROL guidelines prior to construction;
- manage any impacts to radar systems through the implementation of an Aviation Impact Management Plan;
- be liable for any costs associated with implanting the Aviation Impact Management Plan; and
- notify the relevant aviation authorities of the final design of the wind turbines and wind monitoring masts.

Subject to these conditions, the Department considers that the project would not result in unacceptable impacts on private airstrips surrounding the project, and Airservices Australia has confirmed that any risks to the integrity of the operation of the Mt Majura radar and Mt Bobbara radars can be managed.

5.4 Biodiversity

Introduction

Since lodgement of the project application, Epuron has undertaken a number of ecological assessments to assess the project's biodiversity impacts, including:

- Biodiversity Assessment, Coppabella Hills Precinct, NGH Environmental, July 2009;
- Biodiversity Assessment, Marilba Hills Precinct (including the Conroy's Gap Extension precinct), NGH Environmental, July 2009;
- Supplementary Ecology Report, NGH Environmental, November 2012; and
- Biodiversity Risks, Impacts & Offsets Assessment, NGH Environmental, March 2015.

Epuron has also undertaken targeted surveys and/or assessments for the Yass Daisy, Squirrel Glider, Barking Owl, Bush Stone Curlew, Golden Sun Moth, Superb Parrot flight paths and hollow-bearing trees, and has undertaken field validation of treeless pasture for Box Gum Woodland EEC.

During the assessment of this project, the NSW Government's policies in relation to biodiversity impact assessment and offsetting have changed. This includes changes to the classification of native vegetation condition and the introduction of new procedures. Epuron's most recent assessment reflects these changes and the offset credit requirement has been calculated in accordance with the *NSW Biodiversity Offsets Policy for Major Projects* using the *Framework for Biodiversity Assessment* credit calculator.

Avoidance and Mitigation

The ecological assessments are based on a number of measures to avoid and/or mitigate impacts, including:

- designing the project to avoid disturbance of EECs, threatened species and woodland areas as far as practicable;
- committing to undertaking micro-siting of wind turbines during the detailed design stage of the project to further avoid impacts on ecological resources and ecologically sensitive areas (including ensuring that the revised location of the turbine is at least 50 metres from existing hollow-bearing trees) as far as practicable; and
- locating ancillary infrastructure outside of ecologically sensitive areas where practicable.

Vegetation Community Impacts

The Coppabella precinct of the project would disturb (clear) up to 83 ha of native vegetation, much of which comprises Box Gum Woodland EEC and its derived grassland. Figure 16 provides a map of the vegetation type and condition across the whole project site. Although the Department has recommended that only the Coppabella precinct proceed, Table 6 provides a summary of the impacts on vegetation communities for the entire project.

Table 6: Native vegetation community impacts by precinct (ha)

Vegetation type	Conservation Significance ⁷		Coppabella precinct	Marilba precinct*	Conroy's Gap Extension precinct*	330kV Connection precinct*	Total*
	TSC Act ⁸	EPBC Act ⁹					
Aquatic	-	-	0	0	0.1	0	0.1
Box Gum Woodland	EEC	CEEC	11.2	19.4	13.6	33.7	77.9
Box Gum Woodland Derived Grassland	EEC	CEEC	56.1	18.9	11.1	36.6	122.7
Broad-leaved Peppermint Dry Grass Forest	-	-	0	0	0.2	0	0.2
Exotic dominated pasture	-	-	14.7	5.3	2.2	0.8	22.9
Long-leaved Box Dry Grass Forest	-	-	0.9	0.2	0.4	0	1.5
River Red Gum and Riparian	-	-	0.1	0	0	0.9	1.0
Total EEC			67.3	38.3	24.7	70.3	200.6
Total			83.0	43.7	27.6	72.1	226.4

*As outlined above, the Department has recommended that only the Coppabella precinct be approved.

Of the predicted impact of the Coppabella precinct, 67.3 ha (81.8%) is Box Gum Woodland EEC, ranging between poor and good condition and including Box Gum Woodland derived grassland areas. The 67.3 ha includes the Box Gum Woodland EEC that would be required to be cleared to upgrade Whitefields Road as the primary site access route to the precinct. An additional 1 ha of Box Gum Woodland would also be impacted by the access track that traverses the 330 kV Connection precinct. This results in a total impact of 68.3 ha.

Flora Impacts

The assessments identified 7 threatened flora species known to occur or assumed to occur on the whole project site. These species and their conservation significance are listed in Table 7.

Table 7: Threatened flora species known or assumed to occur on the project site

Species	Conservation Significance	
	TSC Act	EPBC Act
Dwarf Bush-pea (<i>Pultenaea humilis</i>)	Vulnerable	-
Silky Swainson-pea (<i>Swainsona sericea</i>)	Vulnerable	-
Small Scurf-pea (<i>Cullen parvum</i>)	Endangered	-
Yass Daisy (<i>Ammobium craspedioides</i>)	Vulnerable	Vulnerable
Burrinjuck Spider Orchid (<i>Caladenia</i> sp Burrinjuck)	Endangered	Vulnerable
Austral Toadflax (<i>Thesium australe</i>)	Vulnerable	Vulnerable
Tarengo Leek Orchid (<i>Prasophyllum petilum</i>)	Endangered	Endangered

Targeted surveys were undertaken as part of the ecological assessments to confirm the threatened flora species present in the project site. The surveys identified only one threatened flora species in the study area, the Yass Daisy. The Yass Daisy was found within two broad locations in the Coppabella precinct, neither of which would be impacted by the project.

The ecological assessments include tests of significance for all of the species listed in Table 7, as well as the Box Gum Woodland EEC, against the criteria in Section 5A of the EP&A Act and the NSW *Threatened Species Assessment Guidelines: The Assessment of Significance*. The tests of significance concluded that the project is unlikely to result in any significant impacts on the abundance, range and distribution of the EEC and species (even with the inclusion of the Marilba, Conroy's Gap Extension and 330 kV Connection precincts).

⁷ EEC – Endangered Ecological Community; CEEC – Critically Endangered Ecological Community

⁸ TSC Act – NSW Threatened Species Conservation Act 1995

⁹ EPBC Act – Commonwealth Environment Protection Biodiversity Conservation Act 1999

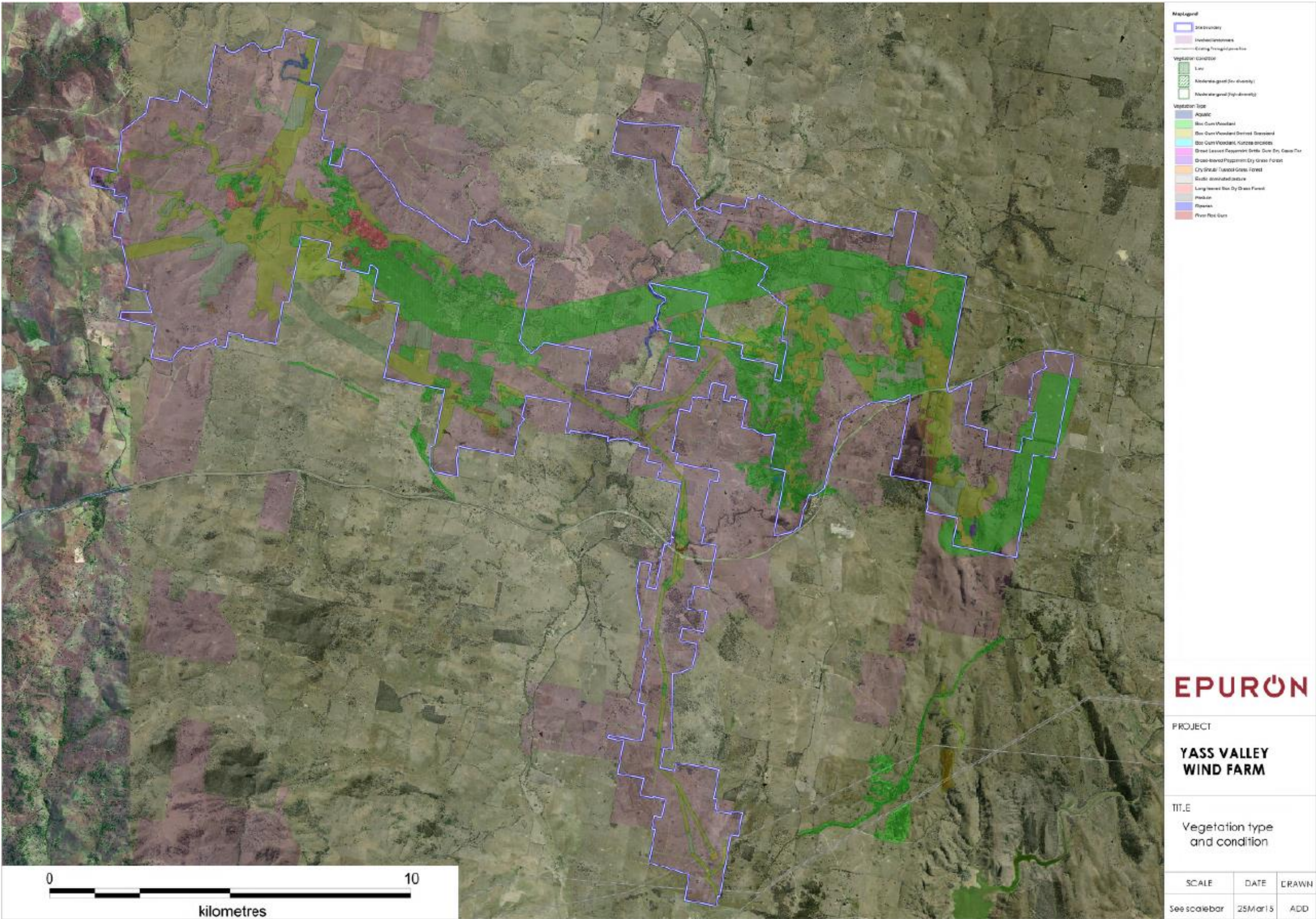


Figure 16: Vegetation Type and Condition Across Project Site

Fauna Impacts

The project has the potential to impact fauna in a number of ways, particularly through direct habitat loss through the clearing of vegetation, and bird and bat strike during operation of the wind turbines (see below).

The ecological assessment surveys recorded 122 fauna species in the whole project area, including 77 bird species, 12 microbat species, 11 mammals, 17 reptiles and 5 frog species.

Thirty-five (35) threatened or migratory fauna species listed under the TSC Act have the potential to be present at the subject site based on available habitat, known ecological requirements, local distribution records and the results of online database searches.

The surveys undertaken as part of the ecological assessments identified that only potential habitat for the Golden Sun Moth and Regent Honeyeater would be impacted by the proposal. The Golden Sun Moth is listed as vulnerable under both the TSC Act and EPBC Act, and the Regent Honeyeater is listed as critically endangered under both the TSC Act and EPBC Act.

The ecological assessments further identified that a large number of hollow-bearing trees occur within the study area, with 251 of these conservatively estimated to be located within the Coppabella precinct disturbance area. Tree hollows are used for shelter and as breeding sites for a wide range of fauna species, including gliders, owls, birds and bats.

Table 8 provides a summary of the impacts on hollow-bearing trees in the Coppabella precinct. These impacts are addressed in the biodiversity offset (as discussed below).

Table 8: Hollow-bearing tree impacts

Distance from wind turbine	Type of tree	Coppabella precinct
0 – 50 m	Alive	64
	Dead	49
50 – 100 m	Alive	88
	Dead	50
Total		251

Epuron has also proposed to avoid siting the wind turbines and other infrastructure in proximity to hollow-bearing trees as far as practicable during micro-siting (i.e. detailed design) for the project. The Department has recommended conditions requiring Epuron to, if micro-siting turbines, ensure that the revised location of the turbine is at least 50 metres from existing hollow-bearing trees.

Biodiversity Offset

Epuron has proposed a biodiversity offset to meet the credit requirements to compensate for the loss of up to 226.4 ha of native vegetation to be cleared for the whole project, including 83 ha for the Coppabella precinct, and the impact on threatened species. With the removal of the Marilba, Conroy's Gap Extension and 330 kV Connection precincts, the offset would only need to address the requirements of the Coppabella precinct.

Table 9 summarises the indicative credit requirements for the biodiversity impacts for the project as a whole and the Coppabella precinct.

Table 9: Summary of credit requirements

Species/EEC	Total Credit Requirements	Coppabella Precinct Credit Requirements
Golden Sun Moth	2,318 species credits	1,028 species credits
Regent Honeyeater	4,012 species credits	801 species credits
Box Gum Woodland	2,611 ecosystem credits	732 ecosystem credits
Red Stringybark Grass Forest	103 ecosystem credits	34 ecosystem credits
River Red Gum Forest	33 ecosystem credits	3.3 ecosystem credits

Both OEH and the Department are satisfied that the offset credit requirements have been correctly calculated using the *Framework for Biodiversity Assessment*.

The preferred offset site proposed by Epuron (for the whole project) is shown on Figure 17 and comprises a total of 1,710.7 ha. Of this, the Coppabella precinct comprises 716.5 ha.

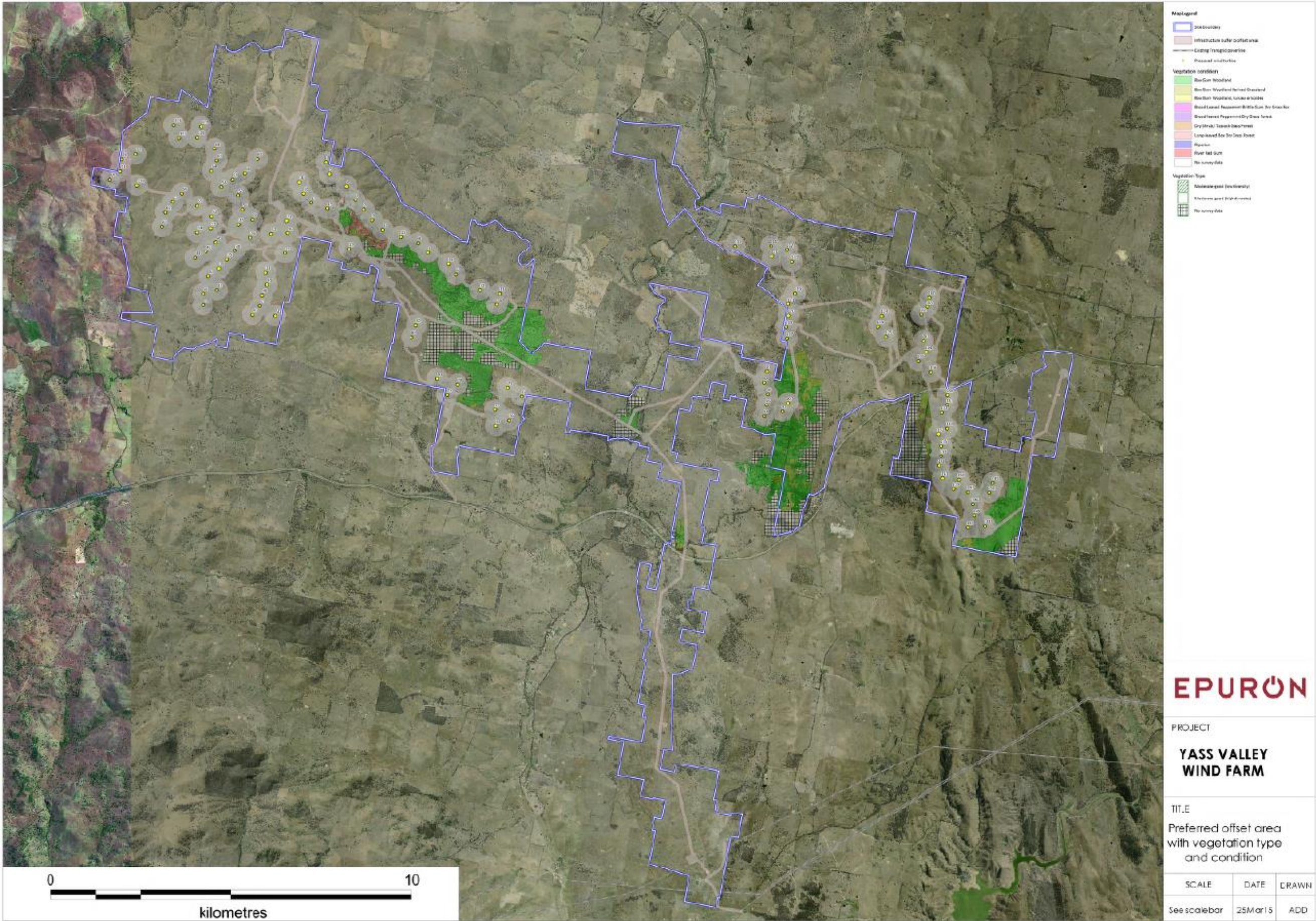


Figure 17: Preferred Biodiversity Offset Site

Epuron has undertaken an assessment of the ability for the offset site to meet the credit requirements for the whole project in accordance with the *NSW Biodiversity Offsets Policy for Major Projects*. The EA demonstrates that the preferred offset site proposed by Epuron would comfortably meet the offsetting requirements of OEH's policy, including providing 5,855 hollow-bearing trees. Both OEH and the Department are satisfied that the proposed offset would adequately compensate for the biodiversity impacts of the whole project, which are generally considered as low given the low conservation value of the project site.

The *NSW Biodiversity Offsets Policy for Major Projects* allows for the retirement of biodiversity offset credits to be achieved by:

- acquiring or retiring credits under the biobanking scheme in the TSC Act;
- making payments into an offset fund that has been developed by the NSW Government; or
- providing supplementary measures.

The Department has recommended conditions requiring Epuron to retire the applicable biodiversity offset credits for the Coppabella precinct. The precise location of the offset site would be determined within 2 years of commencement of construction and the biodiversity offset credits would be retired in accordance with the *NSW Biodiversity Offsets Policy for Major Projects*.

Bird and Bat Strike

To assess potential bird and bat strike impacts, the ecological assessment includes a risk matrix to identify which species would be most at risk of strike. The risk matrix factored in conservation status, flight character, distribution across the site, and whether the species is migratory. A summary of the risk assessment, for those species with a moderate to high risk of strike, is provided in Table 10.

Table 10: Bird and bat strike risk assessment

Risk	Birds			Bats		
	Species	Conservation Status	ID	Species	Conservation Status	ID
High	Wedge-tailed Eagle	-	S	Eastern Bentwing-bat	TSC Act	S
Moderate	Rainbow Bee-eater	EPBC Act	S	Eastern False Pipistrelle	TSC Act	PR
	Square-tailed Kite	TSC Act	PR			
	Gang-gang Cockatoo	TSC Act	PR			
	Swift Parrot	EPBC Act TSC Act	PR			
	Superb Parrot	EPBC Act TSC Act	S			
	Barking Owl	TSC Act	PH			
	Australian Hobby	-	S			
	Barn Owl	-	S			
	Peregrine Falcon	-	PH			
	Silvereye	-	S			

S = Found during field survey PH = Potential habitat exists on site PR = Previously recorded in the area

One bat species, the Eastern Bentwing-bat (*Miniopterus schreibersii oceanensis*), which is listed as vulnerable under the TSC Act, and one bird species, the Wedge-tailed Eagle (*Aquila audax*), are considered to have a high risk of strike, and another 11 bird and bat species have a moderate risk of collision, including 7 threatened species.

Notwithstanding these potential risks, the EA predicted that mortality rates for birds and bats would likely be between one or two per turbine per year (or approximately 79 to 158 bird/bat strikes per year for the Coppabella precinct).

The Department notes that monitoring data from operational wind farms in the Southern Tablelands¹⁰ indicates that mortality rates vary widely, ranging from about 0.1 to 2.0 bird/bat strikes per turbine per year, averaging approximately 1.0 bird/bat strikes per turbine per year. This monitoring data also indicates that the vast majority of affected species are commonly occurring, with only around 5% of mortalities comprising threatened species.

¹⁰ Including the Gullen Range, Capital 1 and Woodlawn wind farms.

Whilst caution should be adopted in applying monitoring data from one site or region to another site or region (as evidenced by the wide range in mortality rates identified in monitoring data), the Department accepts that Epuron's estimate of bird and bat strike is reasonably conservative.

Epuron is proposing a number of mitigation measures to avoid or minimise bird and bat strike, including:

- locating turbines a minimum of 50 m from hollow-bearing trees as far as practicable; and
- avoiding the installation of obstacle lighting (which attract insects and bats that feed on them) and/or selecting lighting that minimises the attraction of insects.

Epuron has also committed to preparing and implementing a Bird and Bat Monitoring Program. Should unacceptable impacts be identified during operations, adaptive management approaches would then be identified to allow a species-specific approach to mitigation.

The Department is satisfied that Epuron has provided a suitably robust assessment of the potential risks of the project on bird and bat species from blade strike, and recognises that management techniques would help reduce any impact. The removal of the Marilba precinct and Conroy's Gap Extension precinct would further reduce this impact.

Nonetheless, the Department accepts that some collisions would be unavoidable. In this regard, the Department agrees with Epuron's assessment and considers that the project would not pose an overall significant or unacceptable level of risk to bird and bat species from rotor interaction.

To ensure that potential risks are minimised as far as practicable, the Department has recommended conditions adopting Epuron's commitments to avoiding impacts on hollow-bearing trees, designing lighting to minimise attraction of insects, and preparing and implementing a detailed Bird and Bat Adaptive Management Plan that includes measures to avoid, minimise, monitor and manage bird and bat strike during operation of the project.

With the implementation of these measures, the Department is satisfied that the impacts of the project on local bird and bat populations, along with the impacts on other threatened fauna species due to direct habitat loss, could be appropriately managed to avoid any significant impacts, subject to appropriate biodiversity offsetting.

Conclusion

The Department acknowledges that the project site is covered in grassland and open woodland that has been largely disturbed by historic grazing and is of limited conservation value. However, the site does provide habitat for some threatened species and ecological communities. The Department is satisfied that Epuron has designed the project to minimise impacts on these biodiversity values, and impacts would be able to be further minimised through micro-siting during the detailed design stage of the project. However, as with most wind farm proposals, the project would result in some residual biodiversity impacts.

Following its assessment the Department is satisfied that these impacts are relatively minor and are able to be adequately mitigated, or at least compensated for, through a range of mitigation and offsetting measures.

In this regard, the Department has recommended conditions requiring Epuron to:

- minimise disturbance of EEC and threatened species as far as practicable;
- minimise the impact on hollow-bearing trees and mature trees along Whitefields Road;
- if micro-siting turbines, ensure that the revised location of the turbine is at least 50 metres from existing hollow-bearing trees;
- prepare and implement a detailed Biodiversity Management Plan, which includes a Bird and Bat Adaptive Management Plan; and
- retire the applicable biodiversity offset credits in accordance with the *NSW Biodiversity Offsets Policy for Major Projects*.

With the implementation of these measures, the Department is satisfied that the project could be undertaken in a manner that improves or at least maintains the biodiversity values of the locality over the medium to long term.

5.5 Traffic and Transport

Introduction

Construction of the project involves the delivery of plant, equipment and materials including the movement of over-dimensional vehicles, which has the potential to impact the local and regional traffic network.

Epuron commissioned Bega Duo Designs to prepare a Traffic Impact Study in December 2008 and a Supplementary Traffic Impact Study for the project in April 2014. The key traffic and transport related impacts of the project relate to the construction phase of the development due to the volume of traffic likely to be generated and the size of the components that need to be transported to the site.

Transport Route

The route for the transport of wind turbine components from an Australian port has not been confirmed and would be finalised prior to commencement of construction and detailed in a Traffic Management Plan.

Regardless of which Australian port the wind turbine components are delivered to, the majority of the transport route would be via National Highways, including the Hume Highway, which provides access to Melbourne and Adelaide to the south and south-west and Sydney and Port Kembla to the east. National Highways provide a relatively high standard of road infrastructure that is generally suitable for the transport of heavy and over-dimensional vehicles.

The only transport along local roads to the Coppabella precinct would be 1.1 km along Whitefields Road, a single lane unsealed road, from the Hume Highway. This site access route is shown on Figure 18.

Whitefields Road is used infrequently as only 4 rural residences use it to access their properties. The road would require reconstruction from the Hume Highway as far as the proposed site access point to a width of 8 m, with the sealing of the road surface in the vicinity of residence C05 to minimise dust.

The intersection of the Hume Highway and Whitefields Road has an insufficient radius to accommodate the turning movements for over-dimensional vehicles transporting turbine blades. Relocation of roadside infrastructure and minor clearing for sight distance would be required in addition to minor pavement widening.

Epuron has committed to undertaking the required upgrade of Whitefields Road and its intersection with the Hume Highway to the satisfaction of RMS and Council, and in accordance with a detailed Traffic Management Plan. These commitments have been incorporated in the Department's recommended conditions of consent and both RMS and Harden Shire Council have indicated they are satisfied with this approach.

Traffic Impacts

Construction related traffic impacts would be limited to the construction period of 36 months, including a shorter period of transport using over-dimensional vehicles (worst-case delivery period up to 9 months).

The transport assessments identified the heavy vehicle transport requirements, including the vehicle type (standard heavy vehicles or over-dimensional) and the number that would be required, to transport all wind turbine components to the project site. The estimated daily vehicle movement for all site construction activities is shown in Table 11.

Table 11: Traffic Generation Summary – Estimated daily vehicle transport movements

Vehicle Type	Coppabella precinct
Light Vehicles	67
Standard Heavy Vehicles	148
Over-Dimensional Vehicles	11

Notes:

- Vehicles per day based on 2-way trips.
- The traffic generation estimates were conservatively based on construction of up to 87 turbines and a substation in the Coppabella precinct.

The estimated hourly volume of construction traffic during the peak hour (based on 15% of the daily volume) is approximately 40 vehicles per hour.

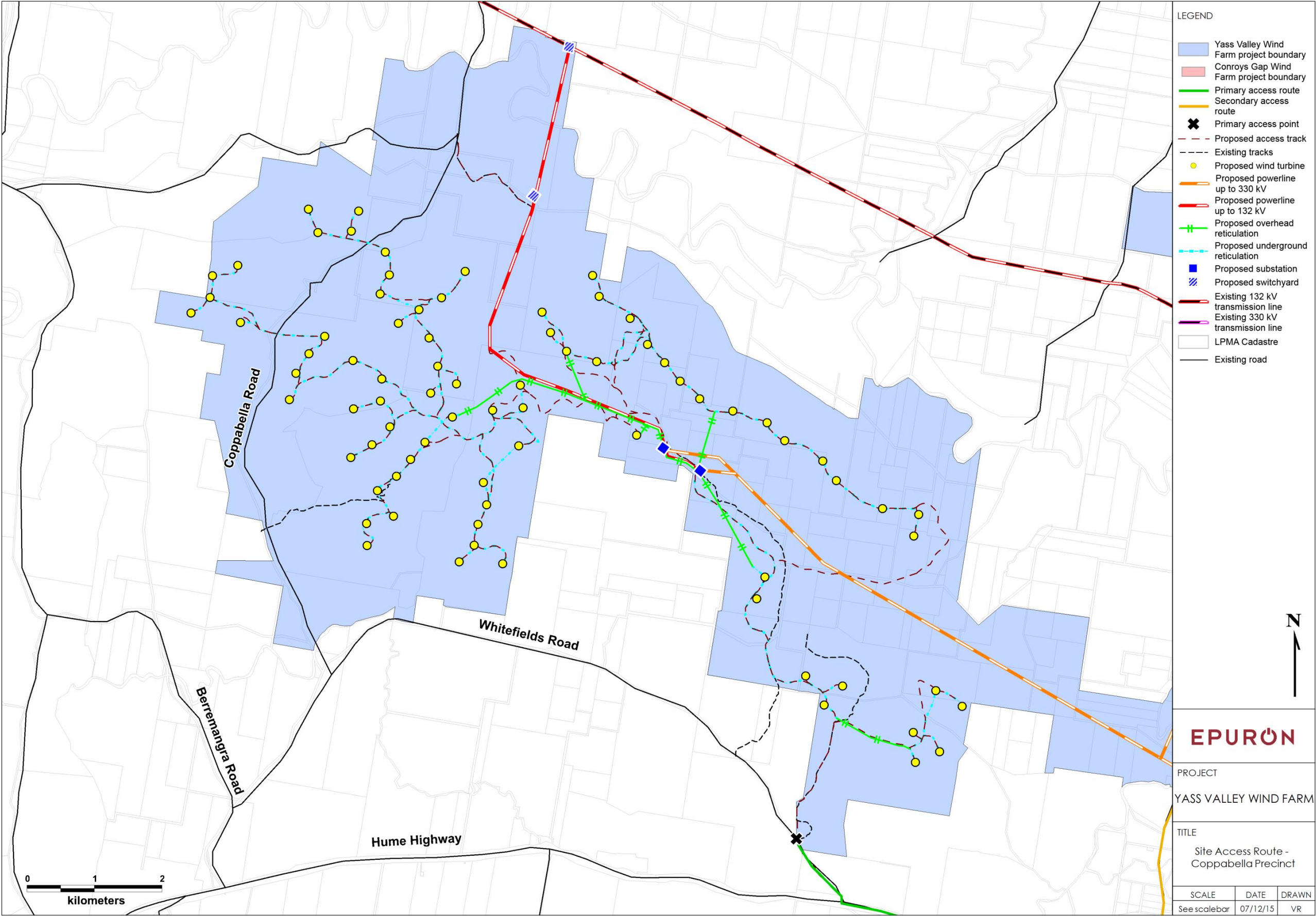


Figure 18: Site Access Routes for the Coppabella Precinct

Based on this traffic generation, the transport assessment concluded that the level of service along both the Hume Highway and Whitefields Road would only change marginally with the contribution of the maximum project-generated construction traffic. Delay times at the intersection for turning vehicles at the junction of the Hume Highway and Whitefields Road was assessed as remaining acceptable without additional turn lanes.

Based on the above, the Department considers the increased traffic generated by the project would not result in significant impacts on Whitefields Road or the State road network.

Over-dimensional Vehicles

Yass Valley Council raised concerns about road safety and construction traffic impacts on local residents, particularly associated with over-dimensional vehicles on narrow local roads.

In terms of the predicted traffic impacts, the EA indicates that the worst-case scenario would be 11 over-dimensional vehicles accessing the Coppabella precinct via Whitefields Road on a single day.

The Department is satisfied that Whitefields Road and its intersection with the Hume Highway could be upgraded to facilitate the transport of wind turbine components to the site, noting that the final road upgrade works would be subject to further detailed assessment and design prior to the implementation of these works.

The Department has recommended conditions requiring Epuron to prepare detailed plans for the upgrade of Whitefields Road and its intersection with the Hume Highway to the satisfaction of the relevant roads authority and the Department prior to transporting the wind turbine components to the site. In preparing these plans, Epuron must seek to avoid and/or minimise the clearing of mature vegetation adjacent to the road. Further, the detailed plans must include a landscaping plan for replacing the removal of any existing vegetation and/or augmenting the existing vegetation adjacent to the upgraded road.

Additionally, the Department has recommended conditions requiring Epuron to prepare a road dilapidation survey for the access route along Whitefields Road prior to construction and decommissioning works and repair any damage resulting from the construction traffic.

The Department notes RMS recommended a number of conditions relating to permitting and approval requirements, traffic controls and design guidelines for the required road upgrades. The Department also notes that Epuron would be required to obtain permits from the relevant roads authorities, including RMS, prior to commencement of any over-dimensional vehicle transport and that it would be a requirement of these permitting arrangements that Epuron would be required to implement appropriate traffic controls during construction and decommissioning works.

The Department has also recommended that Epuron prepare and implement a Traffic Management Plan for the project, in consultation with RMS and the Councils, which would include measures to manage road safety.

Conclusion

In consideration of the limited duration and volume of the predicted project traffic increases, and the implementation of the above management measures, the Department is satisfied that the project would not result in unacceptable impacts on the road network, with no significant impacts on road network capacity, efficiency or safety.

To minimise potential disruptions during the construction and decommissioning phases of the project, and to ensure that traffic impacts are minimised, the Department has recommended conditions requiring Epuron to:

- undertake all necessary road upgrades for the project to the satisfaction of the relevant roads authority prior to the commencement of construction of the wind farm;
- undertake dilapidation surveys of the relevant transport routes prior to construction, and repairing any damage resulting from construction traffic;
- prepare a detailed Traffic Management Plan in consultation with the relevant roads authorities, that includes provisions for:
 - o temporary traffic controls, including detours and signage;
 - o notifying the local community about project-related traffic impacts;
 - o minimising potential for conflict with school buses and rail services;
 - o responding to any emergency repair requirements or maintenance during construction and/or decommissioning;
 - o a traffic management system for managing over-dimensional vehicles; and
 - o include a driver's code of conduct that addresses travelling speeds and procedures to ensure that drivers implement safe driving practices.

5.6 Other Issues

The Department's consideration of other issues is summarised in Table 12.

Table 12: Other issues

Issue	Consideration
Heritage	• The EA includes an Archaeological and Heritage Assessment in accordance with the applicable guidelines. A supplementary assessment was also undertaken as part of the PPR to address the proposed 330 kV Connection precinct. • The assessments identified 70 Aboriginal heritage sites within the Coppabella precinct. • 41 of the Aboriginal heritage sites were assessed as having low to negligible significance and impacts to these sites are not required to be avoided. • The remaining sites were assessed as having low/moderate or moderate significance. These include 21 Aboriginal heritage sites that have potentially moderate scientific significance, 5 Aboriginal heritage sites that have low/moderate local scientific significance and 3 Aboriginal heritage sites that have low local scientific significance. • The assessments recommended impacts to these Aboriginal heritage sites be avoided and Epuron has committed to minimising the extent of the impacts to the identified Aboriginal heritage sites, particularly those with moderate significance, as far as practicable. • OEH has recommended that where impacts to these Aboriginal heritage sites would not be able to be avoided, a program of salvage subsurface excavation be undertaken in impact areas at these sites prior to construction and additional archaeological assessment be conducted in any areas that are proposed to be disturbed that have not been surveyed during the assessment. • The Department considers that impacts on Aboriginal heritage sites can be almost entirely avoided through micro-siting of wind turbines and ancillary infrastructure. • The Department has recommended conditions requiring Epuron to avoid impacts to these Aboriginal heritage sites. • With the avoidance of these Aboriginal heritage sites, the Department is satisfied that the project is unlikely to result in a significant impact on the heritage values of the locality. • Notwithstanding, to ensure that heritage impacts are minimised, the Department has recommended conditions requiring Epuron to prepare a Heritage Management Plan in consultation with OEH and relevant Aboriginal stakeholders and implement this plan for the project. The plan would require a description of measures to be implemented for: • minimising ground disturbance within the project area during construction and decommissioning; • managing impacts to Aboriginal heritage items within the project disturbance area; • managing the discovery of human remains or previously unidentified Aboriginal heritage sites; and • ensuring workers on site receive suitable heritage inductions prior to carrying out any development on site, and that suitable records are kept of these inductions.

Issue	Consideration
Bushfire Safety	- A number of submissions regarding the impact of the project on aerial bushfire fighting were received from the public. However, the NSW Rural Fire Service did not raise any concerns about the project's impacts on aerial bushfire fighting. - Epuron has committed to a number of mitigation measures including, for example, the preparation of a Bushfire Management Plan in consultation with the NSW Rural Fire Service and NSW Fire Brigade. - The Department is satisfied that the bushfire risks associated with the project are not significant and can be effectively managed subject to implementation of the proposed mitigation measures. The Department has recommended conditions requiring Epuron to implement these mitigation measures.
Electro-magnetic Fields	- Like other electricity generating infrastructure, Electro-magnetic Fields (EMFs) would be generated by the electrical components of the project including wind turbines, transmission lines and substations. It is noted that EMFs also result from natural sources such as the Earth's magnetic field and lightning. - A number of submissions regarding the health impacts of the project from EMF were received from the public. - The EA includes an assessment of EMF (including Extremely Low Frequency EMF), which indicates that the project would comfortably comply with the applicable exposure limits specified by the National Health and Medical Research Council (NHMRC) - ie. 1,000 milligauss (mG) for magnetic fields and 5 kilovolts per metre (kV/m) for electric fields, 24 hour exposure. - Accordingly, the Department is satisfied the project is not likely to have any significant EMF-related impacts.
Telecommunications	- Electro-magnetic signals transmitted for telecommunication systems (such as radio, televisions, mobile phones and mobile/fixed radio transmitters) function most efficiently where a clear line of sight exists between the transmitting and receiving locations. Wind farms and other infrastructure have the potential to cause interference with this line of site. - Epuron undertook a Telecommunications and Aviation Navigation Services Assessment in May 2009 as part of its EA. The assessment included consultation with telecommunications service providers and concludes that the project would have minimal effect on telecommunications services in the area. - To ensure that telecommunications services are maintained, the Department has recommended conditions requiring Epuron to 'make good' any disruption to radio or telecommunications services caused as a result of the development. - The Department notes that this approach has been effective in addressing interference with telecommunications services associated with other wind farms in NSW.
Socio-Economics	<u>Agriculture</u> - The site of the project is dominated by agricultural land uses, in particular sheep and cattle grazing. Given the relatively small disturbance footprint of the project components, the Department is satisfied that farming and wind farm activities are compatible land uses and can co-exist in the locality. This has been demonstrated at several operating wind farms in NSW. The Department notes that the project would provide an additional source of income for the landowners of the associated properties, whose land would be directly affected by the project. <u>Mineral Resources</u> - One mining exploration licence exists over the project site. The wind farm would not preclude exploration from occurring within the project site, only proximity to wind turbines and electrical infrastructure, which are less than 0.5% of the exploration site area. As the wind farm would be decommissioned after completion of its working life, any mineral resources on the project site would not be sterilised in the long term. - Epuron has committed to liaising with the current exploration licence holder prior to and during the life of the project. - The Department is satisfied the project is not likely to have significant impacts on future mining exploration. <u>Property Values</u> - A number of submissions from the public raised concerns about potential adverse impacts on property values in the area. - The Department notes that property values are influenced by a number of factors. In

Issue	Consideration
	2009, the NSW Valuer-General released a report on the impacts of wind farms on land values in Australia. The report was based on primary investigations and analysis of previous studies, and concluded that the majority of wind farms in Australia appear to have no quantifiable effect on land values. • Further, the Department notes that as a SSD for electricity generating works, the project is permissible with consent under applicable planning instruments, and the assessment demonstrates that the project would be able to comply with applicable amenity criteria established by the NSW Government for wind farm developments. • Where significant visual amenity impacts are predicted, the Department has recommended that these aspects of the project do not proceed. The Department has also recommended that the landowner of any residence within 5 km of a wind turbine be entitled to request screening to further minimise visual impacts. • The Department considers that at this stage there is no clear evidence that wind farms reduce property values, and that with the significant reduction in the scale of the development in this case, the project would not result in any significant or widespread reduction in land values in the areas surrounding the wind farm. • Further, the Department has obtained legal advice indicating that the specific financial impacts from a development proposal on individual properties are not a relevant consideration for a consent authority in determining an application under the EP&A Act, unless it supports an assessment of broader economic impacts in the locality. The limitation on the consideration of this issue under the EP&A Act has been supported in the NSW Land and Environment Court on several occasions in the context of wind farm proposals and other developments¹¹.

Property Access Agreements

- As outlined in Section 0, Epuron is yet to secure land tenure agreements with all landowners of properties that are proposed to be used for infrastructure components. These include Properties 13, 14, 18, 20, 23, 24 and 25 (see Figure 3). The residences associated with these properties include:
 - Property 13 – residences C25 and C26
 - Property 14 – residence G31
 - Property 18 – residences G15 and M48
 - Property 23 – residence M32
 - Property 25 – residence M13
 - Properties 20 and 24 – no residences.
- The Department has conservatively assessed all residences associated with these properties as non-associated residences. With the removal of the Marilba precinct, Conroy's Gap Extension precinct and 330 kV Connection precinct, the impacts on a number of these residences are considered negligible.
- The Department considers that with the removal of these precincts, together with the Department's other recommended conditions, the impacts on residences whose land tenure agreements are outstanding would be adequately addressed.

Community Enhancement

- In their submissions, both Harden Shire Council and Yass Valley Council questioned what mechanisms would be in place for funding of community infrastructure.
- Epuron has committed to contributing towards a community fund to support community groups, programmes and activities in the locality. This funding would comprise \$2,500 per wind turbine built per annum, indexed to CPI from the date of the consent. This equates to about \$197,500 per year for the maximum proposed number of wind turbines in the Coppabella precinct.
- The Department has recommended the funding be administered via a planning agreement established under Section 93F of the EP&A Act, unless otherwise agreed by the Councils. The funding would be split between the Harden Shire Council and Yass Valley Council LGAs proportionate to the number of turbines in each LGA.
- The Department considers these contributions are reasonable given the limited demand generated by the project on infrastructure and services. They are also in line with the community contributions of other wind farms in the region.
- Road upgrades and related infrastructure to support the project are addressed in Section 5.5 of this report.

¹¹ See, for example, *Taralga Landscape Guardians Inc v Minister for Planning and RES Southern Cross Pty Ltd* (2007) 161 LGERA 1, *Alphatex Australia v The Hills Shire Council (No 2)* [2009] NSW LEC 1126, and *King & Anor v Minister for Planning; Parkesbourne-Mummel Landscape Guardians Inc v Minister for Planning; Gullen Range Wind Farm Pty Limited v Minister for Planning* [2010] NSW LEC 1102.

Issue	Consideration
Blasting and Vibration	- The blast assessment concluded that if blasts were required during construction, the project would comply with the applicable amenity and structural damage criteria at all surrounding private residential receivers. - Furthermore, the assessment concluded that the project would not pose a perceptible source of vibration impacts during construction. - To ensure this occurs, and to appropriately manage any blasting activities and vibration from the project, the Department has recommended conditions requiring Epuron to: - manage blasting operations to comply with relevant criteria at any residence on privately-owned land; and - limit blast hours to be consistent with the ANZEC blasting guidelines.

Soil and Water Resources

- The project has the potential to affect soil and water resources in a number of ways, including:
 - use of water resources for construction and operational activities;
 - erosion and sedimentation risks during construction;
 - impacts to riparian areas; and
 - groundwater impacts.

Water Use

- The project has the potential to impact on the availability of local water resources for agricultural and potable water supplies, such as Jugiong Creek, Lake Burrinjuck, the Yass Dam and groundwater.
- A number of submissions raised concerns regarding the uncertainty of the water sources for the project.
- The amount of water required for the construction of the wind farm over a 24 month period has been estimated to be around 16.23 ML. This includes water for the construction of concrete foundations for the wind turbines, control buildings and substations as well as for dust suppression and in case of fire.
- The water is proposed to be sourced from local landholders (using their groundwater or farm dam entitlements), the Yass Dam, Jugiong Creek, Lake Burrinjuck, the Goldenfields Water County Council water supply pipeline and/or from off-site water suppliers.
- The Department and DPI Water consider the water demand of the project to be relatively low and are satisfied that the project is unlikely to have any significant impact on water supply and demand in the region. However, DPI Water noted that any water sourced for the project is required to be appropriately licenced.
- The Department has recommended conditions requiring Epuron to ensure that it has adequate, licenced water supplies for the project.

Riparian Areas and Erosion Risk

- The project involves a number of water crossings for internal access roads and cabling.
- The landscape within the Coppabella precinct is generally steep with granite rock outcrops and soils have high to extreme erosion potential.
- Notwithstanding, DPI Water and the Department are satisfied that these risks, as well as potential erosion and sedimentation risks associated with the project, are able to be effectively managed using standard best practice construction techniques.
- To ensure this occurs, the Department has recommended conditions requiring Epuron to undertake activities in accordance with applicable guidelines including OEH's *Managing Urban Stormwater: Soils and Construction* and DPI's *Guidelines for Controlled Activities on Waterfront Land, Policy and Guidelines for Fish Friendly Waterway Crossings and Why Do Fish Need to Cross the Road*.

Groundwater

- Whilst the project would involve some rock anchoring at depth (up to 20 m below ground surface level) and potentially some blasting, the activities are unlikely to result in any significant impacts to groundwater resources.
- Epuron has committed to consulting further with DPI Water if any significant volumes of groundwater are intercepted during construction.
- The Department has recommended that Epuron be required to obtain any necessary licences under the Water Act 1912 or the Water Management Act 2000 for the project.

Issue	Consideration
Decommissioning and Rehabilitation	- Some submissions raised concerns about decommissioning of wind turbines and associated infrastructure after the operational life of the project. - The Department has obtained legal advice indicating that it is the proponent's obligation to cover any financial costs associated with decommissioning and rehabilitation and that the Department does not have the capacity to impose a condition of consent which requires a bond for security for decommissioning and rehabilitation, especially on private land. - Notwithstanding, to ensure that redundant infrastructure is removed and the areas rehabilitated appropriately, the Department has recommended conditions requiring Epuron to: - decommission wind turbines (and associated infrastructure) within 18 months of the cessation of operations; - progressively rehabilitate the site, and minimise the total disturbance area exposed at any time; and - comply with a number of rehabilitation objectives, including removing redundant above-ground infrastructure, restoring rural land capability and vegetation, ensuring public safety and ensuring the site is maintained in a safe, stable and non-polluting condition.

6. RECOMMENDED CONDITIONS

The Department has prepared draft recommended conditions of consent for the project (see Appendix G). These conditions are required to:

- prevent, minimise, and/or offset adverse impacts of the project;
- ensure standards and performance measures for acceptable environmental performance;
- ensure regular monitoring and reporting; and
- provide for the ongoing environmental management of the project.

The conditions used a risk-based approach that focuses on performance-based outcomes. This reflects current government policy and the fact that wind farms require relatively limited ongoing environmental management once the turbines have been commissioned.

In line with this approach, the Department has:

- set strict criteria for noise and shadow flicker;
- recommended operating conditions to minimise noise, biodiversity, air quality, and water impacts; and
- consolidated the number of management plans to the following:
 - Traffic Management Plan;
 - Heritage Management Plan; and
 - Biodiversity Management Plan (including a Bird and Bat Adaptive Management Plan).

Other key recommended conditions include:

- micro-siting* – allowing micro-siting of turbines within a 100 metre radius provided the turbines remain within an approved disturbance envelope (see Figure 6) and comply with the other restrictions in the consent;
- visual mitigation* - additional visual impact mitigation for non-associated residences within 5 km;
- biodiversity offsets* – retire biodiversity credits in accordance with the *NSW Biodiversity Offsets Policy for Major Projects*;
- roads* – identifying the necessary road upgrades and establishing a mechanism for determining the road maintenance obligations for the local road network;
- community contributions* – formalising community contributions of up to \$197,500 a year through a voluntary planning agreement with both Councils; and
- decommissioning and rehabilitation* – clarifying obligations to decommission the above-ground infrastructure and setting rehabilitation objectives for the site.

The Department has also liaised with the EPA in developing the recommended conditions to achieve a greater level of consistency with EPL conditions, specifically in relation to noise criteria.

7. SECTION 79C

Section 79C(1) of the EP&A Act outlines the matters that a consent authority must take into consideration when determining development applications. These matters could be summarised as:

- the provisions of environmental planning instruments (including draft instruments), development control plans, planning agreements, and the EP&A Regulations;
- the impacts of the development;
- the suitability of the site;
- any submissions; and
- the public interest.

Section 5 of the EP&A Act also outlines a range of objects that must be considered when making decisions under the EP&A Act, and Sections 5A to 5D further outline provisions to be considered with regard to threatened species (including species, populations and ecological communities) and their habitats. The Department has given consideration to the requirements of other provisions of Sections 5A to 5D. In particular, these matters include:

- the factors in Section 5A(2), known as the '7 part test of significance';
- the threatened species assessment guidelines¹² identified in Section 5A(1); and
- the register of critical habitat as identified in Section 5B.

The Department considered the 7 part tests presented in the EA and also the threatened species assessment guidelines, in deciding whether there is likely to be a significant effect on threatened species, populations, ecological communities, or their habitats.

The Department's consideration has been prepared having regard to Epuron's ecological assessment and the 7 part tests of significance in the EA for the project, along with the threatened species assessment guidelines which assist in the interpretation and application of the 7 factors (or tests) of significance.

The Department's assessment (see Section 5.4) has considered the direct and indirect impacts of the project on threatened species, populations or ecological communities, or their habitats – both on the subject site and the broader study area, as defined under the threatened species assessment guidelines.

The Department has considered all of these matters in its assessment of the project. In summary, the Department believes that:

- apart from the permissibility issue under the local environmental plans as outlined in Section 3.2, the project can be undertaken in a manner that is consistent with the aims, objectives and provisions of the applicable environmental planning instruments, other applicable planning documents and the EP&A Regulations (see Section 3 and Appendix D);
- the project could be undertaken in a manner that is generally consistent with the objects of the EP&A Act (see Section 3.6);
- the impacts of the project could be adequately minimised, managed, or at least compensated for, to an acceptable standard;
- the site is suitable for the project, as it is within a region recognised as having some of the best wind resources in NSW, is sparsely populated and has access to existing electricity distribution networks. The operation of the project would also not compromise the long-term use of the land for agricultural purposes. The Department has carefully considered the potential impacts of the project on the site and surrounds in its assessment, and is satisfied that the impacts of the project on the environment and the local community could be adequately minimised, managed, or at least compensated for, to an acceptable standard; and
- whilst there is some opposition to the project from local landowners and special interest groups, the project is in the wider public interest, particularly as it would:
 - be consistent with the NSW Government's vision for a secure, reliable, affordable and clean energy future for the state;
 - assist in meeting Australia's renewable energy targets as well as future electricity demands without the production of additional greenhouse gases; and
 - facilitate employment for up to 167 personnel during construction and 34 personnel during operations.

¹² *Threatened Species Assessment Guidelines – The Assessment of Significance*, prepared by the then Department of Environment and Climate Change, dated August 2007.

8. CONCLUSION

The Department has assessed the development application, EA, submissions, Response to Submissions and Preferred Project Report, and additional information provided by Epuron in accordance with the objects of the EP&A Act. The Department has also considered the independent expert reviews of the project's aviation and visual impacts.

Based on its assessment, the Department considers the residual visual impacts of the Marilba precinct and Conroy's Gap Extension precinct of the project are unacceptable.

To mitigate these potential impacts, the Department has recommended that the Marilba precinct and Conroy's Gap Extension precinct not be approved. The Department has also recommended the 330 kV Connection precinct not be approved, as the remaining Coppabella precinct has the ability to connect to the transmission network at 132 kV.

With the removal of these precincts, the Department is satisfied that the project achieves a reasonable balance between maximising the efficiency of the wind resource development and minimising the potential impacts on surrounding land users or the environment.

The Department has drafted a detailed set of conditions to ensure that the project complies with the applicable criteria and standards, and to ensure that the predicted residual impacts are effectively minimised, mitigated and/or at least compensated for. The Department has sought to rationalise the recommended conditions, focusing on performance-based outcomes.

The Department believes that these conditions reflect contemporary best practice and are consistent with the applicable policy guidelines for the regulation of wind farm projects in NSW.

Importantly, the project would result in benefits to the wider community by assisting in meeting Australia's renewable energy demands. In addition, the project would stimulate economic investment in and access to, renewable energy and provide associated flow-on benefits to the local community through job creation, capital investment and Epuron's proposed community funding contributions.

On balance, the Department believes that the benefits of the project's Coppabella precinct outweigh its residual costs and that it is in the public interest and that this component of the project should be approved, subject to conditions.

9. RECOMMENDATION

It is recommended that the Planning Assessment Commission:

- considers the findings and recommendations of this assessment report;
- approves the development application for the Yass Valley Wind Farm, subject to the removal of the Marilba, Conroy's Gap Extension and 330 kV Connection precincts; and
- signs the attached recommended conditions of consent (Appendix G).


Mike Young
Director
Resource Assessments

1.2.16.


David Kitto
Executive Director
Resource Assessments and Business Systems

APPENDIX A:

ENVIRONMENTAL ASSESSMENT

See website at http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6698

APPENDIX B:

SUBMISSIONS

See the website at http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6698

APPENDIX C:

RESPONSE TO SUBMISSIONS AND PREFERRED PROJECT REPORT

See website at http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6698

APPENDIX D:

ENVIRONMENTAL PLANNING INSTRUMENTS

SEPP (State and Regional Development) 2011

As addressed in Section 3.1, the project meets the criteria for State Significant Development under *SEPP (State and Regional Development) 2011*.

SEPP (Infrastructure) 2007

SEPP (Infrastructure) 2007 aims to facilitate the effective delivery of infrastructure across the State by improving regulatory certainty and efficiency, identifying matters to be considered in the assessment of development adjacent to particular types of infrastructure development, and providing for consultation with relevant public authorities about certain development during the assessment process.

Development for the purpose of electricity generating works may be carried out by any person with consent on any land in a prescribed rural, industrial or special use zone under the *SEPP (Infrastructure) 2007*. The proposal is for the purpose of generating electricity within a prescribed rural zone, and is therefore permissible with consent.

In accordance with clause 104 of *SEPP (Infrastructure) 2007*, the application was referred to RMS. The matters raised in RMS's submission on the project were considered by the Department, and the Department has recommended conditions of approval in relation to the classified road network.

The application was also referred to Transgrid as the key service provider. Transgrid provided input into the environmental assessment requirements for the project. Epuron has also consulted regularly throughout the assessment process with Transgrid.

SEPP (Rural Lands) 2008

SEPP (Rural Lands) 2008 aims to facilitate the orderly and economic use and development of rural lands for rural and related purposes whilst ensuring the proper management, development and protection of rural lands for the purpose of promoting the social, economic and environmental welfare of the State.

The Department is satisfied that the proposed development is consistent with *SEPP (Rural Lands) 2008* as the operation of the project would not compromise the long-term use of the land for agricultural purposes and would provide an additional source of income for the landowners of the associated properties, whose land would be directly affected by the project.

SEPP No. 44 – Koala Habitat Protection

The Department is satisfied that the project site does not contain any areas of core koala habitat, and that the project is generally consistent with the aims, objectives and requirements of *SEPP 44*.

SEPP No.55 – Remediation of Land

The Department is satisfied that the project site is not located on land identified as contaminated land, nor is it adjacent to land identified as contaminated land. Also, construction activities would not significantly disturb soil or groundwater at the project site.

Yass Valley LEP 2013

The zoning and permissibility of the development under the Yass Valley LEP 2013 is addressed in Section 3.2 of this report.

There are no other provisions of the LEP that substantially govern the development, and the Department is satisfied that the project can be managed in a manner that is generally consistent with the aims, objectives and provisions of the LEP.

Harden LEP 2011

The zoning and permissibility of the development under the Harden LEP 2011 is addressed in Section 3.2 of this report.

There are no other provisions of the LEP that substantially govern the development, and the Department is satisfied that the project can be managed in a manner that is generally consistent with the aims, objectives and provisions of the LEP.

APPENDIX E:

INDEPENDENT PEER REVIEW - VISUAL IMPACT ASSESSMENTS

APPENDIX F:

INDEPENDENT PEER REVIEW - AVIATION IMPACT ASSESSMENTS

APPENDIX G:

RECOMMENDED CONDITIONS OF CONSENT
