Yass Valley Wind Farm

Preferred Project & Submissions Report

September 2014

Yass Valley Wind Farm

Preferred Project & Submissions Report | September 2014

Prepared By:

Epuron Projects Pty Ltd
Level 11, 75 Miller Street
North Sydney NSW 2060
AUSTRALIA
www.epuron.com.au

Revision 4
8 September 2014

Table of Contents

Figures

Tables

1 Introduction

1.1 Background

The Yass Valley Wind Farm proposal is for the development of a wind farm in the Southern Tablelands region of NSW, approximately 30 km west of Yass and around 300 km west of Sydney. An application for the proposal was lodged with the NSW Department of Planning & Environment in December 2008. The Director General's Requirements were issued to the proponent to guide the work required in assessing the proposed wind farm. Detailed assessment of the proposal has been completed between 2008 and 2014.

The Environmental Assessment (EA) for the Yass Valley Wind Farm, which addressed the issues raised in the Director General's Requirements, was lodged in November of 2009 and placed on exhibition by NSW Planning & Infrastructure. Twenty two submissions were received in response to the exhibition of the Environmental Assessment of the wind farm.

A Preferred Project Report (PPR) which described the preferred project and responded to submissions to the EA was lodged on 30 November 2012 and publically exhibited for a statutory period. Seventeen submissions were received in response to the exhibition of the PPR.

1.2 Purpose of this Report

This Preferred Project & Submissions Report (PP&SR) provides the preferred wind farm infrastructure layout and responds to each of the submissions to the exhibited Preferred Project Report.

At the request of the NSW Department of Planning and Environment, the format, and in some cases the content, of responses to the submissions to the EA provided earlier in the PPR (30 Nov 2012) have been updated and are included in Attachment 22.

1.3 Project Development to Date

The Yass Valley Wind Farm began development in 2008. Originally including three precincts – Coppabella, Marilba and Carrolls Ridge, the Office of Environment and Heritage raised concerns about the potential for impacts to threatened species at the Carrolls Ridge precinct. As a result the Carrolls Ridge precinct was uncoupled and the Yass Valley Wind Farm has proceeded through planning with the remaining two precincts. The project went on public exhibition in November 2009.

In December 2009 the project was acquired by Origin Energy and all development and consultation was progressed by Origin Energy. In July 2012 Epuron acquired the development project back from Origin Energy and progressed the project through the planning process. Some changes were made to the project including the addition of a 330kV transmission connection and changes to a number of turbine locations.

In November 2012 the Preferred Project Report was lodged. This report had two key purposes; to respond to submissions made to the Environmental Assessment and to describe, and assess the effects of, the changes associated with the preferred project. The Preferred Project Report went on public exhibition from December 2012 to March 2013. Since then NSW Planning & Infrastructure have sought agency comment on a number of queries all of which are addressed in this Preferred Project and Submissions Report.

A full chronology of the project development steps to date is listed in Table 1-1.

Table 1-1 Timeline of the Yass Valley Wind Farm project development

Date	Action
October 2008	Planning Focus Meeting for agencies to visit the proposed site
October 2008	Yass Valley Wind Farm confirmed as a Major Project
December 2008	Project Application lodged with Department of Planning and Infrastructure (DPI) for a 3 precinct wind farm – Coppabella, Marilba and Carroll's Ridge precincts
January 2009	Director General's Requirements issued to guide the preparation of the Environmental Assessment
May 2009	Environmental Assessment lodged with DPI but potential for impacts to endangered bats at Carroll's Ridge deemed not acceptable so this precinct was removed from the current application

Date	Action
November 2009	Environmental Assessment (Coppabella and Marilba precincts) lodged with DPI
Nov - Dec 2009	Exhibition of Environmental Assessment
November 2009	Newsletter to community advising of exhibition of EA
December 2009	Origin Energy acquired the project from Epuron
December 2009	15 public and 7 agency submissions received in response to exhibition of the EA
Dec 2009- July 2012	Project owned and progressed solely by Origin Energy
July 2012	Epuron acquired the project back from Origin Energy
August 2012	Newsletter to community advising that Epuron is again progressing the wind farm and seeking nominations for the Community Consultative Committee
August 2012	Department of Planning & Environment (DPE) advise sunset date of 30 November 2012 for lodgement of PPR part 3A projects
November 2012	Preferred Project Report lodged with DPE
Dec 2012 to Mar 2013	Exhibition of Preferred Project Report (PPR)
Dec 2012	Newsletter to community advising of exhibition of Preferred Project Report
May 2013	8 public and 9 agency submissions received in response to exhibition of the PPR
July 2013	A new report, the Preferred Project & Submissions Report, which responded to (May 2013) submissions to the PPR , lodged with DPE. Further agency comments provided to Epuron for response
December 2013	Preferred Project and Submissions Report, Revision 2, lodged with DPE
January 2014	Additional copies of PP&SR requested to send to agencies, provided by Epuron
March 2014	DPE request further information
May 2014	PP&SR, Revision 3, lodged with DPE
September 2014	Final PP&SR, Revision 4, lodged with DPE

The project has been amended since the exhibition of the EA (2009) as shown in Table 1-2.

Table 1-2 Changes to the project during development

Detail	Exhibited Environmental Assessment November 2009	Exhibited Preferred Project Report November 2012	Current Preferred Project & Submissions Report September 2014
Number of wind turbines	152	148	134
Length of high voltage overhead powerline	>75 km	25 km (up to 330kV) or 22 km (132kV)	Up to 25 km (up to 330kV) Up to 22 km (132kV)
Number of site substations	6	Up to 2	Up to 2
Maximum tip height	150m	150m	150m

1.4 Structure of this Report

This PP&SR supplements the EA and the PPR and includes the following sections:

- Section 2 Description of Preferred Project for which the proponent is seeking approval
- Section 3 Response to submissions on the PP&SR exhibited in 2013
- Section 4 Updated project benefits
- Section 5 Updated planning context

- Section 6 Updated community consultation details
- Section 7 Updated environmental assessments
- Section **Error! Reference source not found.** Revised Statement of Commitments

2 Preferred Project

2.1 Preferred Project Description

The proposed wind farm includes up to 134 wind turbines and associated infrastructure in four discrete construction stages as shown in Figure 2-2:

- Coppabella stage – 87 wind turbines
- Marilba stage - 29 wind turbines
- Conroys Gap Extension stage - 18 wind turbines
- 330kV Connection stage

Wind turbines

Each wind turbine consists of three blades, a rotor hub and nacelle mounted on a tubular steel tower together with the associated turbine foundation, turbine transformer and crane hardstand area. The maximum tip height is 150m.

Grid Connection

The 330kV grid connection arrangement for the wind farm will consist of:

- A 330kV switchyard enabling the connection of the wind farm to TransGrid's existing Yass to Lower Tumut 330kV transmission line located to the south. The switchyard will incorporate an auxiliary services building and a nearby microwave tower to provide communications to TransGrid's operational control centre (seen Attachment 19 for indicative layout).
- A high voltage (up to 330kV) pole mounted transmission line approximately 25km long to connect the switchyard to the substations on the wind farm site. The easement would be 45m wide.
- Two substations on the wind farm site, one for the Coppabella precinct and one for the Marilba precinct. An option of a single substation located between the Coppabella and Marilba precincts is also being considered.

The 132kV grid connection arrangement for the wind farm will consist of:

- A 132kV switchyard enabling the connection of the wind farm to TransGrid's existing Murrumburrah to Yass 132kV transmission line. The switchyard will incorporate an auxiliary services building and a nearby microwave tower to provide communications to TransGrid's operational control centre. Four possible locations for the switchyard have been identified.
- A high voltage (up to 132kV) pole mounted transmission line to connect sections of the wind farm to the switchyard.
- Up to two substations on the wind farm site.

Due to the staged nature of the development, it is possible that either a 132kV connection arrangement is built followed by a 330kV connection, or that the 330kV connection arrangement is built.

Ancillary Works

- A medium voltage electrical reticulation network of above ground and underground cabling to connect the individual wind turbines to the site substations
- Internal site access tracks and minor upgrades to existing public roads to allow the delivery of the wind turbine components and other equipment
- A permanent operation and maintenance facility including offices, facilities, car parking and equipment storage
- Up to five permanent wind monitoring masts. Refer to Attachment 17 for indicative locations and coordinates.

Temporary Construction Works

- Temporary construction facilities including offices, facilities, car parking, equipment laydown area and a concrete batching plant. Refer to Attachment 19 for indicative layouts of substation and ancillary works.

The map on the following page shows the preferred project infrastructure layout. An A1 size version of the map is included in Attachment 24.

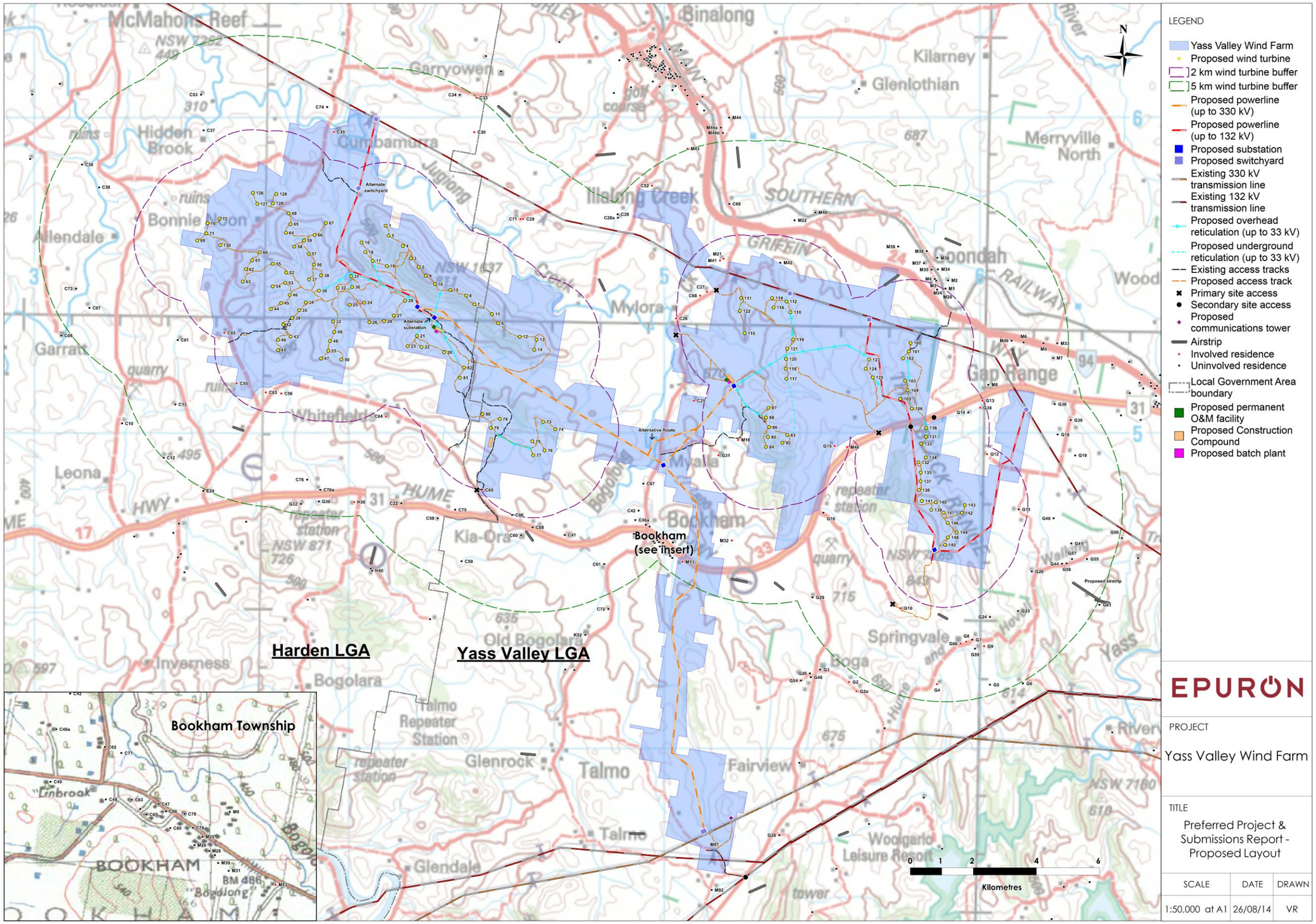


Figure 2-1 Preferred project & submissions report layout (see Attachment 24 for A1 size map)

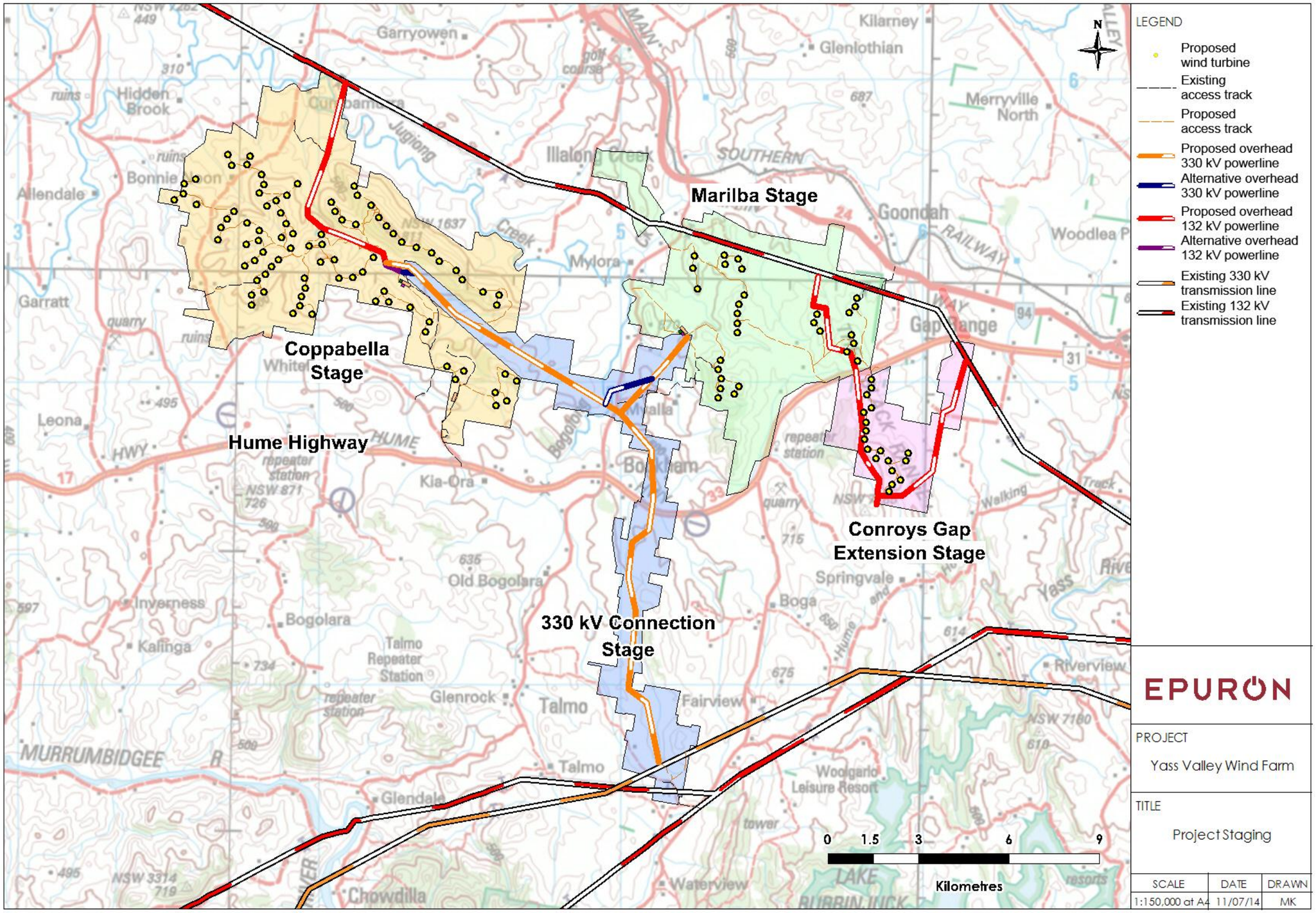


Figure 2-2 Preferred project & submissions report staging layout

2.2 Changes to Infrastructure Layout since November 2012

A number of changes to the infrastructure layout have been made since the exhibition of the Preferred Project Report (Nov 2012). These changes have been made in response to public and government submissions and comments on the project and minimise both the overall and localised environmental impacts of the project. Table 2-1 lists the changes.

Table 2-1 Changes that minimise the environmental impact

	Change	*Impact of change*	*Environmental impacts minimised*
Marilba			
1.	Deletion of wind turbines:		Yes
	• 113 and associated access track and cabling (northern end)	Reduced visual impact and reduced noise impact on new residence M42	
	• 107, 108 & 109 and associated access tracks and cabling (western side)	Reduced visual impact and reduced noise impact on residence C25	
	• 89, 90, 91, 93, 94, 95, 96, 97, 98, 99, and movement of wind turbine 83 into a location which reduces biodiversity impacts as a result	Significant reduction in the potential for impacts to avifauna utilising treed areas adjacent to the removed wind turbines	
2.	Minor relocation of wind turbines:		Yes
	• 110 and 144 (Refer response to NSW Trade & Investment Crown Lands submission)	Avoidance of blade overhang over Crown roads	
	• 101, 102	Reduced impacts to native vegetation	
Coppabella			
1.	Minimal transmission infrastructure alignment:		Yes
	• 330kV transmission line on Coppabella	Increased avoidance of areas of high biodiversity constraint	
	• 132kV transmission line on Coppabella	Increased avoidance of areas of high biodiversity constraint	
	• Alternate 132kV switchyard location - south of original by 2.25km	Potential to minimise cut and fill requirements of original location and to reduce number of creek crossings required for access	
2.	Micrositing/ minor relocation of wind turbines:		Yes
	• 9, 15, 80, (Refer response to NSW Trade & Investment Crown Lands submission)	Avoidance of blade overhang over Crown roads	
3.	Alternate substation		Yes
	• Alternative substation location on Coppabella in proximity to that currently proposed	Potential to relocate to more level area reducing cut and fill requirements, and to reduce impacts to native vegetation.	
4.	New access track		Yes
	• New access track connecting two ridges on Coppabella	Improved connectivity and potential for reduction in cut and fill of previous track layout. Reduced traffic movements during construction and operation.	
330kV transmission line			Yes
1.	• 330kV transmission line moved approximately 230m east at Hume Highway crossing.	Reduced visual impact for residence M13 and other Bookham residences and	

	Change	Impact of change	Environmental impacts minimised
		reduced biodiversity impact (Box Gum Woodland) on northern side of Hume Highway	
2.	• 330kV switchyard moved approximately 520 m west at grid connection point	Reduced biodiversity impact (Box Gum Woodland derived grassland)	Yes
General – very minor amendments across the site			
1.	• Minor relocation of tracks, cables, low voltage powerlines in various areas	Avoidance of constraints and improved alignment; reduced cut and fill requirements; improved connectivity; reduction in impacts on farm management practices.	Yes

The exhibited PPR (Nov 2012) included changes to the project infrastructure layout compared to the EA (2009).

Various reports continue to refer to the previous number and layout of wind turbines. These assessments can now be considered conservative as for example there are now only two uninvolved dwellings within 2km of a wind turbine rather than three.

2.3 Wind Turbine Selection

The turbine supplier and specific turbine model for the project has not been selected at this stage in the project development. The maximum blade tip height proposed is 150 m above ground level and any turbine selected would meet this maximum tip height limit, although the hub height and rotor diameter could vary within this maximum limit. Each wind turbine would have a rated capacity of between 1.5 and 3.6 MW.

For the noise assessment, two turbine models have been considered. The Vestas V90 3MW with an 80m hub height has been used to provide a worst-case noise impact and the REpower MM92 2.05MW with an 80m hub height has been used to provide a representative noise impact.

For the visual impact assessment and photomontages a turbine with 100m diameter rotor on a 100m hub height has been used to provide a representation of the maximum 150m tip height.

Table 2-2 Proposed wind turbine parameters

Wind turbine parameter	
Maximum tip height	150m
Typical rotor diameter	90 – 121m
Typical hub height	78 – 100m
Typical rated capacity	1.5 – 3.6 MW
Maximum wind farm capacity	482.4 MW

When the wind turbine has been selected the rotor diameter and detailed spacing requirements will be known. At this point micro-siting may be required and will only be carried out where impacts remain consistent with those assessed and within a maximum allowance of 100m from the proposed location.

2.4 Wind Farm staging

To ensure the full social, economic and environmental benefits of the wind farm are realised the proponent seeks approval to progress the wind farm in a number of stages:

- Coppabella : 87 wind turbines and 132kV connection and associated works and facilities
- Marilba : 29 wind turbines and 132kV connection and associated works and facilities

- Conroys Gap Extension : 18 wind turbines and 132kV connection and associated works and facilities
- 330kV transmission line: 330kV substation(s) and 330kV transmission line to the proposed 330kV switchyard adjacent to the existing 330kV transmission line to the south and associated works and facilities.

These four stages could potentially be constructed at different times and by different owners, with construction timed to suit the market requirements for additional renewable energy. At the time of writing this report it is anticipated that Yass Valley Wind Farm Pty Ltd would construct the Coppabella, Marilba and 330kV Connection stages, and that Conroys Gap Wind Farm Pty Ltd would construct the Conroys Gap Extension stage. Both of these companies are currently wholly owned subsidiaries of Epuron Projects established as special purpose companies with the sole purpose being to own and operate a wind farm.

Approval is sought for each stage to be able to be constructed and operated independently of the other stages and by separate proponents. Accordingly, the Statement of Commitments outlined, and the consent conditions, shall be complied with by the relevant proponent for each stage and that proponent shall not be responsible for demonstrating compliance with approval conditions for stages for which is its not responsible.

The Statement of Commitments and any resulting consent conditions are only required to be complied with at the relevant time and to the extent that they are relevant to the specific stage.

Since the development began there have been numerous changes to, and reviews of, the legislation governing renewable energy developments. The staged approach presented here provides the greatest opportunity to enable the wind farm to be built in its entirety in the context of the uncertain and fluctuating legislative and policy environment.

Creating a separate stage for the 330kV transmission line acknowledges that should any single stage move to construction ahead of the rest then electrical connection is most likely to be to the 132kV transmission line to the north of the site. The 330kV transmission line would then be required to export generation when a second stage proceeds which would otherwise potentially exceed the spare capacity of the 132kV line.

The Conroys Gap Extension Stage identified in Figure 2-2 is geographically separated from the rest of the site by the Hume Highway. For a number of reasons including electrical connectivity, construction, operation and maintenance, it is possible that this Stage may more efficiently and effectively become an extension to the approved Conroy's Gap Wind Farm. Approval is sought for the option for this stage to be built by a separate entity from the rest of the Yass Valley Wind Farm. This would require the Statements of Commitment, planning conditions and other obligations including cumulative impacts to apply separately to this stage as though it were a discrete wind farm in its own right.

3 Exhibition of the Preferred Project Report

3.1 Public Exhibition

The Yass Valley Wind Farm Preferred Project Report was submitted to the Department of Planning and Environment on 30 November 2012. The report addressed the submissions received during the earlier exhibition of the Environmental Assessment and highlighted the changes made to the project infrastructure layout as a result of those submissions. DPE placed the Preferred Project Report on public exhibition from 14 December 2012 to 1 March 2013 at the following locations:

- NSW Department of Planning and Environment, 23-33 Bridge St, Sydney;
- Nature Conservation Council, Sydney;
- Yass Valley Council office, Yass;
- Harden Shire Council office, Harden;
- Binalong Post Office, Binalong; and
- On the NSW Planning & Infrastructure website.

3.2 Submissions Received

Seventeen submissions were received in response to the exhibition of the Preferred Project Report, eight from individuals and nine from government agencies.

Note that submissions received from the 2009 exhibition of the EA and updated responses to those submissions based on the current project can be found in Attachment 22.

3.3 Summary of Issues Raised by Submissions

The issues raised in each submission have been summarised and tabulated in the table on the following page to identify the most frequently and infrequently raised issues.

All of these submissions have been considered and addressed in section 3.4 and 3.5 of this updated Preferred Project & Submissions Report.

Table 3-1 Summary of Submissions to the Preferred Project Report

Submission Number	Visual Impacts	Operational Noise	Biodiversity Impacts	Heritage Impacts	Consultation/ community	Property Value Impact	Health Impacts	Fire Hazards	Aviation Impacts	Traffic Impacts	Soil Erosion	Decommissioning	Land/water	Support
Submissions from public														
1	■		■		■	■	■	■	■					
2	■					■	■							
3	■	■	■			■	■		■					
4			■		■		■							
5	■		■		■									
6	■						■	■	■					
7	■				■	■	■							
8	■				■	■					■	■		
Submissions from government agencies														
9													■	
10									■					
11		■												
12										■				
13														■
14														■
15			■	■										
16													■	
17										■				
18									■					

3.4 Response to Public Submissions

3.4.1 Mark Glover, Bogolara (5.9 km from nearest turbine)

Submission Issue/Comment	*Proponents Response*
Supplementary LVIA Section 6.1.4 Views from residential dwellings - The visual impact will be high and very significant.	Section 6 of the supplementary LVIA addresses the cumulative visual impact of the proposed Yass Valley Wind Farm together with other proposed, approved and existing wind farms in the vicinity. The assessment identifies simultaneous views of the proposed Yass Valley Wind Farm and the approved Conroy's Gap Wind Farm, particularly for residential properties located to the east and west of the Conroy's Gap Wind Farm. The assessment concludes that the additional visual impact from the Yass Valley Wind Farm will be relatively low in comparison to the level of impact from the approved Conroy's Gap wind farm. No Conroys Gap wind turbines will be visible from the Glover residence. The wind turbines on Coppabella will be visible from this residence albeit at a distance beyond 5km. The impact is assessed as medium.
Section 6.2 Overall cumulative impact is clearly incorrect and should be discounted	Cumulative impact assesses locations from which multiple wind farms can be seen. Conroy's Gap wind farm cannot be seen from this residence so there is visual impact from Yass Valley Wind Farm but not cumulative impact from multiple wind farms from this residence.
Section 7.2 is also incorrect as approval ratings are falling not increasing as stated	The assessment *Community Attitudes to Wind Farms in NSW* (DECCW 2010) showed strong and increasing support for wind farms. Polling by the Coalition's preferred pollster Crosby Textor released September 2014 shows that more than 80 per cent of those polled wanted the RET left alone. The poll shows support for renewable energy and the Renewable Energy Target has strengthened over the last year.
Section 7.3 This statement is also incorrect. 148 turbines must have a high cumulative impact	The wind farm comprising of 134 turbines (reduced from the time of the submission) is a large development, however it is located at a sufficient distance away from other wind farm projects that there won't be any cumulative visual impact other than with the adjacent Conroys Gap Wind Farm. The assessment of visual impact considers more than just the number of wind turbines that may be visible. Refer to section 1.4 of the supplementary LVIA for further details on the methodology.
Section 8. The statement that 'the proposed Yass Valley Wind Farm will have a generally low visual impact on it surrounds, and that the site is a suitable landscape for the construction of a wind farm is clearly ludicrous and plainly wrong.	The conclusion of the LVIA is supported by the assessment which was carried out by qualified landscape architects with significant experience in assessing the visual impact of wind farms. The assessment was carried out in accordance with the Director Generals Requirements and associated guidelines and in accordance with best industry practice. The area has a low density of residential dwellings and current land use is predominantly for agricultural production (grazing).
The area is already in a high bush fire risk zone, these wind farms will only increase that risk.	The wind farm will not change the risk of bush fires in the area. Consultation with the RFS has confirmed that the proposed wind farm access tracks will significantly improve the access for the RFS and help with the management of any bush fire.
Furthermore property values will decline.	The main finding in a report prepared for the NSW Valuer General in August 2009 was that "*wind farms do not appear to have negatively affected property values in most cases*." The value of a property is made up of a myriad of considerations and not only includes proximity to wind turbines but also to other infrastructure, the potential use of the property and any improvements. It is possible to find real estate agents who consider there is an impact and those who consider there is not an impact. However, it is objective studies that provide the basis for sound consideration of this matter and numerous studies conclude that wind farms do not have any discernible impact on property values. Studies include those by Hinman – 3,851 sales over 9 years, Carter – 1,298 sales over 13 years and the 2013 study by Lawrence Berkeley National Laboratory which examined 51,276 sales of homes within 10 miles of 67 different wind farms. This study concluded "we find no statistical evidence that home values near turbines

Submission Issue/Comment	*Proponents Response*
	were affected in the post-construction or post-announcement/pre-construction periods". It is important to remember that the issue of impacts to property values was considered in the 2007 Land and Environment Court ruling in the Taralga Landscape Guardians challenge to the approval of the Taralga Wind Farm. This decision states: "*If the concepts of blight and compensation, as pressed by the Guardians, were to be applied to this private project (a proposition which I reject) than any otherwise compliant private project which had some impact in lowering the amenity of another property (although not so great as to warrant refusal on general planning grounds …) would be exposed to such a claim.* *Creating such a right to compensation (for creating such a right it would be) would not merely strike at the basis of the conventional framework of land use planning but would also be contrary to the relevant objective of the Act, in s 5(a)(ii), for "the promotion and co-ordination of the orderly and economic use and development of land*".
Farming will be impacted as aerial operations are reduced.	The aeronautical assessment (Attachment 11) concluded that the location of individual wind turbines will not impact aerial agricultural operations. The EA for the nearby Collector Wind Farm noted "that crop spraying has been ongoing within 1km of the Cullerin Range Wind Farm with few impacts to operations." It is noted that the submitter's preferred pilot has expressed a personal reservation about servicing properties around wind farms. However, other agricultural aviators are available and the proponent would pay the difference in cost to the landowner (if any - due to increased flying times/distances etc) – see Statement of Commitment 79.
The local community is clearly against this development.	The proponent acknowledges that there are some individuals in the community who do not support the wind farm, but there are also significant numbers of people in the community who do recognise the benefits of the project and do support the project.
EA Section 6.2 Community Consultation This section is totally wrong as Epuron did not consult widely with the community, newsletters were primarily delivered to potential hosts. Face to face meetings with neighbouring landholders did not take place.	Newsletters were delivered to both the involved and non-involved residents around the wind farm. Refer to section 6.3 of this report for more details of meetings and correspondence with the owners of all residences within 5km of the wind farm. It is acknowledged that the submitter is outside of 5km from the wind farm and was not initially contacted. It is appreciated that the submitter has been on the Community Consultative Committee since early 2013
EA Section 7.4 Flora and Fauna This section completely fails to address the adverse impact on the raptor population and also fails to address the impact on the local bent wing bat population.	The assessment of the potential impacts on bird and bat species recorded on the site can be found in section 6.2.2 (pages 96 -98) and 6.3 (pages 100 – 102) of the Coppabella Biodiversity Assessment and in section 6.2.2 (pages 57 – 60) and 6.2.3 (pages 60 – 62) of the Marilba Biodiversity Assessment (pages 57 – 62). In addition Appendix 3.3 to the EA has a more detailed assessment of wind farm risks to birds and microbats.

Submission Issue/Comment	*Proponents Response*
EA Section 7.7 Aircraft Hazard Impacts A comment is made that "Due to the current land use of the proposed wind farm site, potential impacts to Ariel spraying of agricultural areas are considered negligible" this statement is absolute nonsense, on the map in this section there are 3 landing strips marked, these are not for private jets but for agricultural aircraft movement primarily for fertilizer application as well as for herbicide use.	The aeronautical impact assessment (Attachment 11) included consultation with local aviation operators, including the company utilising the air strip on Bogolara. The assessment concluded that the location of the wind farm and its individual turbines will not impact on the safety of aerial agricultural operations. See also section 0 of this report which confirms that the wind farm will not have any impact on the operation of any of the identified airstrips in the vicinity of the wind farm. See new Statement of Commitment 79 and as set out below. *Should the costs of aerial agriculture (as undertaken at any non-associated property adjacent to the site prior to construction) increase as a result of the operation of the proposed wind turbines, the proponent of the relevant stage shall fully re fund to the affected landowner the increase in costs of that aerial agriculture attributable to the operation of the wind turbines*
EA Section 7.11 Fire and Bushfire Impacts There is no mention in this section that aerial fire fighting will not be able to occur. Aircraft will not operate within 1km of a turbine and up to 10km downwind. Aircraft were a huge help to the recent Cobbler Rd fire, however there help will in future be absent once these turbines are built.	Epuron wrote to the NSW Rural Fire Service to ask how they viewed the presence of wind farms when fighting fires on the ground or from the air. The August 1, 2013 response from the Assistant Commissioner noted: On the ground… *"…fire moving across the area of a wind farm is generally managed in the same way as any other bush fire. Fire fighting strategies by ground-based resources would continue and be subject to prevailing weather and topographic conditions. "* And from the air… *"…aircraft would avoid wind turbines in the same manner as they avoid other obstructions, such as power lines."*
EA Section 8.4 Land Value Impacts Recent research shows that land values fall by on average 30% for properties close to wind turbines. In both the UK and Victoria councils have had to reduce their rates due to falling land values. The research papers Epuron has sited in this section are all dated and not relevant to the Yass valley proposal.	The main finding in a report prepared for the NSW Valuer General in August 2009 was that "*wind farms do not appear to have negatively affected property values in most cases*." The value of a property is made up of a myriad of considerations and not only includes proximity to wind turbines but also to other infrastructure, the potential use of the property and any improvements. It is possible to find real estate agents who consider there is an impact and those who consider there is not an impact. However, it is objective studies that provide the basis for sound consideration of this matter and numerous studies conclude that wind farms do not have any discernible impact on property values. Studies include those by Hinman – 3,851 sales over 9 years, Carter – 1,298 sales over 13 years and the 2013 study by Lawrence Berkeley National Laboratory which examined 51,276 sales of homes within 10 miles of 67 different wind farms. This study concluded "we find no statistical evidence that home values near turbines were affected in the post-construction or post-announcement/pre-construction periods". It is important to remember that the issue of impacts to property values was considered in the 2007 Land and Environment Court ruling in the Taralga Landscape Guardians challenge to the approval of the Taralga Wind Farm. This decision states: "*If the concepts of blight and compensation, as pressed by the Guardians, were to be applied to this private project (a proposition which I reject) than any otherwise compliant private project which had some impact in lowering the amenity of another property (although not so great as to warrant refusal on general planning grounds …) would be exposed to such a claim.* *Creating such a right to compensation (for creating such a right it would be) would not merely strike at the basis of the conventional framework of land use planning but would also be contrary to the relevant objective of the Act, in s 5(a)(ii), for "the promotion and co-ordination of the orderly and economic use and development of land*".
EA Section 8.10 Health and Safety	The National Health and Medical Research Council's 2013 report reviewed

Submission Issue/Comment	Proponents Response
There is widespread and growing anecdotal evidence of severe health effects occurring in people living up to 10kms from wind turbines. There is no mention of this in this section, this section needs to be completely rewritten taking into account the most recent research and observations.	available evidence on wind farm health and safety and concluded: "The evidence considered does not support the conclusion that wind turbines have direct adverse effects on human health, as the criteria for causation have not been fulfilled. A similar position has been adopted by: • the 2013 Victorian Department of Health's Wind Farms, Sound and Health report • the 2013 South Australian EPA report on Infrasound Levels Near Wind Farms and Other Environments • The May 2014 Statement by the Australian Medical Association that evidence does not support the view that wind farms cause adverse health effects The application of stringent noise criteria as demanded by the *Draft NSW Planning Guidelines: Wind Farms* provides a precautionary approach to health issues suggested to result from wind farm noise. A very small number of people in Australia have anecdotally reported that they believe that wind turbines are making them ill. The list of symptoms described is long and all are present in the broader community including in areas not near a wind farm and there is no evidence to link the symptom, however real, to wind turbines. Simon Chapman, Professor of Health at UNSW, offers one explanation for ill health suffered by people living near a wind farm who believe the wind farm is causing their ill health is – that some of these cases could be as a result of the "nocebo" effect which has proven that some people who believe that something is making them ill can actually make themselves ill. They suffer a real illness even though there is no physical cause. Consistent with the NHMRC and Professor Chapman, the September 2013 Planning Assessment Commission Determination Report for Bodangora Wind Farm near Wellington notes that "NSW Health also made it clear that noise levels at distances of more than one km from the turbines would not cause health impacts and the 2 km buffer provided in this instance is highly precautionary". The Victorian Department of Health has issued fact sheets on noise and health (http://www.health.vic.gov.au/environment/windfarms.htm) (Vic Health, 2013). The Australian Medical Association released a statement in 2014 that "The available Australian and international evidence does not support the view that the infrasound or low frequency sound generated by wind farms, as they are currently regulated in Australia, causes adverse health effects on populations residing in their vicinity. The infrasound and low frequency sound generated by modern wind farms in Australia is well below the level where known health effects occur, and there is no accepted physiological mechanism where sub-audible infrasound could cause health effects" (AMA, 2014)
Aerial Issues: The Aerial Agriculture Association of Australia has recommended that its members do not fly in areas with wind turbines.	The AAAA policy (March 2011) includes the following statements: • *AAAA opposes all wind farm developments in areas of agricultural production or elevated bushfire risk.* • *While it is not AAAA policy to provide specific comments on particular development proposals due to resource limitations, AAAA notes that wind farms can have far-reaching footprints that can remove significant amounts of land from treatment for a considerable distance from the wind farm boundary.* The AAAA does not specifically recommend that its members do not fly in areas with wind turbines and no attempt has been made to quantify the reference to "a considerable distance."
The aerial risk is not solely with aircraft coming in direct contact with the wind towers but with the turbulence created by large arrays of these turbines. This effect on the air can extend over 20 km downwind of turbines.	Studies indicate that levels of turbulence that are capable of posing a hazard to aviation will not be present at more than a few rotor diameters downwind of a turbine, were turbulence is found to reduce to ambient levels (Smedman et al, 2003). The EA for the nearby Collector Wind Farm noted "that crop spraying has been ongoing within 1km of the Cullerin Range Wind Farm with few impacts to operations" and that "The operator indicated that the main cause of turbulence in the locality was topography rather than the wind farm."

Submission Issue/Comment	Proponents Response
The chief pilot of Yass Air, Ted McIntosh, has stated that if the Yass Valley wind farm is constructed then he would be unable to spread super phosphate at the submitter's property due to wind turbulence.	Despite meeting with Mr McIntosh, Epuron has not been able to establish the details of why he believes this is the case.
The dangers to aircraft operating near wind turbines are significant with a number of accidents and fatalities being recorded overseas.	There are no known fatalities as a result of aircraft operating near wind turbines either in Australia or overseas.
Should the proposal be approved then the NSW Department of Planning must address the issue of compensation to affected farmers	For the avoidance of doubt a new Statement of Commitment has been included at SoC 79 which commits the wind farm owner to pay any difference in the cost of aerial agriculture attributable to the operation of the wind farm

3.4.2 Dr Mary Ann Robinson, Bookham (3.3 km from nearest turbine)

Issue/Comment	Response
The Company Epuron in relation to any developments has never contacted me; I have recently made efforts of my own to make contact and have received vague answers to the date of construction etc.	During the early development of the wind farm under Epuron the 330kV connection was not planned. The project proponent (Origin Energy at the time) held meetings with Dr Robinson shortly after the exhibition of the EA on 25 March 2010 and on 19 May 2010. Epuron has also more recently visited the Robinsons at their property and provided written responses to address the specific queries raised. At this stage the date for commencement of construction is not known.
I submit that the company assessment is patently incorrect and deliberately confusing in its language and the assessment regarding the visual and overall cumulative visual impact on the residents.	Cumulative impact assesses locations from which multiple wind farms can be seen. Conroy's Gap wind farm cannot be seen from the Robinson residence. There is visual impact from Yass Valley Wind Farm but not cumulative impact from multiple wind farms at this residence.
Therefore I write on behalf of myself and my husband from ground zero of the proposed wind farm to object in the strongest terms to its construction on the grounds that it will have a severe and detrimental effect on our lives via its high visual impact, the destruction of the night sky with aircraft lighting, the reduction in the valuation of our property, the as yet unknown and untested health risks of these turbines, and the lack of clear and professional assessment of the environment if it is based on the above document which I have read in its entirety.	The overall visual impact at this residence has been assessed as medium from the living areas and high from the garden. See section 5.5.4 (page 45) of the supplementary LVIA (Attachment 5) for more details. Screening options would be available to mitigate visual impact. The installation of obstacle lighting is not currently proposed for the wind farm. The CASA Advisory Circular AC 139-18 in relation to Obstacle Marking and Lighting of Wind Farms has been withdrawn and wind farms that have previously operated red flashing obstacle lighting have now turned these off permanently.

3.4.3 Tony & Barbara Folkard, Bowning (approximately 8 km away)

Issue/Comment	Response
Landscape and Visual Impact Assessment Our concern that your assessment does not appear to recognise the widespread visual impact from 148	The installation of the wind farm only requires a small part of the productive farming land and will not prevent the landowner from continuing to farm/graze the land. The supplementary landscape and visual impact assessment has considered the visual impact of the proposed wind turbines from publically accessible viewpoints,

Issue/Comment	*Response*
massive towers 150m high, over productive farming land and you appear more concerned with the impact the Yass Valley Wind Farm will have on tourism and traveller amenity. We also disagree with the statement that the "likely cumulative visual impact is probably low from residential dwellings where towers will have a dominant effect on the landscape". Everyone but the host farmers are horrified at your insensitive and arrogant assessment.	sequential viewpoints (highways) as well as from individual residences in the vicinity of the wind farm. There are a limited number of residential locations that will be able to see turbines from both the Conroy's Gap and Yass Valley Wind Farms. Many of these dwellings are well screened by existing vegetation, thus the cumulative impact from both wind farms is low. The most effected residential properties will be those that are located immediately to the east and west of the Conroy's Gap Wind Farm where residents may be able to see Conroy's Gap wind turbines while viewing in one direction and then the Yass Valley wind turbines when viewing in another. This potential panorama would be greater for residents to the west of Conroy's Gap Wind Farm. Residents, especially to the west of Conroy's Gap Wind Farm, may have a larger panorama of wind turbines than would be the case if only one wind farm was visible. Therefore there could be a cumulative visual impact. The previous assessment has shown that houses are well screened by existing vegetation. Therefore the probability of residential properties being able to see this enlarged panorama of wind turbines is low. The combination of few effected residential properties and this existing vegetation would lead to the conclusion that the likely cumulative visual impact caused by this increased panorama from residential properties immediately to the east and west of Conroy's Gap Wind Farm is low. If there are residential properties without existing screening vegetation that are within 3km of Conroy's Gap Wind Farm and are also within 3km of Yass Wind farm, then these properties could be offered landscape to mitigate the additional cumulative visual impact.
Other aspects including noise, effect on native fauna, health concerns and lowering of land values are of equal importance must also be considered.	Each of these particular aspects has been addressed in the EA and this Preferred Project and Submissions Report.
A great many people in any population these days have compromised immune systems for various reasons, and they especially are very likely to be afflicted with health problems, apart from others who also become vulnerable to the insidious effects of the wind farms.	The National Health and Medical Research Council's 2013 report reviewed available evidence on wind farm health and safety and concluded: "The evidence considered does not support the conclusion that wind turbines have direct adverse effects on human health, as the criteria for causation have not been fulfilled. A similar position has been adopted by: • the 2013 Victorian Department of Health's Wind Farms, Sound and Health report • the 2013 South Australian EPA report on Infrasound Levels Near Wind Farms and Other Environments • The May 2014 Statement by the Australian Medical Association that evidence does not support the view that wind farms cause adverse health effects The application of stringent noise criteria as demanded by the *Draft NSW Planning Guidelines: Wind Farms* provides a precautionary approach to health issues suggested to result from wind farm noise. A very small number of people in Australia have anecdotally reported that they believe that wind turbines are making them ill. The list of symptoms described is long and all are present in the broader community including in areas not near a wind farm and there is no evidence to link the symptom, however real, to wind turbines. Simon Chapman, Professor of Health at UNSW, offers one explanation for ill health suffered by people living near a wind farm who believe the wind farm is causing their ill health is – that some of these cases could be as a result of the "nocebo" effect which has proven that some people who believe that something is making them ill can actually make themselves ill. They suffer a real illness even though there is no physical cause. Consistent with the NHMRC and Professor Chapman, the September 2013 Planning Assessment Commission Determination Report for Bodangora Wind Farm near Wellington notes that "NSW Health also made it clear that noise levels at distances of more than one km from the turbines would not cause health impacts

Issue/Comment	Response
	and the 2 km buffer provided in this instance is highly precautionary". The Victorian Department of Health has issued fact sheets on noise and health (http://www.health.vic.gov.au/environment/windfarms.htm) (Vic Health, 2013). The Australian Medical Association released a statement in 2014 that "The available Australian and international evidence does not support the view that the infrasound or low frequency sound generated by wind farms, as they are currently regulated in Australia, causes adverse health effects on populations residing in their vicinity. The infrasound and low frequency sound generated by modern wind farms in Australia is well below the level where known health effects occur, and there is no accepted physiological mechanism where sub-audible infrasound could cause health effects" (AMA, 2014)
A major concern has recently manifest itself in the local community is the ban imposed on aircraft operating within one kilometre of towers.	The Aerial Agriculture Association of Australia does not have a policy restricting aircraft operation within one kilometre of a wind turbine. Neither does the NSW Rural fire service have any procedures restricting aircraft operation within one kilometre of a wind turbine.
Your assessment of the cumulative visual impact of the Yass Valley Wind Farm has concluded that there would be minimal cumulative visual impact and that the changes to people's perception of the surrounding area would not be significantly changed by the presence of multiple wind farms in the locality. A number of public meetings have indicated otherwise.	The wind turbines will be evident in the landscape but will not obscure views of the existing landscape features. The assessment of the cumulative visual impact was carried out by qualified landscape architects with significant experience in assessing the impact of wind farms. It is noted that several submitters have read cumulative to be multiple wind turbines rather than multiple wind farms.

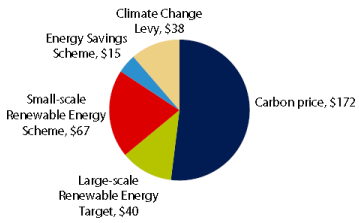
3.4.4 David Burraston, Cootamundra (approximately 60 km away)

Issue/Comment	Response
Poor community consultation by Epuron The proponent contacted me 3 weeks after I was contacted by the Department.	It must be noted that we do not as a matter of practice consult on an individual basis with landowners so distant from the wind farm site. Epuron has contacted and continues to consult with the neighbouring landowners as noted in section 6 and set out in the consultation plan in Attachment 6 to 9 of the EA. The consultation program includes: ▸ Ongoing telephone contact ▸ Ongoing individual meetings with landowners ▸ Newsletters – distributed to landowners, neighbours and the broader community ▸ An Open House information day held on 10 December 2008 During the early stage of the project representatives from Epuron made telephone calls to neighbours in the vicinity of the project and this was followed in most cases with a face to face meeting to provide any further information required and answer individual questions. Since Epuron re-acquired the project from Origin Energy in July 2012 it has: ▸ Issued four project newsletters ▸ Established a project website ▸ Establish a Community Consultation Committee (CCC) ▸ Held seven CCC meetings ▸ Contacted or attempted to contact all neighbours with a residence within 5 km of a turbine and in some cases beyond 5 km.
Environmental issues – Box Gum	The majority of the wind farm site comprises low diversity native pasture derived

Issue/Comment	*Response*
Grassy Woodlands BGGW habitat has been identified as endangered and vulnerable on NSW state and national registers. With many overseas research studies documenting the negative impacts wind turbines have on fauna and natural habitats it is clear that the establishment of wind farm in and around BGGW areas will further fragment this habitat, hinder biodiversity and have a detrimental impact on many of its endangered species, many of which are migratory. There is no peer-reviewed scientific research on mitigation strategies to offset the impact of industrial scale wind turbines on BGGW habitat.	from Box-Gum Woodland and is dominated by exotic weeds which is typical of the unimproved grazing land in the district. The wind farm infrastructure will have a direct impact on < 2% of the area of the wind farm site. Nevertheless, the biodiversity assessments have considered the potential impacts on the Box-Gum Woodland Endangered Ecological community. Following the supplementary ecology assessment the wind farm infrastructure layout has been further revised to minimise the impact on Box-Gum Woodland. The CEMP will also include measures to mitigate impacts on sensitive native vegetation. Residual impacts that can't be avoided will be offset in order to achieve a positive net environmental outcome for the proposal. Refer to Attachments 1 and 2 for further details.
Noise and health Important developments in wind turbine noise and health are being studied by the federal department Health Canada (13 February 2013) and these are not addressed in the PPR.	The Health Canada studies haven't been completed yet (to the best of our knowledge it is due late 2014), however, the potential health impacts from wind farms have been extensively investigated in Australia. The National Health and Medical Research Council's 2013 report reviewed available evidence on wind farm health and safety and concluded: "The evidence considered does not support the conclusion that wind turbines have direct adverse effects on human health, as the criteria for causation have not been fulfilled. A similar position has been adopted by: • the 2013 Victorian Department of Health's Wind Farms, Sound and Health report • the 2013 South Australian EPA report on Infrasound Levels Near Wind Farms and Other Environments • The May 2014 Statement by the Australian Medical Association that evidence does not support the view that wind farms cause adverse health effects The application of stringent noise criteria as demanded by the *Draft NSW Planning Guidelines: Wind Farms* provides a precautionary approach to health issues suggested to result from wind farm noise. The Australian Medical Association released a statement in 2014 that "The available Australian and international evidence does not support the view that the infrasound or low frequency sound generated by wind farms, as they are currently regulated in Australia, causes adverse health effects on populations residing in their vicinity. The infrasound and low frequency sound generated by modern wind farms in Australia is well below the level where known health effects occur, and there is no accepted physiological mechanism where sub-audible infrasound could cause health effects" (AMA, 2014).
Local climate impacts The is continued scientific research showing significant local meteorological effects from large scale wind installations that are not addressed in the PPR.	Much of the referenced research can be considered fledgling research into this topic - peppered with words such as "could", "possibly" and "might". Effects observed related to near-surface temperature effects such as very localised mixing of the cooler higher air with slightly warmer air above the ground rather than the much wider phenomenon of climate change. For example the studied effects are not likely to have any impact on the area of the troposphere where clouds are formed or on rainfall.

3.4.5 Stephen Frith, Bogolara (approximately 10 km away)

Issue/Comment	*Response*
Community consultation There has been a singular lack of	Epuron has contacted and continues to consult with the neighbouring landowners as noted in section 6.3 and set out in the consultation plan in Attachment 6 to 9 of

Issue/Comment	*Response*
appropriate community consultation regarding the proposed development of a wind farm in our district.	the EA. The consultation program includes: • Ongoing telephone contact • Ongoing individual meetings with landowners • Newsletters – distributed to landowners, neighbours and the broader community • An Open House information day held on 10 December 2008 During the early stage of the project representatives from Epuron made telephone calls to neighbours in the vicinity of the project and this was followed in most cases with a face to face meeting to provide any further information required and answer individual questions. Since Epuron re-acquired the project from Origin Energy in July 2012 it has: • Issued four project newsletters • Established a project website • Establish a Community Consultation Committee (CCC) • Held seven CCC meetings • Contacted or attempted to contact all neighbours with a residence within 5 km of a turbine and in some cases beyond 5 km. Attempts have been made to contact the submitter.
Visual impact of the development The assessment of visual impact as in Section 6.1.4 is erroneous and misleading, diminishing the value to residents of the pastoral landscape. There has been no adequate consultation with local residents, and there appears no adequate government assessment of the community value of wind farms which can only survive because of government subsidies.	This section of the supplementary landscape and visual impact assessment relates to the cumulative visual impact from residential dwellings of the Conroy's Gap and Yass Valley wind farms together. It is not clear what aspect of the assessment was considered erroneous or misleading. Wind farms in Australia do not receive any government subsidies, while there are no fuel costs there are significant capital costs and in recognition of this the Renewable Energy Target obliges retailers to secure a percentage of their power from renewables. Wind energy in the grid competes with other forms of electricity generation which is driving down the wholesale price. IPART, the Independent Pricing and Regulatory Tribunal, identified how much an average customer would pay on their retail bill and wind energy cost $40 per year in 2013/2014 – which equates to 77 cents per week. **Figure 1 Annual cost of green schemes for a typical residential customer ($ per annum, $2013/14)**  **Note:** Costs calculated for a typical customer using 6.5 MWh per year. Includes GST and energy losses. Forecast inflation is 2.5%.
Distraction of the pastoral landscape associated with white and yellow box woodland. The wildlife assessment is lacking in convincing research that might support an approval.	The biodiversity assessment was carried out in accordance with the requirements and guidelines nominated in the Director Generals Requirements for the project and reviewed by the NSW Office of Environment & Heritage.
There appears no adequate government assessment of the community value of wind farms, which can only survive because of government subsidies.	The benefits of the proposed wind farm are outlined in section 4 of this report which includes details of the community fund. Wind farms in Australia do not receive any direct government subsidies. Like any other form of renewable energy generation, wind farms are able to generate renewable energy certificates for every unit of electrical energy generated.

Issue/Comment	Response
There is international resistance to wind farms on ecological, health and environmental grounds	Numerous studies globally and in Australia show strong support for wind farms, including *Community Attitudes to Wind Farms in NSW* prepared by the NSW Department of Environment Climate Change & Water in 2010. The most recent forecasts from the Global Wind Energy Council show wind energy capacity continuing to grow at greater than 12% per year. All forms of generation have their impacts. The issues raised – ecological, health and environmental have been addressed in the EA, the PPR and this report.

3.4.6 Brian & Beverley Joseph, Address Withheld

Issue/Comment	Response
Visual impact Our concern that your assessment does not appear to recognise the widespread visual impact from 148 massive towers 150m high, over productive farming land and you appear more concerned with the impact the Yass Valley Wind Farm will have on tourism and traveller amenity. We also disagree with the statement that the "likely cumulative visual impact is probably low from residential dwellings where towers will have a dominant effect on the landscape". Everyone but the host farmers are horrified at your insensitive and arrogant assessment.	The installation of the wind farm only requires a small part of the productive farming land and will not prevent the landowner from continuing to farm the land. The supplementary landscape and visual impact assessment has considered the visual impact of the proposed wind turbines from publically accessible viewpoints, sequential viewpoints (highways) as well as from individual residences in the vicinity of the wind farm. There are a limited number of residential locations that will be able to see turbines from both the Conroy's Gap and Yass Valley Wind Farms. Many of these dwellings are well screened by existing vegetation, thus the cumulative impact from both wind farms is low. See 5.8.3 below for detail from the expert assessor on cumulative visual impact
Other aspects including noise, effect on native fauna, health concerns and lowering of land values are of equal importance must also be considered.	Each of these particular aspects has been addressed in the EA and this Preferred Project and Submissions Report.
A great many people in any population these days have compromised immune systems for various reasons, and they especially are very likely to be afflicted with health problems, apart from others who also become vulnerable to the insidious effects of the wind farms.	The National Health and Medical Research Council (NHMRC), the peak national body for research in Australia, issued a *Public Statement: Wind Turbines and Health - July 2010* stating that there was no published scientific evidence to positively link wind turbines to adverse health effects. This is the most relevant document to reference as it is impartial, expert and considered. It is understood this document is likely to be updated as more independent reports are published. The application of stringent noise criteria as demanded by the *Draft NSW Planning Guidelines: Wind Farms* provides a precautionary approach to health issues suggested to result from wind farm noise. A very small number of people in Australia have anecdotally reported that they believe that wind turbines are making them ill. The list of symptoms described is long and all are present in the broader community including in areas not near a wind farm and there is no evidence to link the symptom, however real, to wind turbines. Simon Chapman, Professor of Health at UNSW, offers one explanation for ill health suffered by people living near a wind farm who believe the wind farm is causing their ill health is – that some of these cases could be as a result of the "nocebo" effect which has proven that some people who believe that something is making them ill can actually make themselves ill. They suffer a real illness even though there is no physical cause. Consistent with the NHMRC and Professor Chapman, the September 2013 Planning Assessment Commission Determination Report for Bodangora Wind Farm near Wellington notes that "NSW Health also made it clear that noise levels at distances of more than one km from the turbines would not cause health impacts and the 2 km buffer provided in this instance is highly precautionary". The Victorian Department of Health has issued fact sheets on noise and health

Issue/Comment	Response
	(http://www.health.vic.gov.au/environment/windfarms.htm) (Vic Health, 2013). The Australian Medical Association released a statement in 2014 that "The available Australian and international evidence does not support the view that the infrasound or low frequency sound generated by wind farms, as they are currently regulated in Australia, causes adverse health effects on populations residing in their vicinity. The infrasound and low frequency sound generated by modern wind farms in Australia is well below the level where known health effects occur, and there is no accepted physiological mechanism where sub-audible infrasound could cause health effects" (AMA, 2014).
A major concern has recently manifest itself in the local community is the ban imposed on aircraft operating within one kilometre of towers.	The Aerial Agriculture Association of Australia does not have a policy restricting aircraft operation within one kilometre of a wind turbine. Neither does the NSW Rural fire service have any procedures restricting aircraft operation within one kilometre of a wind turbine.
Your assessment of the cumulative visual impact of the Yass Valley Wind Farm has concluded that there would be minimal cumulative visual impact and that the changes to people's perception of the surrounding area would not be significantly changed by the presence of multiple wind farms in the locality. A number of public meetings have indicated otherwise.	The assessment of the cumulative visual impact was carried out by qualified landscape architects with significant experience in assessing the impact of wind farms. The wind turbines will be evident in the landscape but will not obscure views of the existing landscape features. For people with an understanding of the importance of renewable energy in Australia's future energy supply mix the wind farm can be a positive association with a sustainable energy future.

3.4.7 Craig Turnbull, Berremangra (4.2 km from nearest turbine)

Issue/Comment	Response
They (Origin) promised me a photomontage from my residences and this has not been produced.	A photomontage from the residences has been produced and provided to the landowner by Epuron.
My original letter raised the objection of loss of visual amenity. This development will replace the natural beauty with an industrial forest of twirling machines.	It is acknowledged that the perception of visual amenity is subjective and that some people find the visual impact from wind turbines acceptable and that others do not. As noted in the supplementary landscape and visual impact assessment, the visual impact of wind turbines diminishes significantly as the distance away from the turbines increases. The Shepstone Park residences are located 4.2 km from the nearest turbine. The visual impact from this location has been assessed as low. The landscape is a modified landscape largely cleared and with fences, sheds, residences, roads etc and very little of the remaining remnant native vegetation will be impacted.
This project will take away the peaceful natural amenity. Therefore this project makes Shepstone Park less attractive for me or any other potential buyer. Therefore it must decrease the value of my property. No compensation for this loss has ever been offered by either developer. Why couldn't every resident within sight of the development be offered free electricity as compensation for their losses.	It is neither possible, as it is not a retailer, not preferable, for encouraging minimal usage, for the Proponent to offer free electricity. However, Epuron has listened to such concerns and in response has proposed a community fund which proposes that around 50% of the community enhancement fund is available specifically to neighbours within 5 km of the wind farm to assist them to reduce their electricity bill by installing solar and energy efficiency options to their homes. Ssee SoC in section 8.1.14 of this report for further details
I believe that the way Epuron has managed community relations is very divisive and dangerous. My understanding is that the developer has paid the people that will have	Epuron has not paid the people who will have turbines on their land not to talk to other residents. Epuron has established a Community Consultation Committee that includes several representatives of non-involved landowners to keep all stakeholders

Issue/Comment	Response
turbines on their land not to talk to other residents. This has created mistrust and suspicion.	informed about the project and to secure feedback from the community on the project throughout the life of the project (not just one- way communication).
One issue that has not been addressed in the application is health problems associated with wind farms. We have heard stories of sub-sonic sound waves and depression problems.	The National Health and Medical Research Council's 2013 report reviewed available evidence on wind farm health and safety and concluded: "The evidence considered does not support the conclusion that wind turbines have direct adverse effects on human health, as the criteria for causation have not been fulfilled. A similar position has been adopted by: • the 2013 Victorian Department of Health's Wind Farms, Sound and Health report • the 2013 South Australian EPA report on Infrasound Levels Near Wind Farms and Other Environments • The May 2014 Statement by the Australian Medical Association that evidence does not support the view that wind farms cause adverse health effects The application of stringent noise criteria as demanded by the *Draft NSW Planning Guidelines: Wind Farms* provides a precautionary approach to health issues suggested to result from wind farm noise. The Australian Medical Association's statement in 2014 that "The available Australian and international evidence does not support the view that the infrasound or low frequency sound generated by wind farms, as they are currently regulated in Australia, causes adverse health effects on populations residing in their vicinity. The infrasound and low frequency sound generated by modern wind farms in Australia is well below the level where known health effects occur, and there is no accepted physiological mechanism where sub-audible infrasound could cause health effects" (AMA, 2014). A very small number of people in Australia have anecdotally reported that they believe that wind turbines are making them ill. The list of symptoms described is long and all are present in the broader community including in areas not near a wind farm and there is no evidence to link the symptom, however real, to wind turbines. Simon Chapman, Professor of Health at UNSW, offers one explanation for ill health suffered by people living near a wind farm who believe the wind farm is causing their ill health is – that some of these cases could be as a result of the "nocebo" effect which has proven that some people who believe that something is making them ill can actually make themselves ill. They suffer a real illness even though there is no physical cause. Consistent with the NHMRC and Professor Chapman, the September 2013 Planning Assessment Commission Determination Report for Bodangora Wind Farm near Wellington notes that "NSW Health also made it clear that noise levels at distances of more than one km from the turbines would not cause health impacts and the 2 km buffer provided in this instance is highly precautionary". The Victorian Department of Health has issued fact sheets on noise and health (http://www.health.vic.gov.au/environment/windfarms.htm) (Vic Health, 2013). The Australian Medical Association released a statement in 2014 that "The available Australian and international evidence does not support the view that the infrasound or low frequency sound generated by wind farms, as they are currently regulated in Australia, causes adverse health effects on populations residing in their vicinity. The infrasound and low frequency sound generated by modern wind farms in Australia is well below the level where known health effects occur, and there is no accepted physiological mechanism where sub-audible infrasound could cause health effects" (AMA, 2014).

3.4.8 Renee Grogan, Binalong (1.2 km from nearest turbine)

Issue/Comment	Response
Impacted Residences	Epuron appreciates having this residence pointed out. Occasionally new dwellings do not appear on the mapping and on-ground and Google Earth searches do not have

Issue/Comment	*Response*
Amend the PPR to accurately reflect the residences in the area, and amend the impact assessment to include these residences. Update the stakeholder engagement to include a targeted assessment of all impacted residences.	recent enough imagery to identify buildings and dwellings. Epuron has reviewed the layout of the turbines and confirmed compliance at this new residence. Assessment of all impacted residences has now been completed.
Community Consultation Engage all non-involved and involved landowners in a systematic and inclusive manner, particularly those whose residences are within 2km of the proposed wind turbine locations.	Epuron has written to all neighbours within 5km of the wind farm and met with all neighbours who have been available to meet or requested a visit. Epuron has established a Community Consultation Committee that includes several representatives of non-involved landowners to keep all stakeholders informed about the project and receive input from the community (not just one-way communication). Representatives continue to meet with member of the community to consult on the project.
Meeting held on 28 February 2013 (published minutes indicate the meeting was held on 1 March 2013 but this is an error) was not an open meeting. Concerned non-involved landowners and community members were not permitted entry to the meeting, and as a result conducted a picketing exercise outside the Yass Soldier's Club Hall in protest.	There is often confusion about what is happening in the community. In fact there is no error in our minutes. The NSW Government's Precinct Co-ordinator independently assisted in hosting a meeting of The Wind Farm Host Landholders Network with "involved landowners" in Yass on 28 February. Neither Epuron nor any other developer was invited or attended. Epuron understands it was not an open meeting but was for 'host' landholders and their representatives only. Epuron understands that the landowners who picketed outside the meeting were aware that it was a meeting convened by this group and the Precinct Coordinator and that Epuron was not invited and did not attend. The published minutes dated 1 March are from our Community Consultation Committee which was indeed held on 1 March 2013. This was not an open meeting as it followed the Director General's requirements for CCC meetings. This meeting was not picketed. It was attended by neighbouring landholders who are on the committee.
A number of statements in the original 2009 Environmental Assessment are disengaging, unsupported, and inflammatory, including the statement that "*targeted social research on perception clearly demonstrated that there is a very high level of support for wind farms amongst local residents, with 71% supporting wind farms within 1km of their residence*". This social research is not specific to the Yass Valley area and is therefore misleading in its representation of the specific project area.	While the perception study cited was originally commissioned for the Gullen Range Wind Farm it is clearly documented in the Environmental Assessment that this was the case. As there were respondents from the Yass Valley it was considered relevant. There are always opponents to any development in a community and we understand it is our task to find out what the particular concerns are and address them where possible. Epuron considers that 71% support for a wind farm within 1km of a residence is strong support. This level of support is consistently found in impartial professional surveys, even in other countries. Epuron does understand that there are some members of the community who vigorously oppose the construction of wind turbines. Where these concerns are related to unreasonable impacts and can be mitigated them this will be done.
Non-involved landowners, i.e. landowners whose properties are not proposed for wind turbine locations, but who are likely to be impacted by visual impacts or noise impacts, are concerned that they are not being engaged with, or that compensation discussion have not included them. In the words of a landowner within 2km of proposed wind turbine locations, "*No one has come to talk to us*". Further, to define landowners adjacent to the proposed project area as "non-involved" is misleading, given these stakeholders are likely to be exposed to negative impacts of the project, and while not at present involved in	In line with the planning process we have designed a wind farm which will comply with the requirements of the planning system. If any non-compliance issue is discovered Epuron will ensure it is swiftly addressed. Epuron does not consider that payment is a suitable way forward for those whose land does not host infrastructure. We are unaware of other developments, roads, cattle feedlots, mining etc. where neighbours with no on-ground impacts are compensated. The concept of the community fund is that the wider community whose view is altered or who experience traffic delays during construction etc. might benefit through community initiatives such as solar PV, landcare funding or contributions to the local rural fire service The Land & Environment Court's decision in 2010 for the Gullen Range Wind Farm provides a succinct and authoritative response. Relevant excerpts from the decision are: *"150 The Guardians* [who oppose wind farms] *advance the proposition that a consequence of approval of the wind farm will be that a number of properties which are in the vicinity will suffer from "blight" for which there should be payment of*

Issue/Comment	*Response*
compensation discussions, are likely to be significantly affected by the project.	*compensation if the project were to be approved…* *154 Such a proposition faces a number of insurmountable hurdles.* *155 The first is that the wind farm, as earlier noted, is a permissible use on all of the parcels of land upon which it is proposed….* *159 If the concepts of blight and compensation, as presented by the Guardians, were to be applied to this private project (a proposition which I reject) than any otherwise compliant private project which had some impact in lowering the amenity of another property…would be exposed to such a claim.* *160 Creating such a right to compensation (for creating such a right it would be) would not merely strike at the basis of the conventional framework of land use planning but would also be contrary to the relevant objective of the Act, in s 5(a)(ii) for "the promotion and co-ordination of the orderly economic use and development of the land…As a consequence, we decline to consider any issues relating to claims for compensation."* Accordingly, compensation to neighbouring properties of wind farms is not warranted, since this would set a precedent for *any* private project in which amenity is affected, and would be in contravention to land use planning which seeks to achieve the orderly and economic use of the land.
Section 10.1 outlines the process for implementation of environmental mitigation measures, including the implementation of the Construction Environmental Management Plan and the Project Environmental Management Plan. These plans are not well understood among stakeholders, and a number of stakeholders have expressed concern regarding how controls will be implemented for the project.	Sample plans have been provided to members of the CCC for distribution to all interested parties. NSW Planning & Infrastructure has prepared a guideline for preparation of Environmental Management Plans. The CEMP and OEMP will both require approval by the Director-General NSW Planning & Infrastructure. An independent Environmental Representative is also appointed to ensure compliance including compliance with the environmental plans and sub-plans.
Section 10.2 of the 2009 Environmental Assessment lists 93 proposed proponent commitments in order to manage the potential impacts of the project. These are not well understood among stakeholders, and community stakeholders have not been engaged with during the development of these commitments.	Epuron hopes that the Preferred Project Report further explained those aspects that concerned residents who made a submission. Epuron would be happy to discuss any aspect with any landowner who would like to know more about any of the commitments. Many of the commitments result from the expert studies so the community would not have played a part in the development of these. Other community and social commitments have been developed as a direct result of community consultation.
A number of non-involved community members have expressed their concern over visual impacts, with emotive comments such as "*Our pristine landscape shouldn't be polluted with steel structures that have questionable environmental value*", and "*I don't want to look at them and I don't see why I should have to when there are viable alternatives such as solar. We wouldn't mind having solar panels on our properties, as the visual landscape would not be so dramatically changed*". These comments, while emotive, indicate both that there is not a common understanding of the real (net present as well as future) benefit of wind turbines, or why the area has been selected for wind turbines over windier (but potentially more built up)	Epuron does encounter such comments and does understand that it is confronting to have the surrounding environment changed. Railways, roads, mines, quarries are all met with such remarks and in more densely populated areas there is often concern about the location of hospitals and community facilities but that is why there is a planning department – to find a least harm but most effective location for infrastructure which is required by the wider community. The precinct coordinators have been out and about in each of the renewable energy precincts explaining why each precinct has been determined. In the case of most precincts, and certainly the Yass area, it is because of the excellent wind resource and connection opportunities. Solar, while reducing in cost dramatically remains twice as expensive as wind energy and covers significantly more land to provide the same electricity. It is without doubt an excellent power source on homes with north facing roofs and is increasingly promising for larger 1MW + developments.

Issue/Comment	*Response*
areas, or why solar has not been considered. These may all be issues that can be addressed by Epuron, but have not been effectively communicated with stakeholders to date.	
The PPR indicates that an erosion and sediment control plan will be implemented, utilising "*standard erosion and sediment control measures*". A number of community members have continued to express concern over the potential erosion and sediment impacts due predominantly to the construction of access roads in steep areas and areas of poor quality. In addition, members of the community have expressed concern regarding the construction infrastructure and any impacts these may have on the impacted land, as well as land downstream or in other parts of the regional catchment.	The assessment of the impacts is a matter for NSW Planning and Infrastructure but if we can assist landholders to understand such control plans better we will endeavour to do so. A sample erosion and sediment control plan has been provided to members of the CCC. It is not in the proponent's interest to have poorly constructed roads, unstable slopes, scouring of drains or exposed earth. The proponent is well aware that poor management of these aspects have significant social and cost implications.
The PPR indicates that "*infrastructure will be located on the ridges which are predominantly on basalt rock and less prone to erosion risks*". Table 8-6 of the 2009 Environmental Assessment describes seven soil types, six of which are listed as having a high or extreme erosion potential. This contradicts the statement in the PPR, and it remains unclear how Epuron will manage this risk. Potential downstream impacts of erosion have also not been addressed in detail.	At this pre-approval stage in the development it is important to know what has to be addressed more than the precise detail of how it will be addressed. As noted in the EA we are aware of the very high erosion potential of most of the area. This is often the case in cleared grazing land which is suitable for wind farms. The width of the ridges is minimal in places and in those areas we would tend to include the access track itself as part of the hardstand. The hardstand can be adapted to be long and thin rather than a square if this is required. The current designs are the exhibited infrastructure layout upon which we undertake a constructability assessment for our own risk assessment purposes. We don't believe there is a discrepancy between our documents. The risks raised here are managed through the CEMP and the detailed design stage which must be signed off by the Director-General before construction can commence.
Noise The Epuron website refers to a report by the Victorian EPA, which indicates that wind farms are not a significant contributor to low frequency noise, "*at houses located approximately 1.5km away from wind farm sites*". However, the Yass Valley proposal includes a number of residences (including non-involved landowner residences) that are located within 1.5km of the wind farm sites. As such, these residences are likely to be impacted (as indeed the 2009 Environmental Assessment indicates) by noise from the wind farms. The Director General's Requirements (dated 2009) requires the proponent to clearly outline the noise mitigation, management and monitoring	There are two houses owned by non-involved landowners that are located within 1.5km of a proposed wind turbine: M42 and G14. The noise assessment addendum (Attachment 9) has confirmed full compliance with the noise criteria for these two residences and all the other residences located in the vicinity of the wind farm.

Issue/Comment	*Response*
measures. This has not been completed.	
The 2009 Environmental Assessment did not include all potentially impacted residences in the noise survey, or modelling exercise, as required by the Director General's Requirements.	The noise assessment addendum (Attachment 9) has confirmed full compliance with the noise criteria for all the residences located in the vicinity of the wind farm. The submitter's family member's home was not in existence at the time of the monitoring for the 2009 EA.
Land Values The PPR indicates that "*A number of studies in Australia and overseas have shown that wind farms do not generally have any negative impact on the value of surrounding land…"* and more specifically, refers to the findings of the NSW Valuer General in 2009, stating that "*wind farms do not appear to have negatively affected property values in most cases*". These are general comments that do not include an assessment of land values in the Southern Tablelands that have been impacted by wind farms. The statements are not conducive to a detailed property evaluation report.	Land values are not considered to be a planning matter but more a consultation matter to explain how the planning system works in relation to land values. The matter is best left to the experts - see the Land and Environment Court ruling in relation to the Gullen Range Wind Farm – the issue is addressed in paragraphs 107 to the paragraph after 160 in the decision of King & Anor v Minister for Planning found at http://www.lawlink.nsw.gov.au (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] NSWLEC 1102 (7 May 2012)) In terms of consultation we accept that a wide range of matters may cause individuals to have concerns about the value of their land. However, we know only of instances where people have considered that there may be an impact but not of any actual impacts to land value resulting from wind farms in close proximity. It is possible to find real estate agents who consider there is an impact and those who consider there is not an impact. However, it is objective studies that provide the basis for sound consideration of this matter and numerous studies conclude that wind farms do not have any discernible impact on property values. The issue of impacts to property values was also considered in the 2007 Land and Environment Court ruling in the Taralga Landscape Guardians challenge to the approval of the Taralga Wind Farm. This decision states: "*If the concepts of blight and compensation, as pressed by the Guardians, were to be applied to this private project (a proposition which I reject) than any otherwise compliant private project which had some impact in lowering the amenity of another property (although not so great as to warrant refusal on general planning grounds …) would be exposed to such a claim.* *Creating such a right to compensation (for creating such a right it would be) would not merely strike at the basis of the conventional framework of land use planning but would also be contrary to the relevant objective of the Act, in s 5(a)(ii), for "the promotion and co-ordination of the orderly and economic use and development of land*".
Visual amenity Figure 5-7 (Residential Viewpoints) in Attachment 3 to the PPR does not appear to consider a number of residences in close proximity (i.e. less than 2 km of the proposed turbine locations, including the residence of my parents-in-law and my brother-in-law). The Director General's Requirements (DGRs) dated 2009 require a description of community and stakeholder values of the local and regional amenity, including "*perceptions of the project based on surveys and consultation*". This has not been adequately documented. It is not clear what the definition of low, medium and high impact is, and how this has been quantified.	Figure 5-7 does not, and was not intended to, show all residential viewpoints towards the wind farm. This figure considers only those locations selected as representative viewpoints from a range of locations around the proposed site. This approach complied with the DGRs when the EA was exhibited. However, we note that it would be more useful for individuals to have an assessment of the potential visual impact to all properties within 2 km of a turbine. This fits with the guidance provided in the draft NSW Planning guidelines for Wind Farms which are not a requirement for this project. Photomontages and visual impact assessment have now been carried out for and provided to all non-involved dwellings within 2km.

Issue/Comment	*Response*
Cumulative Impact The methodology of the cumulative impact assessment does not appear to have been calibrated by the perception of cumulative impacts by potentially impacted stakeholders. Statements from the PPR relating to residents along minor roads do not adequately reflect the potential cumulative impacts to those stakeholders, including the statement that "*It is considered that the visual impact will be minor from these locations predominantly because the viewer numbers are low*". This is somewhat akin to saying that the cumulative impact of a small car accident in which two people are killed is low, because only two people are impacted. It is an inappropriate assessment of cumulative impacts.	Section 8.14 of the EA deals with cumulative impacts in relation to visual impacts, noise impacts, biodiversity impacts, air hazard impacts, traffic impacts, economic and resource impacts, social impacts and climate and air quality impacts. This approach, undertaken over 2 years before the Draft NSW Wind Farm Guidelines were issued, is consistent with the Guidelines. Guidelines for mining and other projects may have limited relevance. Epuron is aware of the EU Commission's document referenced however, proponentst must be guided by the planning requirements of the jurisdiction in which they operate. It is acknowledged from this comment and those made by others that cumulative impact is not well understood as relating to the impact of multiple wind farms from particular views.
Management Plans A number of commitments proposed are covered by the statement that a plan (such as a Construction Environmental Management Plan, a Decommissioning Plan, a Biodiversity Management Plan, etc.) will be developed. Given the sensitivity (both from a community stakeholder and biodiversity perspective) of the project, there may be value in providing conceptual details of these plans, in order that stakeholders can understand the measurable objectives of these plans.	Epuron will make the draft Construction Environmental Management Plan and draft Biodiversity Management Plan available to the CCC and any other interested stakeholders for comment prior to implementation. These plans are developed in conjunction with the construction contractor and require the approval of the Director-General. A draft Decommissioning & Rehabilitation Plan has been included in this report (Attachment 20).
Decommissioning & Rehabilitation Non-involved stakeholders have expressed concerns over how decommissioning and rehabilitation will occur, particularly given the long life of the turbines, and the potential that Epuron may not be the owner of the infrastructure at the end of the project life. One landowner indicated "*We are hearing stories of wind turbines being left to fall down, having been sold to offshore owners. How do we know this will not happen in our district?*" In addition, stakeholders indicated there does not appear to be a precedent for the successful decommissioning of wind turbines globally, and therefore there was little confidence that this would be carried out effectively in the Yass Valley area.	Epuron will comply with the requirements of the NSW Government's draft Wind Farm guidelines which state: • If a DA for a wind farm classed as State significant development is approved, decommissioning requirements will be included in the Conditions of Consent issued by the consent authority. Conditions of Consent will generally require that: • The wind farm owner is responsible for decommissioning (not the landowner) and that the applicant/wind farm owner must provide evidence to demonstrate this prior to construction commencement. • The Decommissioning and Rehabilitation Plan must be updated every 5 years and made public on the applicant's website as well as providing a copy to the relevant consent authority. • The turbines and associated facilities must be decommissioned within 18 months of cessation of the operation of the project. • Any individual turbine that cease operating for more than 12 months must be dismantled within 18 months The wind farm owner must keep independently verified annual records of each wind turbine electricity generation production. Copies of these records should be made available to the consent authority on request. See Draft Decommissioning plan at Attachment 20.

3.5 Response to Government Agency Submissions

3.5.1 NSW Trade & Investment Crown Lands

Issue	*Response*
Turbines located on or very close to Crown roads	Seven turbine locations did have an overhang over Crown roads. One of these has been deleted, the other six turbines have been micro-sited to ensure they are not located on or overhang Crown roads. Please refer to the current wind turbine co-ordinates in Attachment 16. Turbine ID / Easting / Northing / Distance moved (m) 9 / 642,410 / 6,155,033 / 9.2 15 / 643,186 / 6,154,579 / 24.8 144 / 659,241 / 6,146,899 / 46.9 80 / 644,203 / 6,150,649 / 59.3 83* / 653,869 / 6,149,983 / 158.0 110 / 653,972 / 6,153,875 / 62.3 *this Turbine was moved away from Crown roads but has been subsequently been moved further as a result of the deletion of a number of wind turbines on the Marilba precinct.
Substation sites located on or very close to Crown roads	The substation sites have been micro-sited to ensure that they are not located on any Crown roads. The proposed 330kV switchyard location is located on a Crown road. Epuron is currently in the process of adjoining and closing the affected section of Crown road as outlined in the Crown Lands submission. If this is not possible, then the switchyard will be microsited to avoid the Crown road.
Powerline route crossing Crown Roads	Prior to the commencement of construction the proponent will obtain the necessary agreement from Crown Lands for the powerline crossing in accordance with the Crown Lands Act 1989.

3.5.2 Civil Aviation Safety Authority

Comment	*Response*
Risk to aircraft navigation and obstacle lighting	An Aeronautical Impact Assessment, Obstacle Lighting Review and Qualitative Risk Assessment for the wind farm has been carried out by the Ambidji Group. The assessment recommended that aviation obstacle lighting for the wind farm is not required.
Providing heights and co-ordinates to Airservices and Department of Defence prior to commencement of construction	The proponent has committed to providing heights and co-ordinates of wind turbines to Airservices and Department of Defence prior to commencement of construction.
Consultation with Airservices Australia	Consultation with Airservices Australia is ongoing. Following initial discussion with Airservices Australia a detailed assessment of the potential impact on air traffic control radar has been completed. Further work on identifying appropriate mitigation measures has been undertaken. A full radar impact assessment will be undertaken after detailed design when the final wind turbine locations are identified. Any issues will be dealt with by avoidance or mitigation acceptable to Airservices. See SOC 79
Consultation with Aerial Agricultural Association of Australia	The AAAA was consulted as part of the aeronautical assessment in 2010. The assessed level of risk to aerial agricultural operations in the vicinity of the proposed wind farm was assessed as Low/Medium. It was noted that the location of the wind farm and its individual turbines will not impact on the safety of aerial applications provided pilots conduct proper pre-planning of operations.

Comment	Response
Consultation with operators of non-regulated aerodromes	The owners and operators of fourteen non-regulated aerodromes, airfields and airstrips within 100km of the wind farm were contacted. The aeronautical assessment noted that the wind farm and any of its individual turbines will not impact on the approach, circuit work or take-off of aircraft from any of the identified aerodromes airfields or airstrips in the region.
Consultation with Royal Flying Doctor Service	The RFDS was consulted as part of the aeronautical assessment. No concerns with the proposed wind farm were raised.

3.5.3 NSW Environmental Protection Agency

Comment	Response
The EPA has now reviewed the PPR and believes that it adequately addresses the issues raised in the public submissions.	Noted
Noise modelling to be updated once the actual wind turbine to be constructed has been confirmed and on-ground compliance assessed once operation has commenced.	It is expected that these will be included in any conditions of approval for the project.
It is unclear whether the deletion, micro-siting and/or relocation of the wind turbine layout will change the noise impacts to the receivers to the extent that the criterion is no longer complied with.	An updated noise impact assessment has been carried out – please refer to Attachment 9 for more details. The updated assessment confirms that the current wind turbine layout complies with the relevant criterion. Following micrositing the Noise Assessment will be undertaken again to provide noise predictions of the final turbine model and layout selected at each of the receiver locations. Post construction compliance monitoring will be undertaken to verify compliance.

3.5.4 NSW Roads & Maritime Services

Comment	Response
RMS considers that the proposed changes to the development would not represent any further concerns to those raised in the response from the RTA (now RMS) in 2009.	Noted The proposed conditions of approval in the 2009 submission have been directly referenced in the revised Statement of Commitment 37.
The preparation of a detailed Traffic Management Plan and a road dilapidation report may appropriately address the traffic related issues outlined in the previous correspondence from the RTA.	Epuron has committed to a road dilapidation report and preparation of a detailed Traffic Management Plan in consultation with RMS and the councils prior to the commencement of construction.

3.5.5 NSW Catchment Management Authority Murrumbidgee

Comment	Response
The Murrumbidgee CMA concurs with the PPR that the revised Environmental Assessment will reduce residual impacts of the development on the existing environment.	Noted

3.5.6 Department of Defence

Comment	Response
Defence is pleased that its comments	Noted

Comment	Response
have been acknowledged in the PPR submission, and overall, the Department of Defence has no concerns with the proposal at this time.	

3.5.7 NSW Office of Environment & Heritage

Issue	Response
OEH notes that the proponent has addressed many of the issues raised in our submission of 2010, including: recalculation of BGW EEC, mapping of the proposed transmission easement and provision of greater detail on hollow-bearing trees in the areas not mapped in the EA.	Noted
Turbine placement & numbering	A large scale A1 size map (Attachment 24) with consistent turbine numbering has been included in this report together with a list of current turbine coordinates (Attachment 16). This enables a direct comparison with the original turbine placement and numbering shown in the Environmental Assessment. (Figure 3-10 to Figure 3-12 on pages 47 to 50 of the EA)
Offset assessment methodology and offset ratios	The proposed methodology is to use data from the existing field surveys as well as from additional survey data that will be collected prior to construction to determine offset ratios with reference to: ▸ The conservation status of the vegetation; ▸ The condition of the vegetation; and ▸ Whether the habitat provides actual (not potential) threatened species habitat. The additional pre-construction surveys will inform whether the habitat is used by threatened species and whether the proposed offset ratio needs to be increased or not. A large amount of biodiversity survey work has already been undertaken on site providing a substantial baseline from which to propose offsets. Preconstruction surveys would supplement the baseline studies. Using the Biometric Assessment Methodology would be unnecessary and a duplication of these survey efforts. See Attachment 2.
Clarification of terms: native pasture, BGW pasture, native grassland, BGW (native pasture), BGW (grassland), native dominated grassland and secondary grassland	These terms refer to the same community. The community is derived from intact Box Gum Woodland but now is in different condition classes depending on land use practices such as tree clearing, conversion to exotic pasture and grazing intensity. In different areas the community has a varying proportion of native understorey (from entirely exotic to entirely native) and tree cover (from treeless to within benchmark cover for this community). 'Secondary grassland' refers to the many areas where the community has now been cleared of overstorey but still retains a proportion of native understorey. It identifies the community was not originally a grassland; this is a secondary state after removal of the overstorey.
Clarification of loss of Hollow Bearing Trees as moderate constraint	In the Marilba and Coppabella Biodiversity Assessments, hollow bearing trees were considered a high constraint. Reasoning for this included risks associated with hollow bearing trees near turbines, the location of mature woodland fragments (particularly along roadsides) and the potential to impact breeding for species such as the Superb Parrot. The field assessments conducted for the additional areas primarily focussed on transmission line infrastructure and turbines on the periphery of the site.

Issue	*Response*
	Generally speaking, micrositing poles to avoid hollow-bearing trees is easier to achieve in these areas and the greater abundance of hollows in these areas suggested that minimisation rather than strict avoidance was warranted as a management strategy, to avoid significant impacts. Preclearance surveys have been recommended to address risks to resident fauna. Offsetting would be undertaken to replace the resource.
Request that Biodiversity Management Plan be developed in consultation with OEH and approved by the Director General.	Noted
Recommended conditions of approval	Noted
Procedures for any additional heritage surveys to be documented in a Cultural Heritage Management Plan	Prior to the commencement of construction a Construction Environmental Management Plan will be prepared and submitted to the Director General for approval. The CEMP will include an Aboriginal and non-Aboriginal heritage management plan which will document the procedures to be followed for additional archaeological assessments in any areas which are proposed for impacts that have not been surveyed during the assessments to date. Refer to Statement of Commitments 25 and 26.
Copy of the Heritage Assessment addendum report to be forwarded to other registered Aboriginal stakeholders for their information and comments	A copy of the Heritage Assessment Addendum report has been circulated to all three registered Aboriginal stakeholders for review: ▸ Buru Ngunawal Aboriginal Corporation, ▸ Ngunawal Heritage Aboriginal Corporation and ▸ Onerwal Local Aboriginal Land Council. An endorsement from the Buru Ngunawal Aboriginal Corporation has been included in Attachment 3.

3.5.8 NSW Department of Primary Industries

Comment	*Response*
Agriculture NSW advises no issues in respect to agriculture matters.	Noted
Fisheries NSW advise no issues in respect to fisheries matters.	Noted
NSW Office of Water noted that key changes to water legislation related to this project since 2009 include the commencement of Water Sharing Plan for the NSW Murray Darling Bain Fractured Rock Groundwater Sources and the commencement of the Water Sharing Plan for the Murrumbidgee Unregulated and Alluvial Water Sources	The proponent will adhere to the provisions of these plans where groundwater or surface water is being taken or intercepted. Water extracted from Harvestable Rights Dams will be used on the property that the dam is located on.
The proponent shall prepare a CEMP and Operational Water Management Plan prior to the commencement of activities.	The proponent has committed to preparing a CEMP prior to construction and will include an Operational Water Management Plan.
The design of waterway crossings for access roads and cable installations is to be in accordance with the departments guidelines and included in the CEMP	Noted
If rock anchoring is selected for wind tower foundations, a groundwater assessment is to be undertaken and endorsed prior to construction.	Noted

3.5.9 Yass Valley Council

Issue	*Response*
Complete a more detailed Traffic Impact Study in consultation with the relevant authorities, including Yass Valley Council, prior to commencement of construction including: ▸ Ensure the condition and road user safety is not compromised ▸ Identify hazards along length of each road ▸ A structural assessment of the existing pavements ▸ Review the standard of unsealed roads planned to be used ▸ A structural assessment of all bridges and major drainage structures ▸ Address the location and standard of the proposed access points off the road network ▸ Review the controls for safety and asset protection impacts.	A supplementary Traffic Impact Study (refer Attachment 14) has been completed to take into account changes in the wind farm layout since the preparation of the EA in 2009. The proponent is committed to developing a more detailed traffic management plan in consultation with the relevant authorities (RMS & Councils) and the appointed transport contractor prior to the commencement of construction. Refer to the revised Statement of Commitments 8.1.8.

3.6 Additional Comments from Government Agencies 2013

A Preferred Project & Submissions Report was submitted to NSW Planning & Infrastructure on 30 July 2013. The report addressed the submissions received during the exhibition of the Preferred Project Report from 14 December 2012 to 1 March 2013, as well as the late submissions that were received up to May 2013.

Copies of the Preferred Project & Submissions Report were provided to a number of government agencies who provided additional comments on the report. These additional comments are addressed below.

3.6.1 Office of Environment & Heritage

Comment	*Response*
Surveys have not yet been completed to fully identify and map constraints (e.g. Hollow Bearing Trees, Fauna habitat). If the proponent is to comply with their commitment to avoid impacts in all high constraint areas then all constraints must be accurately identified before the project design is finalised.	Detailed protocols would be developed in consultation with OEH as part of the Biodiversity Management Plan. Specifically this would address: ▸ Threatened reptile finds – preclearance in mapped rocky habitats ▸ Hollow-bearing trees – preclearing surveys ▸ Golden Sun Moth habitat – based on summer surveys completed in 2013/14 See Attachment 2.
The EA (2009) and subsequent documents have repeatedly defined high constraint areas as being Box Gum Woodland EEC in good condition according to the Commonwealth EPBC Act listing. However, semi cleared areas with trees and areas of native groundcover are included in the NSW listing of Box Gum Woodland EEC and therefore of High Conservation Value and impacts should also be avoided in these areas.	Vegetation types and condition have now been updated to reclassify 'exotic' and 'pasture' as Box Gum Woodland in 'moderate - good condition'. Discussions with OEH in October 2013 clarified that not all areas of EEC, regardless of condition, need to be avoided. Refer Attachment 2 for further details.
Further information regarding how vegetation of conservation significance is defined, the	See the further information provided following the OEH site visit (20 Nov 2013) with ngh Environmental at Attachment 2.

Comment	Response
calculation of area of impact, and the finalisation of an offset is required.	
Turbines and infrastructure are still located within areas of high conservation significance which will have potential impacts both vegetation and fauna	See the further information provided following the OEH site visit (20 Nov 2013) with ngh Environmental at Attachment 2
OEH is concerned that there is an ever increasing cumulative impact on Aboriginal cultural heritage values that is not being addressed.	The changes made to the wind farm layout do not result in an ever increasing cumulative impact on Aboriginal heritage. Refer Attachment 4 for further details.
OEH requests confirmation that Aboriginal Site Recording Forms have been submitted for all new sites recorded since the original 2008 survey.	Site cards have been submitted to OEH and AHIMS numbers issues.

3.6.2 Roads & Maritime Authority

Comment	Response
RMS notes the indicative alignment of the proposed transmission lines across road reserves, particularly the Hume Highway, however given the scale of the wind farm proposal, specific design details for the transmission lines have not been provided such as detailed alignment plans, pole placement, clearance of transmission lines above roads etc. In this regards RMS refers to the need for further detailed information and the requirement for approval for works within the road under section 138 of the Roads Act, 1993.	The requirement for more detailed information and approval under the Roads Act is noted. Key planning criteria for design will be sought from RMS at the beginning of the design process. Details will be supplied to RMS and the required approval obtained as part of the detailed design of the transmission line.
Approval for the upgrade of an existing access driveway or construction of a new driveway to the public road network will need to be undertaken in accordance with RMS design guidelines.	This has been previously noted in the Preferred Project & Submissions Report.

3.6.3 NSW Environmental Protection Agency

Comment	Response
The EPA has reviewed the revised PPR and believes that it adequately addresses the issues raised in our previous submission on the original PPR to the Department of Planning and Infrastructure dated 25 February 2013.	Noted.
The EPA would like to reiterate its previous comments regarding the need to remodel the predicted noise impacts of the project once a wind turbine generator make and model has been confirmed, and to conduct an on-ground compliance assessment once the project is constructed.	Noted.

3.7 Further Additional Comments from OEH 2014

A second revision of the Preferred Project and Submissions Report was lodged with the NSW Department of Planning and Infrastructure on 19 December 2013. Further comments were received from NSW Office of Environment & Heritage as noted in the table below.

Comment	*Response*
Uncertainty about preferred transmission line options and associated potential impacts	There is no uncertainty and no inconsistency in the mapping of the preferred 330kV transmission line route or the alternate 132kVtransmission line route. The preferred option and alternate option for connecting the wind farm to the grid is described in the Preferred Project & Submissions Report (Dec 2013). Figures provided gave a comparison of the current transmission line options to those proposed in the EA (page 54 & 55) in 2009.
The proposed high constraints mapping	As detailed in previous responses, the level of constraint is not only based on whether an area is an EEC or provides threatened species habitat, but on whether the type of impact expected could generate a significant impact to a listed entity or an impact that cannot be withstood without local population consequences.
Accuracy of Endangered Ecological Community mapping	The earlier field surveys in 2008/9 did not accurately map areas of pasture that were considered to be poor condition and poor to moderate condition. These areas are highly disturbed and dominated by exotic grasses. Following discussion during the site visit in November 2013 it was agreed with OEH to take a conservative approach in assuming that these areas could be derived native grasslands and that the impact areas and associated offsets required would be finalised during the pre-construction surveys.
Inappropriate Yass Daisy Buffers	The draft response provided to OEH in October 2013 proposed an increase in the buffer from 2m to 5m. OEH have now recommended a further increase to 20m. Although 20m appears to be a very excessive buffer, Epuron have accepted this higher buffer.
Hollow bearing tree assessment methods, abundance and proposed loss	The accuracy of the HBT estimates does not change the commitment to minimise the impact on HBTs and offset any residual impact that cannot be avoided. The actual impact and offset required will be accurately mapped as part of the pre-construction surveys.
Offset Strategy	As previously noted, and accepted by DPE, the detailed offset plan will be developed prior to construction after finalisation of infrastructure micro-siting and preconstruction surveys. The strategy outlined to date has adequately demonstrated the methodologies to be used and the availability of suitable offset areas in the vicinity of the site.

3.8 Additional Comments from the Department of Planning & Environment

Additional comments were received from DPE in March 2014 and these have been addressed in this report as noted in the following table.

Department of Planning and Environment Comment	*Where addressed in this report*
Further details on the potential impact of turbines on non-associated receivers, particularly for the north west part of the site	Attachment 23
Further details on the potential impact of the revised transmission line on non-associated receivers	Attachment 23
Further details on estimated electromagnetic fields from revised transmission line	Section 7.5
Further details on the cumulative visual impact with Conroys Gap Wind Farm	Section 7.1.3 & Attachment 5
Details of the visual impact assessment of the revised transmission line on residential viewpoints	Section 7.1
Further details on construction noise assessment	Section 7.2.4 & Attachment 9
Further details on low frequency noise assessment	Section 7.2.5.2 & Attachment 9

Department of Planning and Environment Comment	*Where addressed in this report*
Further details on traffic impact assessment	Section 7.6 & Attachment 14
Further details on potential impacts on water resources	Section 7.8
Further details on the potential impact on air traffic control radars	Section 7.10
Further details on the potential impact on aerial agricultural operations and private airstrips	Section 0
Updated status of EPBC referrals	Section 5.6
Indicative plans for switchyards, substations, concrete batch plants and wind monitoring masts	Attachment 19

4 Project benefits

The energy context and benefits of the project were outlined in section 4 (page 79) of the EA. This section provides an update based on the current policy and regulatory environment.

4.1 Summary of Benefits

Based on 134 wind turbines using a 2.5MW average sized wind turbine working at a typical 36% capacity factor the Yass Valley Wind Farm would provide the following primary benefits:

- In full operation, it would generate more than 1,056,000 MWh of electricity per year – sufficient for the average annual consumption of around 132,000 homes.
- It would provide greenhouse gas emissions savings of approximately 1,021,000 tonnes of carbon dioxide equivalent (CO_{2e}) per annum relative to the emissions intensity of the current electricity generation profile[i].
- With an offered community contribution up to $350,000 per annum which includes a contribution for solar energy systems, there would be significant domestic renewable solutions installed on neighbouring residences and opportunities for notable community and environment programs.
- Around 25% of residences within 5km of a turbine are owned by host landowners. These farmers and landowners will receive approximately $2 million in total payments each year, much of which is expected to be spent or invested locally or regionally.
- Based on a local expenditure of $25,000 per person per annum for a construction worker (SKM 2012b), with around 150 construction workers this would scale up to $3.7million in accommodation, food and other services spent regionally per construction year. This would result in increased services locally.

4.2 Policy Benefits

The Yass Valley Wind Farm would contribute to government policy objectives at both State and Federal level.

Responding to the *NSW 2021 State Plan* the wind Farm would address the following goals:

Table 4-1 Goals addressed from the NSW 2021 State Plan

Goals Addressed	*Benefit from the Yass Valley Wind Farm*
Goal 1 – improve the performance of the NSW economy	The wind farm investment of up to $570 million would bring construction jobs and other direct and indirect economic benefits to the State
Goal 3 – Drive economic growth in regional NSW	The wind farm would bring jobs and investment to the Yass region.
Goal 4 – increase the competitiveness of doing business in NSW	The Yass Valley Wind Farm would send a signal that NSW is open for business, attracting a number of key manufacturers and constructions companies to tender for this large infrastructure project NSW is currently lagging other states in investment in and installation of renewable energy.
Goal 5 – place downward pressure on the cost of living	As can be seen from AEMO reports from South Australia, the more renewable energy there is going into the grid the greater the downward pressure on electricity prices (AEMO, 2012). Additionally the project commits significant funding to neighbours to install solar energy options on their homes reducing individual energy costs around the wind farm.
Goal 6 – Strengthen the NSW skill base	This multi-million dollar infrastructure investment project will train multiple personnel in the ongoing operation and maintenance of a wind farm. Such jobs are high value for regional NSW
Goal 11 – keep people healthy and out of hospital	Physical health - The more wind farm projects go up in the state the greater the reduction in air pollution by offsetting coal generation. Mental health - The more farmers benefit from diversified farm income the more likely they

Goals Addressed	*Benefit from the Yass Valley Wind Farm*
	are to be resilient through drought.
Goal 19 – Invest in critical infrastructure	Investing in new clean generation in NSW brings jobs and lower power prices and investment to NSW and the region.
Goal 22 – Protect our natural environment	The environmental impacts of the wind farm itself are minimised and the wind farm helps to reduce coal fired emissions and reduce water use in thermal pwer generation assisting to transition NSW towards a cleaner more sustainable future.
Goal 23 – increase opportunities for people to look after their own neighbourhoods and environments	With a significant community enhancement fund which can be spent on renewable energy solutions for individual homes around the wind farm and community plans such as land care projects, the wind farm will assist significantly with goal 23 at the regional and local level

Responding to the NSW government's *Renewable Energy Action Plan*, the wind farm would demonstrate the key statement of the Plan that NSW is open for business in renewable energy.

- The wind farm would attract significant renewable energy investment. Most of the investment in wind farms in the National Electricity Market on the east coast of Australia has to date been in South Australia and Victoria. This large scale project provides an opportunity for investment in clean generation in the most populous state, and consequently assists in driving down electricity prices in NSW, as has occurred in South Australia which now has over 27% of South Australian installed capacity generating over 25% of annual total energy in South Australia.

4.3 Energy Context of the Proposal

Power generation planning has a long time horizon. At the Federal level the Energy Green Paper is due out shortly (Q3 2014) and from this the Energy White Paper will emerge with a long term plan for Energy for Australia.

Until the Energy White Paper is realeased and the Federal government's position on the Renewable energy Target is know there is some uncertainty around power generation investment in Australia. However, this situation is short term and it is considered inevitable that within the timeframes of energy planning renewable energy will remain part of new investment in the sector.

The NSW State Government has a clear stated position of support and encouragement for development of and investment in renewable energy. NSW has shown strong leadership in its desire to encourage investment in renewable energy in the State to reduce carbon emissions and continue transitioning towards its fossil fuel heavy reliace towards a more sustainable generation fleet.

In the national Electricity Market (NEM) electricity consumption has reached a plateau. The Australian Energy Market Operator (AEMO) notes: 'For the first time in the National Electricity Market's history, as a result of decreasing operational consumption, no new capacity is required in any NEM region to maintain supply-adequacy over the next 10 years.

AEMO's Annual Electricity Statement of Opportunities (ESOO 2014) notes:

> "Given current consumption forecasts and generation fleet, new generation or demand-side response is not required to maintain electricity supply reliability within the NEM Reliability Standard. However, investment opportunities may still arise through renewable energy generation incentive schemes, localised network issues or pockets of demand growth, or to manage system security issues arising from the intermittency of some renewable generation sources.
>
> There are two major federal schemes that provide incentives to invest in large-scale generation: the RET, which is currently under review; and the carbon pricing mechanism, which was repealed in July 2014. Some states and territories have additional incentive schemes, such as the Australian Capital Territory which incentivises renewable generation above federally-mandated targets.

The 10-year average annual growth rate for the 2014 NEFR medium scenario is 0.3%, which is lower than the 1.3% forecast in the 2013 NEFR. See Figure 4-1 below

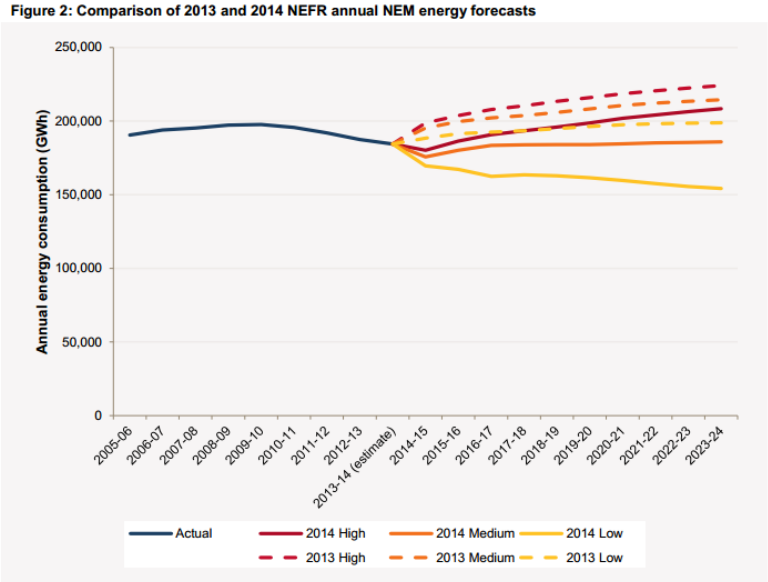


Figure 4-1 Predicted annual energy consumption 2013-2023

The ESOO cites reasons for reduced electricity consumption in the short-term (2013–14 to 2016–17) which include:

- A decline in energy-intensive industries, including closure of the Point Henry aluminium smelter in Victoria.
- Strong growth (24% average annual) in rooftop PV installations, particularly in Queensland and Victoria.
- Strong growth (10% average annual) in total energy efficiency savings.

The removal of the carbon tax in July 2014 may cause a readjustment in the private consideration of which plant may retire for reasons of age or viability. While this may result in a short time extension of the life of some aged fossil fuel plant the issue of emissions will inevitably be a regulating factor.

Power generation and emissions intensity are two sides of the same coin and addressing emissions reduction cannot be done at any scale without application to the electricity sector.

Since the removal of the carbon tax, data from the NEM shows that emissions from the electricity sector rose by around 1 million tonnes or 0.8 per cent at an annualise rate compared with June when the carbon tax was in place. This rise is the biggest two month increase since the end of 2006 and has been attributed to an increase in overall demand and a rise in the share of coal-fired power in the market.

In the mid- term a transition towards increased investment in renewable energy remains part of the planned future. The ESOO itself notes that:

> ‘Generation investment interest in New South Wales is focused on wind generation, with 27 projects, mainly through the Liverpool Range, Uungula, Rye Park, **Yass Valley**, and Sapphire proposals. ‘

It also notes that :

> ‘There has been a significant reduction in the number of gas-powered generation proposals, with 1,470 MW of total generation capacity no longer being pursued. This includes the Bannaby, Buronga, Leafs Gully, Narrabri 1 and 2, and Parkes Peaking proposals.

AEMO’s January 2014 ‘Planning Methodology and Input Assumptions’ notes that over the longer term electric vehicles are expected to become a significant new source of electricity demand within the typical timeframes of AEMO’s long term planning.

One of the key drivers of new renewable energy generation is the requirement for downward pressure on emissions. While the Australian government is currently moving away from pricing carbon there is a growing, pressing, global movement towards carbon pricing and or emissions trading. Many Australian businesses seek certainty knowing that there will be a requirement to source sustainable generation or pay in one way or another for emissions associated with their power use.

4.4 The Role of Renewable Energy

The Commonwealth Renewable Energy Target aims to deliver over 20% of Australian's generation by 2020. The Mandatory Renewable Energy Target was introduced in 2001 as a 2% target and was expanded as the Renewable Energy Target to a target of at least 20% of renewable energy by 2020. From January 2011 the target was split into two parts, the Large-scale renewable energy target (LRET), and the Small-scale renewable energy target (SRES). The LRET provides an obligation on retailers to source a percentage of their generation from large scale renewable energy sources. All retailers charge their customers for this.

In NSW the LRET costs around $40 per customer per year according to IPART. This is effectivey 77 cents per week per household for large scale renewable enegy to be built. As all consumers in Australia pay for the LRET, it is important that NSW, the most populous state, and therefore the state contributing most to the cost of the LRET, benefits from it.

The current Federal Government's stated long-term target is to reduce greenhouse gas emissions to 80% below 2000 levels by 2050.

The Government's ClimateChange website notes;

> 2020
> Australia will reduce its greenhouse gas (GHG) emissions by 25 per cent compared with 2000 levels by 2020 if the world agrees to an ambitious global deal capable of stabilising levels of GHGs in the atmosphere at 450 ppm (parts per million) carbon dioxide equivalent (CO_2-e) or lower.
>
> Australia will unconditionally reduce its emissions by 5 per cent compared with 2000 levels by 2020 and by up to 15 per cent by 2020 if there is a global agreement that falls short of securing atmospheric stabilisation at 450 ppm CO_2-e under which major developing economies commit to substantially restraining their emissions and advanced economies take on commitments comparable to Australia's.
>
> 2050
> Australia will reduce GHG emissions by 80 per cent compared with 2000 levels by 2050.

The Renewable Energy Target Scheme (RET) supports this target as does NSW 2021: A Plan to Make NSW Number One and the NSW Renewable Energy Action Plan.

The changing regulatory, policy and market setting for electricity generation in NSW and more broadly across the National Electricity Market has the potential to affect future modelling predictions. It is wise, accordingly, to take a cautious view of predictions made about additional capacity likely to be required in the future due to factors such as increased demand or the retirement of emissions intensive electricity generators in response to government policy or water shortages or natural disasters. There are a number of uncertainties inherent in the assumptions around matters such as future market conditions, domestic and global economics, demand management and energy efficiency uptake.

Another driver expected to become increasingly relevant is the downward pressure on electricity prices which results when wind farm penetration rises in a local (e.g. NSW) market as has been the case in South Australia. See economic benefits below.

To date the greater part of the investment and jobs from wind farms built under the RET have been in South Australia which has seen documented, attributed price reductions as a result. Victoria is hot on the heels of South Australia in moving towards its potential of installed capacity of wind generation.

With its excellent wind resource and grid connection options, identified across a number of government driven renewable energy precincts, NSW now has the opportunity to be a key beneficiary of the regional investment and lower electricity prices which accompanies the construction of multiple wind farms. New South Wales,

which has announced it is open for business in renewable energy, has the opportunity to progress billions of dollars of new generation and associated jobs, community funding and flow-through regional economic benefits.

While a number of projects are in development it is likely that with the RET in place, even with a longer horizon to achieve the target, or a slightly smaller target, a good number of these wind farms will be required to meet that target and will through supply and demand reduce the wholesale cost of electricity for customers in NSW.

4.5 Environmental Benefits

The Preferred Project & Submissions Report documents how the Yass Valley Wind Farm would

- generate more than 1,056,000 MWh of electricity per year from a renewable, sustainable resource - sufficient for the average consumption of around 132,000 homes;
- reduce greenhouse gas emissions by approximately 1,021,000 tonnes of carbon dioxide equivalent (CO_2e) per annum;
- contribute to the NSW Government's target of reducing greenhouse gas emissions by 60% by the year 2050;
- save up to 1,200 ML of water compared to producing the same amount of electricity from a coal-fired power station;
- remove the equivalent emissions that 277,000 cars produce annually; and
- provide opportunities for local environmental projects through the community enhancement fund – such as the solar hot water and rooftop PV opportunities for neighbours to the wind farm, landcare projects and similar initiatives.

4.6 Social Benefits

The offer of $2,500 per wind turbine built per annum will result in up to $335,000 going in to a community fund. Through a statement of commitment the contribution, which relates to the number of wind turbines finally built, is proposed to go directly to the Community Consultation Committee for distribution through to both the wider community and specifically to neighbours living with 5km of the wind farm. It is proposed that around 50% of this fund is available to neighbours to assist them to reduce their electricity bill by installing solar and energy efficiency options to their homes. This leaves a significant amount for distribution to environmental and community schemes as the community, which includes the two councils, sees fit.

The benefiting landowners own 32 of the 122 residences within 5km of the wind farm. This means the owners of over 26% of residences within 5km of a wind turbine will benefit financially from land agreements with the wind farm.

Contributions to local regional economies from wind farms have been shown to significantly improve the living environment in those regions. Services are improved and made more sustainable. Population decline can be arrested or reversed. Improved job opportunities allow young people to stay in the regions or return. Schools can see increases in pupils and remain viable.

4.7 Economic Benefits

Local Benefits

Wind farms bring investment to regional NSW. To build a 50-150 turbine wind farm requires a workforce working on site for up to 24 months. The workforce provides revenue to accommodation and services providers for those who must stay locally but live elsewhere. Local businesses benefitting are quarries, local construction firms, machine hire, vehicle hire, plumbers, electricians, labourers; accommodation providers – hotels, motels, B&Bs, house rentals, and restaurants, cafes; office services, communications providers and many more. A community enhancement fund is usually set up to provide funding for whatever purpose the local community sees fit. Roads are often upgraded in locations where they would be unlikely to receive such attention otherwise.

There is considerable confusion about the Renewable Energy Target and how it supports wind farms and other renewable generation. While a number of inaccurate media reports have stated that renewable energy forms

a large fraction of electricity costs, as can be seen below, an inquiry by the Public Accounts Committee of the NSW government's Legislative Assembly, citing the NSW Auditor General, notes that all green schemes in operation form around 7% of an indicative annual electricity bill.

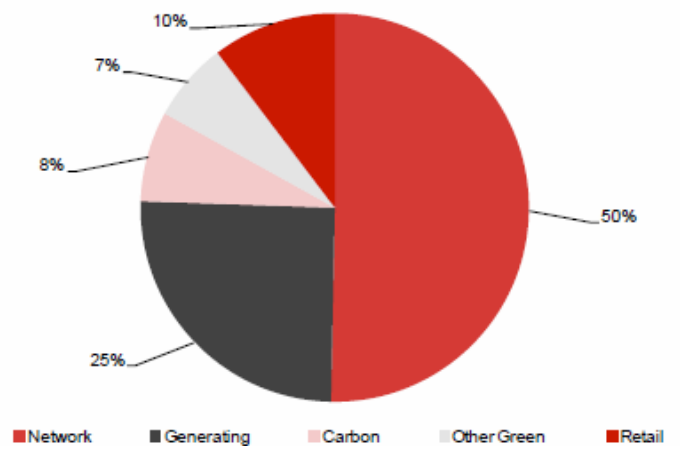
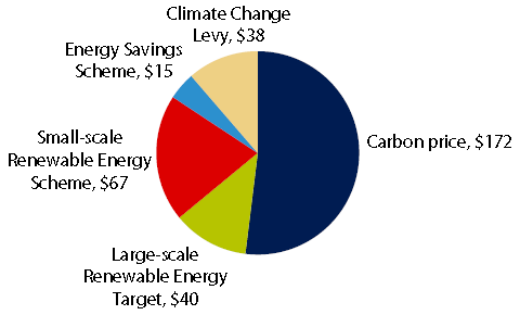


Figure 4-2 Composition of an indicative annual bill for customers in all NSW supply areas

The RET makes up a small portion of 'Other Green', with the remainder of costs due to NSW support for the installation of solar panels and other state schemes. The LRET which supports wind farms costs $40 per year per household or 77 cents each week per household. See detail below from IPART 2013. This LRET cost is less than 2% of the average NSW household bill.

Figure 1 Annual cost of green schemes for a typical residential customer ($ per annum, $2013/14)



Note: Costs calculated for a typical customer using 6.5 MWh per year. Includes GST and energy losses. Forecast inflation is 2.5%.

Figure 4-3 IPART breakdown of costs of green schemes with wind (LRET) at $40 pa

Wind Farms Bring Electricity Prices Down

In South Australia it is clearly documented by independent sources that the greater the penetration of wind energy into the State's electricity market the greater the downward pressure on wholesale prices – such price reductions being passed on to consumers.

The 2012 Electricty Statement Of Opportunity (ESOO) (AEMO, 2012) states that the average spot market prices for electricity in South Australia in 2010-11 and 2011-12 have been lower than expected and similar to the average spot price levels recorded for the years 2001-02 to 2005-06. The reduction in average spot market prices was attributed to certain factors including:

- mild summer temperatures in both years, with fewer and shorter high-price periods;
- reduced annual energy and increasing energy contributions from rooftop photovoltaics; and

- the increasing capacity of connected wind farms which, due to their lower operating costs, put downwards pressure on spot prices.

AEMO data showed the wholesale prices were half of the average during periods of wind and the average wholesale price was 0.5c per kWh cheaper due to wind. The Essential Services Commission of South Australia stated that the cost of wind power added just 0.366c per kWh to an electricity bill or $18 a year per household.

Reports from AEMO show this story continuing with consistent price reduction in wholesale electricity prices resulting from wind generation. SAEMET (2013) notes that "The total South Australian market generation volume-weighted average prices will be lower than the corresponding fossil-fuelled prices, as the total is effectively reduced by the lower renewable generation prices."

The recent Warburton-led RET review (2014) has resulted in a large number of studies which have modelled the long term impact of the RET on electricity prices. The modelling has delivered wildly different projections on future costs. One area of consistency is that all modellers agree that the outcome of the modelling will depend on the balance between higher costs because of the cost of Renewable Energy Certificates (RECs), and lower costs because of price competition from renewable generators in the wholesale electricity market.

The ACIL TASMAN study, commissioned by the RET review panel suggests that power bills will begin to fall from 2021 onwards with the RET still in place, reaching annual household savings of up to A$91 by 2030.

A study by Deloitte commissioned by The Australian Chamber of Commerce and Industry, suggests the opposite: that renewables will drive up household power bills by between A$47 and A$65 by 2030.

Regardless of which of these studies is correct the worst case increase in the average power bill by $65 by 2030 is small when viewed alongside the $1,000+ paid annually right now on the average power bill for 'poles and wires'.

Most studies demonstrate a small but measurable net benefit to electricity consumers once renewables reach a certain level in a particular region of the NEM, as demonstrated in South Australia

Flow on economic benefits

The economic benefits of wind farms in Australia have been calculated (SKM, 2012a) and, for every 50MW in capacity a wind farm delivered the following benefits:

- Direct employment of up to 48 construction workers, with each worker spending approximately $25,000 in the local area in shops, restaurants, hotels and other services (totalling up to $1.2 million)
- Direct employment of around five staff – a total annual input of $125,000 spent in the local economy
- Indirect employment during the construction phase of approximately 160 people locally, 504 state jobs and 795 nationwide jobs
- Up to $250,000 per year for farmers in land rental income and $80,000 on community projects each year.

Table 4-2 Economic benefits of the project

Economic benefit	*SKM study for 50MW*	*Extrapolated for Yass 360 MW*
Construction workers	48	322
Permanent direct employment for life of the project	5	36
Indirect Employment		
▸ Locally	160	1,072
▸ State	504	3,377
▸ Nationwide	795	5,327
Land rental income	$250,000	$1,675,000

AGL advised a Senate Enquiry in 2011 that its wind farms at Hallett in South Australia had employed an average of 98 construction workers at any one time from 2005 to 2010.

AGL's estimate of jobs associated with the construction of the Macarthur Wind Farm in Victoria, commissioned in 2013, is 875 from the region, 2,490 from Victoria and 2,782 from Australia. 18 local residents make up the majority of the permanent site operation and maintenance team at this wind farm and these jobs will remain for at least 20 years.

5 Planning Context

5.1 Transition from Part 3A to State Significant Development

Yass Valley Wind Farm was a transitional Part 3A project, being a critical infrastructure project, assessable under the provisions of former Part 3A.

On 19th March 2014 the Department of Plannning and Environment wrote to Epuron advising that the project had been transitioned to the government's new State Significant Development (SSD) assessment system. The actions taken under the Part 3A process to date, including exhibition of the Environmental Assessment and the exhibition of the PPR have been accredited under the SSD process and are taken to have been completed.

5.2 Requirements of the Planning Assessment Process

Previously section 75H of the EP&A Act set out the process for public exhibition of the EA, written submissions to the EA, response to the submissions by the proponent and where necessary, a preferred project report which outlines any proposed changes to the project to minimise its environmental impact.

DPE did not consider that all changes to the exhibited EA, as documented in the Preferred Project Report lodged on 30 November 2012, minimised its environmental impact. However the public has had an opportunity to submit comment on the changes as in line with item (7) of the EP&A Act process detailed below, the Preferred Project Report was put on public exhibition from 14 December 2012 to 1 March 2013.

75H Environmental assessment and public consultation

(1) The proponent is to submit to the Director-General the environmental assessment required under this Division for approval to carry out the project.

(2) If the Director-General considers that the environmental assessment does not adequately address the environmental assessment requirements, the Director-General may require the proponent to submit a revised environmental assessment to address the matters notified to the proponent.

(3) After the environmental assessment has been accepted by the Director-General, the Director-General must, in accordance with any guidelines published by the Minister in the Gazette, make the environmental assessment publicly available for at least 30 days.

(4) During that period, any person (including a public authority) may make a written submission to the Director-General concerning the matter.

(5) The Director-General is to provide copies of submissions received by the Director-General or a report of the issues raised in those submissions to:

(a) the proponent, and

(b) if the project will require an environment protection licence under Chapter 3 of the Protection of the Environment Operations Act 1997—the Department of Environment, Climate Change and Water, and

(c) any other public authority the Director-General considers appropriate.

(6) The Director-General may require the proponent to submit to the Director-General:

(a) a response to the issues raised in those submissions, and

(b) a preferred project report that outlines any proposed changes to the project to minimise its environmental impact, and

(c) any revised statement of commitments.

(7) If the Director-General considers that significant changes are proposed to the nature of the project, the Director-General may require the proponent to make the preferred project report available to the public.

5.3 State Environmental Planning Policy (Infrastructure) 2007

State Environmental Planning Policy (Infrastructure) 2007 (SEPP (Infrastructure)) prevails over inconsistences with local environmental plans (clause 8). Clause 33 and 34 apply to electricity generating works. Clause 33 includes Zone RU1 Primary Production in the definition of 'prescribed rural zone'. Clause 34(1) provides that

'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.'

As there is no SEPP that specifically relates to the project, the provisions of LEPs and SEPPs do not apply to Yass Valley Wind Farm (former section 75R). The Minister may, however, take into account that under the environmental planning instruments, the project would be permissible with consent (the prohibitions in the applicable LEPs being overridden by SEPP (Infrastructure) 2007).

5.4 Yass Valley Local Environmental Plans

Yass Valley Council was created by council amalgamation in 2004, and as a result three LEPs (Gunning, Yarrowlumla and Yass) applied in different parts of the local government area. The project is located on land which was subject to Yass LEP 1987, zoned No 1(a) Rural Agriculture. Wind farms were permissible with consent in Zone 1(a) Rural Agriculture.

Since the wind farm project entered the planning process Yass LEP 1987 has been replaced with Yass Valley Local Environmental Plan 2013. The project site is now zoned RU1 (Primary Production).

Wind farms would be prohibited in zone RU1 (Primary Production), however SEPP (Infrastructure) would override the prohibition (clauses 8, 33 and 34), resulting in development for the purpose of electricity generating works, such as the proposed wind farm, being permissible with consent.

The Yass Valley Council have submitted their comments on the project – refer section 3.5.9 and Attachment 22.

5.5 Harden Local Environmental Plan

The project is located on land which was subject to Harden Interim Development Order No. 1 (dated 4 June, 1976). Since the wind farm project entered the planning process that planning instrument has been replaced with Harden Local Environmental Plan 2011. The project site is now zoned RU1 (Primary Production). As for Yass, the Harden LEP prohibits wind farms in this zone, however SEPP (Infrastructure) 2007 would override the prohibition (clauses 8, 33 and 34).

The Harden Shire Council have submitted their comments on the project – refer Attachment 22.

5.6 Commonwealth EPBC Referral

Referrals for the project under the EPBC Act have been submitted in two parts as shown on the map in Figure 5-1 on the following page. Details of the referrals are available on the Department of Environment's website www.environment.gov.au

5.6.1 EPBC Referral 2013/7002 Yass Valley Wind Farm

It was determined that the proposed action is a controlled action and would have, or is likely to have, a significant impact on two matters of national environmental significance that are protected under Part 3 of the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* and will be assessed on Preliminary Documentation. The controlling provisions are:

- listed threatened species and communities (section 18 and 18A); and
- Listed migratory species (sections 20 and 20A).

The Preliminary Documentation was on public exhibition from the 2nd to 29th July 2014. No comments were received. The assessment and determination by the Department of Environment is expected to be completed by the end of September 2014.

5.6.2 EPBC Referral 2013/6989 Conroys Gap Wind Farm Stage 2

It was determined that the proposed action is a controlled action and would have, or is likely to have, a significant impact on a matter of national environmental significance that is protected under Part 3 of the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* and will be assessed on Preliminary Documentation. The controlling provision is listed threatened species and communities (section 18 and 18A). The Preliminary Documentation was on public exhibition from the 2nd to 29th July 2014. One comments was received and a response was provided on 8 August 2014. The assessment and determination by the Department of Environment is expected to be completed by early October 2014.

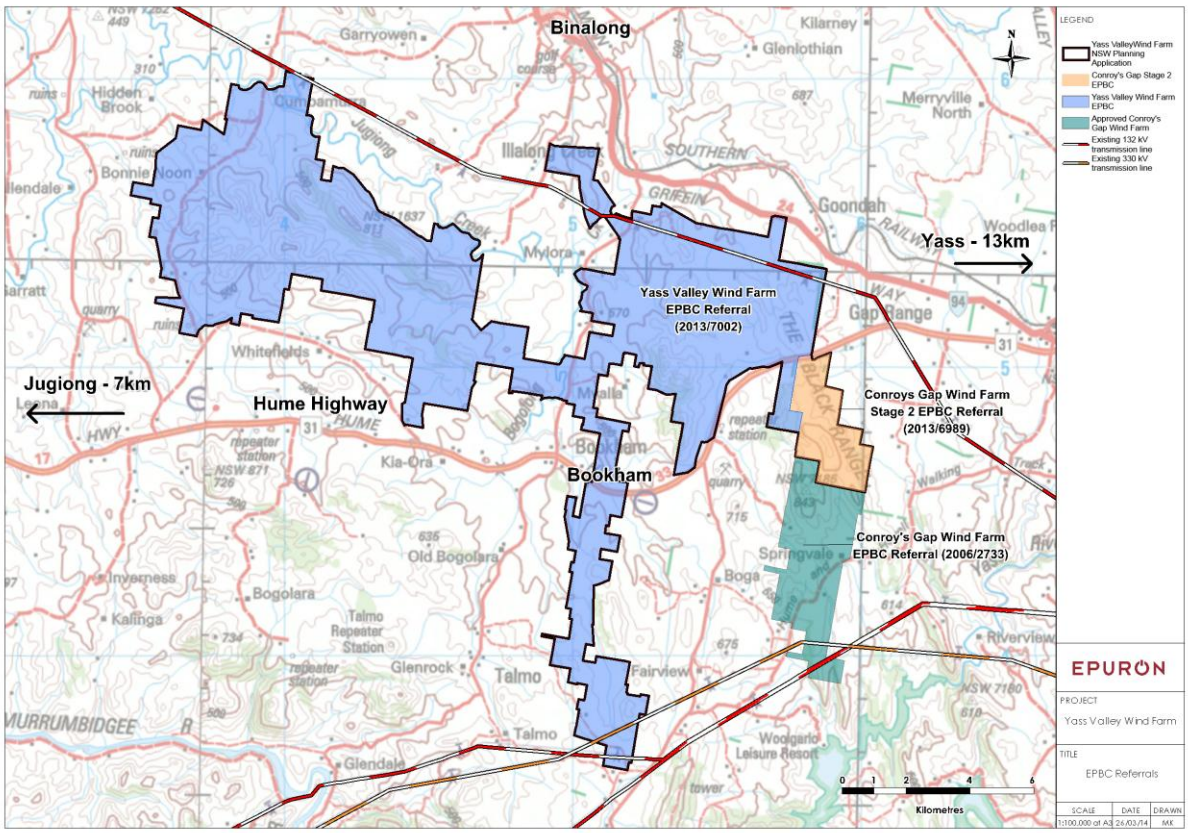


Figure 5-1 EPBC referrals and adjoining actions

6 Community Consultation

6.1 Local Community

The nearest turbine of the proposed Yass Valley Wind Farm would be located approximately 16 km west of Yass. The wind farm would be located on hills to the north and south of the Hume Highway, extending 24 km west to east and 12 km north to south. The properties on which it would be located are mainly used for sheep grazing.

6.2 Distribution of Neighbouring Residences

Please note that due to the withdrawal of 10 wind turbines from the Marilba precinct the numbers reported in this section have changed marginally. Two residences previously within 2 km are now outside (G16 and M32) and three previously within 5 km are now outside (G3, G26 and G46).

There are 23 neighbouring residences within 2 km of a proposed wind turbine, 17 of which belong to involved landholders and 6 of which are not involved in the wind farm. Within 3 km of a proposed wind turbine there are 23 involved landowners and 30 not-involved landowners. Widening out that distance to 5 km includes 128 residences. Of these 128 residences, 94 are not-involved and 34 are involved. See Table 6-1 below.

Table 6-1 Residences within 5km of the proposal

Landowners	*Involved*	*Not Involved*	*Total*
Within 2 km	17	6	23
Total Within 3 km (includes 2 km)	23	30	53
Total within 5 km	**34**	**94**	**128**
% ownership of residences within 5 km	27%	73%	100

During the course of the development of the project the requirements for consultation have evolved and Epuron has increased its level of consultation accordingly.

Epuron personnel have visited all residences within 2 km on at least one occasion. At the time of this report, in total the project team had visited 82 properties or residences (involved and non-involved). During phone calls to residences within 5 km eight residents said they did not want or need to be visited. Epuron have visited 9 residences beyond 5 km, most of whom live in the area which will have some proximity to both Yass Valley Wind Farm and Conroy's Gap. Epuron has met with three landowners in Sydney.

Further meetings are planned with residents within 5km and meetings and phone contact is continuing.

Details of the consultation can be found in the consultation spreadsheet (section 6.4) which has properties identified but not names. This spreadsheet should be read alongside the site map in Figure 2-1 or the A1 map in Attachment 24.

6.3 Details of Consultation

6.3.1 Newsletters

All residences within 5km have been sent newsletters. Since Epuron acquired the project back from Origin Energy in 2012 there have been six project newsletters sent out to the community. The mailing list for the newsletters started with 130 addresses and has grown to contain 191 addresses plus 36 email addresses. Newsletters have been sent to everyone within 5km and Harden Shire and Yass Valley Councils have assisted with addresses for residences owned by companies or trusts. Ten newsletters were returned to sender from the August 2012 mail out of 130 addresses and the address list has been refined and expanded. From the May 2013 mail-out to 174 addresses five newsletters were returned to sender and these have been re-addressed and resent. The newsletter is also sent out to agencies and community representatives and anyone else who has registered an interest in the project.

6.3.2 Residences within 2 km

There are five uninvolved residences within 2 km. Epuron has had numerous face to face meetings with all 5 of these residents.

There was a sixth, residence G16, prior to the removal of 10 turbines at Marilba but this residence is now 2.55km from the nearest wind turbine. This residence is owned by the owners of Bogo quarry. Epuron is in touch with the owners who live off site and it is anticipated that the quarry would provide materials for the construction of the wind farm.

Residence number M42 is a new house (completed late 2012) whose presence was unknown to Epuron until contacted by the owner. Background noise data has been gathered for this house and this has resulted in the removal of the closest turbine which was proposed in the exhibited Preferred Project and Submissions Report. Multiple visits have been made to the owners of M42. Discussion is on-going with the owners of G11 and G14 to determine preferred mitigation options for visual impact. G14 has stated an interested in screen planting and a large shed which will assist in focussing views towards more distant turbines.

6.3.3 Residences between 2 – 3 km

There are 24 non-involved residences between two and three kilometres of a wind turbine.

There has been limited contact with 2 landowners, M38 and G20, other than newsletters. The reason for this is that one, M38, is in a company name and Epuron has made numerous attempts to find the correct address but has had newsletters returned to sender and has resent them to other addresses listed for the same name. There has been no contact back from the last post out so it is hoped that the current address to which the newsletter has been sent is correct. G20 has been sent each of the newsletters but there has been no one in when passing and there is no phone number publicly listed.

The owners of property M8, Crisp Galleries, have shown Epuron personnel the general area of a proposed eco-tourism development which required the adoption of a new LEP for the development to be permissible. The new LEP is now in place. Further plans have been requested but not yet supplied.

Epuron has had correspondence and a number of meetings with Crisp Galleries and have noted the request through the 2009 submission not to build a number of the proposed wind turbines. The original concerns of the Crisps were night lighting and shadow flicker. No night lighting is proposed for the wind farm and due to the distance between the general location of the tourism village and the wind farm there will be no shadow flicker experienced. For the 2009 Environmental Assessment ERM visited the location of the proposed eco-tourism village and prepared a photomontage. However plans of the layout of the village were not available in 2009 and have not been made available since being requested in April 2013 and April 2014. Epuron considers that as the wind turbines, at over 2.5 km away, would be compliant for noise and shadow flicker in the vicinity of the eco-tourism village, should the wind farm proceed to construction it would provide visual certainty for consideration of any future development.

The proponent would provide screening planting to screen both the existing overhead transmission lines in the foreground view of the eco-tourism village as well as the wind turbines in the distance.

At this stage it is not clear that the proposed eco-tourism village will go ahead and as there are no compliance issues Epuron is seeking approval for all wind turbine locations. Discussions will remain open between the Proponent and Crisp Galleries to maximise the benefits of the co-existence of the two projects.

Photomontages have been produced for all non-involved residences within 2km of any wind turbine and at typical viewpoints, as shown in the visual assessment (Attachment 5).

6.3.4 Residences between 3 – 5 km

There are 34 non-involved residences between 3 and 4 km from a turbine location. All have been sent newsletters.

There are 27 non-involved residences between 4 and 5 km from a turbine location. All of these residents have been sent newsletters.

Epuron has met with 37 of the 61 residents between 3 and 5 kms

In addition to photomontages for residences within 2km and viewpoints in the Landscape and visual impact assessment, Epuron has offered photomontages to other residents that live beyond 2km from turbines on request. Photomontages have been provided to four residents between 3 and 5km.

6.3.5 Residences between 5 – 6 km

Thirteen residents between five and six kilometres from a wind turbine are registered on the database. Some of these have made contact directly and some are neighbours to Conroy's Gap Wind Farm and in proximity to the five kilometre buffer with Yass Valley Wind Farm turbines.

6.3.6 Total Contact ~5 km

- Newsletters to all residents
- Face to face meetings with 48 non-involved residents, three in Sydney
- Phone contact with 50 residents
- Separate letters to 22 residents

6.3.7 Community Consultation Committee

Epuron has established a Community Consultation Committee (CCC) for both the Yass Valley Wind Farm and the adjacent approved Conroy's Gap Wind Farm. The CCC has had seven meetings since its inception early in 2013. The Minutes of the CCC are available at http://www.epuron.com.au/project/yass-valley/

The CCC consists of: an independent chair, an involved landowner, a representative of the Bookham Agricultural Bureau, two neighbours living within 5 km of Conroy's Gap Wind Farm, two neighbours (living beyond 5km) of Yass Valley Wind Farm, representatives of Harden Shire and Yass Valley Councils, two representatives of Epuron and an observer from the State government's renewable energy precincts program. The CCC also includes a number of members of the wind farm opposing Landscape Guardians group. Epuron is trying to expand the representation to include landowners within 2 km of the Yass Valley Wind Farm turbines. Epuron appreciates the on-going time commitment of the current members of the CCC.

The CCC has requested that Epuron contact everyone within 5 km of the Yass Valley and Conroy's Gap Wind Farms. To date Epuron has ensured that all resident in this 5 km zone have received information about the project and has focused on those individuals who through topography or proximity are considered most likely to have amenity impacts. Epuron continues to attempt to personally contact all residents in this proximity.

During on-going consultation residents living within 2km and 5km of a turbine have mentioned to Epuron that they would like to have been involved in the CCC but state they did not receive the August newsletter advising of the formation of the CCC, therefore they did not have the opportunity to declare an interest in becoming a member of the CCC. The current members of the Community Consultation Committee responded to the August newsletter which included a nomination form for the CCC.

The current membership of the CCC includes one neighbour living within 5km of the Yass Valley Wind Farm, who is also a neighbour to the Conroy's Gap Wind Farm. All other community members live beyond 5kms. The Draft NSW Planning guidelines: Wind Farms directs that at least 2 of the community representatives be neighbours within 2km of a wind turbine.

Should the project receive planning approval there is a statement of commitment which is intended to both remedy the current 'non-compliance' with the existing committee and provide an opportunity for new nominees (and existing members) to put forward for selection on the new CCC which would be for Yass Valley Wind Farm only.

6.3.8 Issues Raised Through Consultation

A number of issues were raised in face to face meetings with the community. They are summarised below.

Table 6-2 Summary of issues raised through consultation

Issue	Detail	Response
Consultation	A number of people said they had not been adequately consulted	Continue to phone and visit neighbours to understand any concerns and address them

Issue	Detail	Response
		where possible. Continue to update the mailing list.
Community Benefit	A number of people said the community fund should go to the neighbours who bear the impacts. Most were interested in free electricity. Several said the community did not need halls or sporting facilities. Common theme that the fund not be given to the councils for roads.	Create a Statement of Commitment that allocates at least 50% of the Community Enhancement Fund to clean energy options for neighbours. Have the CCC, with council representation, in charge of the allocation of the funds.*
Property Values	Concern about the impact of the wind farm on property values.	Provide Valuer General's advice and information on the benefits of the project to the local community.
Visual Impact	Two aspects to visual impact – one was the impact on views and the other was the visual impact impacting upon property values.	Screening planting offered to mitigate both
Traffic and site access	Some queries about where the construction traffic would enter the site.	Detail provided
Do they work?/ Power prices	Some noted that they 'wouldn't mind wind farms if they worked' and if they didn't cost so much in subsidies	Provided information re wind farms resulting in lower prices via AEMO reports Provided 'my bill has gone up' information sheet
Follow through on commitments	Some queries about how neighbours can trust that any new owner will follow through on promises we make	Explanation of statements of commitment as planning conditions and how any future company would be bound.
Screening planting	Requested by a number of residents	SoC to offer screening planting to residences within 5 km
Aerial fire fighting & agriculture	Number of questions about ability to fight fires aerially. Questions about aerial super spraying	RFS information provided about turbines being treated like any other obstacle. Any additional costs to be met by the proponent.
Health impacts	A few queries about health	Provided Victorian Department of Health April 2013 information re health impacts
Agricultural Landing Areas (ALA)	Potential impacts from the wind farm on agricultural airstrips	Provided the CASA guidelines for ALAs and conducted an assessment of ALAs within the vicinity of the wind farm. No active airstrips within 2 km of a proposed wind turbine See Attachment 12 for ALA map and details

* Through consultation with neighbours to the wind farm several have mentioned that they consider the model of 50% of the community enhancement fund being allocated to clean energy options for neighbours within 5km to be a suitable arrangement for the equitable distribution of benefits to the impacted community. Some residents have noted that it would be productive to have individuals who are supporters of the wind farm on the CCC. It is proposed that the management of the community enhancement fund be through a newly established CCC to be elected when the project moves to construction – see SoC 72.

6.4 Assessment of Neighbouring Residences

Consultation with neighbouring residences within approximately 5 km of the proposed wind turbines and preliminary assessment of environmental effects has resulted in the targeting of particular residences for more detailed study in accordance with Table 6-3. See section 7 for the updated environmental assessments.

Table 6-3 Assessment of neighbouring residences in order of proximity to turbines

Residence ID Code	Landowner	Consultation – See Notes 1&2	Distance to nearest Yass turbine (km)	Nearest Yass turbine ID number	Relevant noise receiver (identified in accordance with SA EPA Guidelines 2003) – See Note 3	Residential viewpoint assessed in LVIA
M18	Involved	Visit	0.9	84	Yes	
G16	Non-involved	Telephone	(Now 2.6 1.1	(Now 92) 96	Yes	Yes
C27	Involved	Visit	1.1	111	Yes	
G15	Involved	Visit	1.2	93	Yes	
M42	Non-involved	Visit	1.2	114	Yes	Yes
C68	Involved	Visit	1.3	111	Yes	
M21	Involved	Visit	1.4	111	Yes	
M41	Involved	Visit	1.4	111	Yes	
C56	Involved	Visit	1.4	41	Yes	
C03	Involved	Visit	1.4	41	Yes	
G14	Non-involved	Visit	1.4	136	Yes	Yes
G31	Involved	Visit	1.5	84	Yes	
M48	Involved	Visit	1.5	93	Yes	
C02	Involved	Visit	1.7	44	Yes	
C55	Involved	Visit	1.7	41	Yes	
G11	Non-involved	Visit	1.7	143	Yes	Yes
G12	Involved	Visit	1.8	143	Yes	
G38	Involved	Visit	1.8	136	Yes	
M32	Involved	Visit	1.9	95	Yes	
M20	Non-involved	Visit	1.9	100	Yes	Yes
M24	Non-involved	Visit	1.9	100		Yes
C05	Involved	Visit	2.0	77		
G13	Involved	Visit	2.0	136	Yes	
C06	Non-involved	Visit	2.1	77		
C26	Involved	Visit	2.1	122	Yes	
M1	Non-involved	Visit	2.1	100		
M3	Non-involved	Telephone	2.1	100		
M4	Non-involved	Visit	2.2	100		Yes
C04	Involved	Visit	2.3	50	Yes	
C08	Non-involved	Visit	2.3	77		
M2	Non-involved	Newsletter	2.3	100		
C25	Involved	Visit	2.3	88	Yes	
M35	Non-involved	Visit	2.4	100		
M8	Non-involved	Visit	2.4	136	Yes	Yes

Residence ID Code	*Landowner*	*Consultation – See Notes 1&2*	*Distance to nearest Yass turbine (km)*	*Nearest Yass turbine ID number*	*Relevant noise receiver (identified in accordance with SA EPA Guidelines 2003) – See Note 3*	*Residential viewpoint assessed in LVIA*
G10	Involved	Visit	2.5	145		
C37	Non-involved	Visit	2.5	126		Yes
G29	Non-involved	Visit	(Now 4.5) 2.5	(Now 145) 95		Yes
M34	Non-involved	Newsletter	2.5	100		
C60	Non-involved	Visit	2.6	77		
M22	Non-involved	Visit	2.6	114		Yes
M37	Non-involved	Visit	2.6	126		
C35	Involved	Visit	2.7	129		
C41	Non-involved	Visit	2.7	77		Yes
G20	Non-involved	Newsletter	2.7	144		
G24	Non-involved	Visit	2.7	145		
C01	Non-involved	Visit	2.8	63		Yes
C75	Non-involved	Newsletter	2.8	79		
G40	Non-involved	Visit	2.8	143		
M36	Non-involved	Newsletter	2.8	100		
C71	Involved	Visit	3.0	8		
M38	Non-involved	Newsletter	3.0	100		
M40	Non-involved	Newsletter	3.0	112		
C69	Non-involved	Visit	3.0	111		
C29	Involved	Visit	3.1	8		
G23	Non-involved	Newsletter	3.1	145		
G7	Non-involved	Visit	3.1	145		
M39	Non-involved	Visit	3.1	100		
G8	Involved	Visit	3.2	145		
G60	Involved	Visit	3.2	145		
C74	Non-involved	Visit	3.2	129	Yes	
M46	Non-involved	Newsletter	3.2	100		
C58	Non-involved	Visit	3.3	79		
C67	Non-involved	Visit	3.3	74		Yes
G59	Non-involved	Newsletter	3.4	145		
G9	Involved	Visit	3.4	145		
C38	Non-involved	Newsletter	3.5	69		
C42	Non-involved	Visit	3.5	76		Yes
C53	Non-involved	Visit	3.5	126		
G44	Non-involved	Newsletter	3.5	144		

Residence ID Code	*Landowner*	*Consultation – See Notes 1&2*	*Distance to nearest Yass turbine (km)*	*Nearest Yass turbine ID number*	*Relevant noise receiver (identified in accordance with SA EPA Guidelines 2003) – See Note 3*	*Residential viewpoint assessed in LVIA*
M13	Involved	Visit	3.6	95		
C46a	Non-involved	Visit	3.6	76		
G41	Non-involved	Visit	3.6	143		
G58	Non-involved	Visit	3.6	144		
M6	Non-involved	Newsletter	3.6	100		
C13	Non-involved	Visit	3.7	41		
C22	Non-involved	Newsletter	3.7	79		
G18	Non-involved	Visit	3.7	143		
G57	Non-involved	Visit	3.7	144		
M9	Non-involved	Newsletter	3.7	95		
G19	Non-involved	Newsletter	3.8	143		
M31	Non-involved	Newsletter	3.8	95		
C49	Non-involved	Newsletter	3.9	76		
G23	Non-involved	Newsletter	3.9	145		
M25	Non-involved	Newsletter	3.9	95		
M28	Non-involved	Newsletter	3.9	95		
M29	Non-involved	Newsletter	3.9	95		
M30	Non-involved	Newsletter	3.9	95		
C07	Non-involved	Visit	4.0	69		
C62	Non-involved	Newsletter	4.0	76		
C78	Non-involved	Newsletter	4.0	95		
C79	Non-involved	Newsletter	4.0	95		
M26	Non-involved	Newsletter	4.0	95		
C30	Involved	Visit	4.1	1		
C59	Non-involved	Visit	4.1	77		
C61	Non-involved	Visit	4.1	76		
C66	Non-involved	Visit	4.1	95		
C77	Non-involved	Newsletter	4.1	76		
C80	Non-involved	Newsletter	4.1	95		
G36	Non-involved	Newsletter	4.1	136		
C76	Non-involved	Visit	4.1	47		
C47	Non-involved	Newsletter	4.2	95		
C76	Non-involved	Visit	4.2	47		
C76a	Non-involved	Visit	4.2	47		
G55	Non-involved	Visit	4.2	144		
M5	Non-involved	Newsletter	4.2	100		

Residence ID Code	*Landowner*	*Consultation – See Notes 1&2*	*Distance to nearest Yass turbine (km)*	*Nearest Yass turbine ID number*	*Relevant noise receiver (identified in accordance with SA EPA Guidelines 2003) – See Note 3*	*Residential viewpoint assessed in LVIA*
C73	Non-involved	Newsletter	4.3	69		
C48	Non-involved	Newsletter	4.3	76		
C63	Non-involved	Newsletter	4.3	95		
C64	Non-involved	Newsletter	4.3	95		
C65	Non-involved	Newsletter	4.3	95		
G39	Non-involved	Newsletter	4.3	143		
C39	Non-involved	Visit	4.4	69		Yes
G4	Involved	Visit	4.4	145		
G30	Non-involved	Visit	4.5	47		
M7	Non-involved	Telephone	4.5	100		
H30	Involved	Visit	4.5	50		
C52	Involved	Visit	4.6	111		
M33	Non-involved	Newsletter	4.6	100		
C28	Non-involved	Newsletter	4.7	13		
C28a	Non-involved	Newsletter	4.7	13		
G32	Non-involved	Visit	4.7	47		
G5	Non-involved	Newsletter	4.7	145		
C34	Non-involved	Visit	4.8	1		
G26	Non-involved	Visit	Now over 5.0 Was 4.8	(Now 145) Was 95		
G3	Non-involved	Visit	Now over 5.0 was 4.8	(Now 145) Was 95		
C33	Involved	Visit	5.0	1		
G2	Involved	Visit	5.1	145		
G61	Non-involved	Visit	5.1	144		
H40	Non-involved	Visit	5.9	79		

Notes:
1."Visit" indicates there has also been telephone contact & newsletters sent
2."Telephone" indicates newsletters also sent
3.A relevant receiver for noise assessment is a residence that has an initial prediction of higher than 35 dB(A)

6.5 Residences to the North West of Coppabella

Following the exhibition of the Preferred Project Report (Nov 2012) DPE requested further information about localised impacts to residences in proximity to the 12 wind turbines relocated to the north west of the Coppabella precinct since the EA (2009). Further studies had been undertaken and consultation has been ongoing. Details of the latest consultation are outlined in Table 6-4. Further details on changes to noise and visual amenity are included in section **Error! Reference source not found.**

Table 6-4 Changed impacts to individuals in north-west of the wind farm

Receiver ID	*Distance to nearest turbine (km)*	*Most recent consultation*	*Comments*
C37	2.5	Telephone 21 Apr 2014	Residence in valley with no views of turbines. Queried effects on livestock. Issue discussed. No other concerns raised.
C01	2.8	Telephone 22 Mar 2014	No issues, previously involved. No concerns raised.
C74	3.2	Telephone 16 Apr 2014	Noise logging and photomontages undertaken. Not a supporter but no issues raised.
C53	3.5	Telephone 11 Apr 2014	Noise concerns addressed (Nov 2013). Photomontage sent Jan 2014. Uncertain about what will hear but no other concerns raised.
C38	3.5	Telephone 11 Apr 2014	Reduced impact. Pleased about relocation of western-most turbines. Supports wind energy
C07	4.0	Telephone 14 Apr 2014	Formally involved. Reduced impact. No concerns.
C73	4.3	Telephone 14 Apr 2014	Reduced impact No issues raised. Supports renewable energy where doesn't impact others. Decommissioning queries addressed.
C39	4.4	Telephone 11 Apr 2014	Concerns (night lighting & erosion) raised through EA submission (see section 2.4.3) have been addressed. Visual impact is the only concern but owner considers has been improved by the relocation of turbines to the west of COP.
C09	5.3	Telephone 17 Apr 2014	Reduced noise and visual impacts. Concerned about level of consultation. Copies of newsletters resent (mail and email). Visual impact of concern.

7 Updated Environmental Assessments

The assessment of the key environmental issues addressed in the Environmental Assessment were updated as part of the PPR (November 2012) and updated again as part of this Preferred Project & Submissions Report to incorporate:

- the changes in infrastructure layout for the preferred project;
- matters arising from the submissions to the PPR that required further assessment;
- matters arising from community consultation; and
- comments received from the NSW Department of Planning & Environment.

Note, the assessment carried out in this section was prepared prior to the removal of 10 turbines to address concerns of OEH. Accordingly, the impacts of the current proposal will be the same or lower than the impacts outlined in this section.

7.1 Visual Impact Assessment

A supplementary Landscape and Visual Impact Assessment has been completed by Environmental Resources Management (ERM) and included as Attachment 5 to this report to accommodate the changes made to the wind turbine layout as a result of the submissions received. The supplementary report supports the original conclusion that the proposed Yass Valley Wind Farm will have a generally low visual impact on its surrounds, and the site is a suitable landscape for the construction of a wind farm. The supplementary assessment confirms that the revised transmission line and associated substations will have low to negligible visual impact for most locations within the viewshed.

An additional site visit was undertaken on 25 and 26 March 2013 to assess the following:

- Visual impact from all non-involved residences located within 2km of a proposed wind turbine;
- Visual impact of the revised transmission line route; and
- The cumulative visual impact of the proposed Yass Valley Wind Farm and the approved Conroy's Gap Wind Farm.

7.1.1 Non-involved Residential Viewpoints

Additional assessment was undertaken for all six non-involved residences located within 2km of a proposed wind turbine. One of these (M42) is a new residence that was built in 2012. Further residential viewpoints were to the north, east and south of the project to provide a comprehensive assessment of the visual impact of the project. Revised photomontages have been prepared for each of these locations. The visual impact from residential viewpoints is summarised in Table 7-1 below.

Table 7-1 Summary of visual impacts from residential viewpoints

House ID (EA VP#)	Distance and direction to nearest wind turbine - EA	Overall visual impact - EA	Distance and direction to nearest wind turbine - Current Proposal	Overall visual impact - Current Proposal
G14 (R1)	1.3 km - S (MRL 53)	Low – without screening Existing screening	1.4 km - SW (136)	Low – without screening Existing screening
M04 (R2)	2.1 km - S (MRL 43)	Low – without landscape mitigation Screening may not be appropriate	2.1 km - SW (100)	Low – without landscape mitigation Screening may not be appropriate
M22 (R3)	2.2 km - S (MRL 05)	Low – without landscape mitigation Screening may not be appropriate	2.5 km - S (114)	Low – without landscape mitigation Screening may not be appropriate

House ID (EA VP#)	*Distance and direction to nearest wind turbine - EA*	*Overall visual impact - EA*	*Distance and direction to nearest wind turbine - Current Proposal*	*Overall visual impact - Current Proposal*
C83 (R4)	10 km - S (COP01)	Negligible – without landscape mitigation Extensive existing screening	9.9 km - SW (129)	Negligible – without landscape mitigation Extensive existing screening
C39 (R5)	4.5 km - SE (COP74)	Medium - without landscape mitigation	4.3 km - SE (69)	Medium - without landscape mitigation
G27 (R6)	2.4 km to the South (CAR 01) 8.1 km to the North (MRL 39)	Low – without screening Existing screening	No turbines to the south. 7.7 km - N (95)	Not applicable Existing screening
M8 (R7)	2.3 km - S (MRL 53)	Negligible – Existing vegetation around gallery Medium – Bamboo garden without mitigation Low – Proposed eco village site	2.3 km – SW (136)	Negligible – Existing vegetation around gallery Medium – Bamboo garden without mitigation Low – Proposed eco village site
C41 (R8)	2.7 km - N (COP 68)	Low - without landscape mitigation	2.7 km – NW (77)	Low - without landscape mitigation
C42 (R9)	3.8 km - NW (COP 71)	Medium - without landscape mitigation	3.5 km – NW (76)	Medium - without landscape mitigation
Additional residential viewpoints assessed (not previously assessed in EA)				
G11			1.7 km-W (143)	Low – Existing vegetation and orientation of residence
G16			1.1 km-W (96)	Nil - from living areas Medium to Low - from driveway with landscape mitigation
M20			1.8 km-SW (100)	High - from living areas Medium to Low - with landscape mitigation
M24			1.9 km-SW (100)	Low - from living areas Low - with landscape mitigation
M42			1.1* km-S (114)	Nil - from living areas Low - from driveway with landscape mitigation
C01			2.7 km-NE (63)	Nil - from living areas Low - from driveway
C37			2.5 km-SE (126)	Nil
C67			3.3 km-NW (74)	Medium - from living areas High - from garden without landscape mitigation
G29			2.5 km-N (95)	Medium - from living areas Medium to Low - with landscape mitigation
Goondah			2.3 km-S (100)	Low to Negligible

House ID (EA VP#)	Distance and direction to nearest wind turbine - EA	Overall visual impact - EA	Distance and direction to nearest wind turbine - Current Proposal	Overall visual impact - Current Proposal
Bookham			3.8 km-NE (95)	Low to Negligible

*Distance fom viewpoint. Elsewhere distance from residence noted as 1.2km

In response to a request from DPE, all residences located within 8.5 km of a wind turbine have now been identified – see Table 7-2 below summarising the number of residences located within each distance band from the nearest turbine. The location of these residences have been identified on an updated A1 size ZVI map (see Attachment 8) which provides an indication of the possible number of turbines that will be visible from each location. An assessment of the potential visual impact from each residence has been carried out based on the distance to the nearest turbine, the number of wind turbine hubs potentially visible and the screening from existing vegetation. The results of this assessment are included in tables in Attachment 7.(Please note this has not been updated since the recent removal of 10 turbines in the Marilba precinct.)

Table 7-2 Number of residences within 8.5km of the Yass Valley Wind Farm

Distance to nearest turbine	Total number of residences	Involved residences	Non-involved residences	Residential viewpoints assessed	Number of photomontages
0 - 1 km	1	1	0	0	1
1 - 2 km	22	16	6	5	4*
2 - 3 km	30	6	24	7	5
3 - 4 km	31	5	26	2	4
4 - 5 km	44	6	38	3	7
5 - 6 km	27	3	24	0	2
6 - 7 km	38	0	38	0	0
7 - 8.5 km	192	0	192	1	2
>8.5 km	-	-	-	0	2
Total	**384**	**36**	**348**	**18**	**27**

*Note that one resident did not provide permission for a photomontage to be used for further assessment

7.1.2 Revised Transmission Line

The visual impact assessment of the transmission line follows the same methodology used for the assessment of the wind turbines including defining the viewshed, establishing a zone of visual influence and visual impact assessment from publically accessible locations.

The viewshed of the transmission line is defined by the poles (up to 45m high) and will extend up to a distance of 5km, but the transmission line will be visible from very few locations on the surrounding road network. The overall visual impact of the proposed transmission line will be negligible with the associated substations having a negligible to low visual impact.

The visual impact assessment has also been updated to include an assessment of revised transmission line from the nearest residential viewpoints.

Figure 7-1 Typical overhead transmission line configurations - 330kV double circuit steel poles (left) 132kV single circuit concrete poles (right)

7.1.3 Cumulative Impact with Conroys Gap Wind Farm

The supplementary LVIA has been updated to include consideration of the cumulative impact of the Yass Valley Wind Farm together with the adjacent Conroys Gap Wind Farm, including for each of the individual residential viewpoints as shown in Table 7-3.

Table 7-3 Cumulative visual impacts from public viewpoints

Viewpoint	*Distance to proposed wind turbines (YVWF)*	*Distance to approved wind turbines (CGWF)*	*Assessment of cumulative visual impact of approved CGWF and proposed YVWF*
	PUBLIC VIEWPOINTS		
VP01	16.7 km - NW (144)	16.8 km - W (R14)	Negligible (Screened by vegetation and built form of Yass township)
VP02	16.4 km - NW (144)	16.6 km - W (R14)	Nil (no views to wind turbines)
VP03	12.6 km - W (143)	13.5 km - W (R5)	Negligible (The distance to nearest wind turbines)
VP04	4.7 km - SW (143)	6.7 km - SW (R1)	Low (The two farms would appear contiguous and indistinguishable from each other)
VP05	2.4 km - SW (136)	5.3 km - SW (R1)	Low (The two farms would appear contiguous and indistinguishable from each other)
VP06	0.3 km - SE (136)	3.7 km - S (R1)	Low (The two farms would appear contiguous and indistinguishable from each other)
VP07	1.2 km - NW (93)	3.3 km - SE (R1)	Low (The two farms would appear contiguous and indistinguishable from each other)
VP08	5.6 km - N (95)	2.5 km - E (R12)	Medium (The CGWF will appear in the foreground)
VP09	9.6 km - N (145)	2.4 km - S (S14)	Medium (The CGWF will appear in the foreground)
VP10	8.9 km - NE (145)	3 km - NE (S14)	Medium (The CGWF will appear in the foreground)
VP11	10.8 km - N (95)	6.3 km - NE (S14)	Low (The distance to nearest wind turbines)

Viewpoint	*Distance to proposed wind turbines (YVWF)*	*Distance to approved wind turbines (CGWF)*	*Assessment of cumulative visual impact of approved CGWF and proposed YVWF*
VP12	20.2 km - NE (95)	15.4 km - NE (S14)	Nil (No views to wind turbines due to intervening topography and vegetation. Refer LVIA)
VP13	5.4 km - NE (145)	0.9 km - NE (R12)	Low (Low viewer numbers)
VP14	4.1 km - NW (76)	8.4 km - E (R2)	Low (The two farms would appear contiguous and indistinguishable from each other)
VP15	11.7 km - NE (95)	10.9 km - NE (R12)	Negligible (The distance to nearest wind turbines)
VP16	1.4 km - E (122)	10.1 km - SE (R1)	Low (The two farms would appear contiguous and indistinguishable from each other)
VP17	2.3 km - SW (112)	9.6 km - SE (R1)	Low (The two farms would appear contiguous and indistinguishable from each other)
VP18	1.8 km - SW (100)	7.9 km - S (R1)	Low (The two farms would appear contiguous and indistinguishable from each other)
VP19	23.6 km - NW (145)	17.5 km - NW (S14)	Negligible (The distance to nearest wind turbines)
VP20	21.5 km - NW (145)	15.5 km - NW (S14)	Negligible (The distance to nearest wind turbines)
VP21	18.7 km - NW (145)	12.7 km - NW (S14)	Nil (No wind turbines visible – refer LVIA)
VP22	14.6 km - NW (145)	9.3 km - NW (S14)	Nil (No wind turbines visible – refer LVIA)
VP23	12.2 km - NW (145)	6.7 km - NW (S14)	Nil (No wind turbines visible – refer LVIA)
VP24	3.2 km - N (145)	2 km - NW (R9)	Low (Low viewer numbers)
VP25	1.9 km - NE (95)	5.1 km - E (R2)	Low (The two farms would appear contiguous and indistinguishable from each other)
VP26	2.4 km - NE (77)	13.1 km - E (R2)	Low (The two farms would appear contiguous and indistinguishable from each other)
VP27	1.5 km - NE (79)	14.8 km - E (R2)	Low (The two farms would appear contiguous and indistinguishable from each other)
VP28	3.1 km - E (88)	8.7 km - SE (R1)	Low (The two farms would appear contiguous and indistinguishable from each other)
VP29	8.4 km - SE (111)	17.6 km - SE (R1)	Negligible (The distance to nearest CGWF wind turbines)
VP30	5.5 km - SW (1)	19.3 km - SE (R1)	Negligible (The distance to nearest CGWF wind turbines)
VP31	4.9 km - SW (129)	22.8 km - SE (R1)	Negligible (The distance to nearest CGWF wind turbines)
VP32	1.8 km - SW (129)	22.2 km - SE (R1)	Negligible (The distance to nearest CGWF wind turbines)
VP33	3 km - SE (69)	27.4 km - SE (R1)	Negligible (The distance to nearest CGWF wind turbines)
VP34	8.8 km - NE (41)	25.9 km - E (R12)	Negligible (The distance to nearest CGWF wind turbines)
	SEQUENTIAL VIEWPOINTS		
SVP-01	8.7 km - NE (41)	25.9 km - E (R12)	Negligible
SVP-02	5.5 km - NE (41)	22.2 km - E (R2)	Negligible
SVP-03&04	4.3 km - E (95)	8.1 km - E (R2)	Low
SVP-05	9.4 km - NW (1)	20 km - SE (R1)	Negligible

Viewpoint	*Distance to proposed wind turbines (YVWF)*	*Distance to approved wind turbines (CGWF)*	*Assessment of cumulative visual impact of approved CGWF and proposed YVWF*
SVP-06	2.3 km - S (100)	8.5 km - S (R1)	Low
SVP-07	6 km - SW (143)	8 km - SW (R5)	Low
SVP-08	4.8 km - NW (143)	5.6 km - W (R5)	Low
SVP-09	8.9 km - NE (145)	2.1 km - NE (S14)	Medium
SVP-10	13.2 km - NE (95)	8.9 km - NE (S14)	Negligible
SVP-11	6.2 km - SE (111)	15.3 km - SE (R1)	Negligible
	CUMULATIVE VIEWPOINTS		
CVP1	5.2 km - SW (143)	7.3 km - SE (R5)	Low
CVP2	3.2 km - SW (136)	5.9 km - SW (R1)	Low
CVP3	0.9 km - W (96)	3.0 km - E (R1)	Low
CVP4	2.0 km - NE (95)	5.2 km - E (R2)	Low
	RESIDENTIAL VIEWPOINTS		
G14 (R1)	1.4 km - SW (136)	4.4 km - SW (R1)	Low
M04 (R2)	2.1 km - SW (100)	8.3 km - S (R1)	Low
M22 (R3)	2.6 km - SW (114)	10.7 km - SE (R1)	Negligible
C83 (R4)	10 km - SW (129)	25.6 km - SE (R1)	Negligible
C39 (R5)	4.3 km - SE (69)	28.8 km - SE (R1)	Nil (CGWF will not be visible)
G27 (R6)	7.7 km - N (95)	3.8 km - NE (R12)	Low (Wind farms contiguous and indistinguishable and screened by vegetation)
M8 (R7)	2.3 km - SW (136)	5.5 km – S (R1)	Low (Wind farms contiguous and indistinguishable and screened by vegetation)
C41 (R8)	2.7 km - NW (77)	10.9 km - E (R2)	Negligible (screened by intervening topography to east)
C42 (R9)	3.6 km - NW (76)	8.7 km - E (R2)	Negligible (CGWF screened by topography)
G11	1.7 km - W (143)	3.3 km - SW (R5)	Low
G16	1.1 km - W (96)	2.9 km - E (R1)	Low
M20	1.9 km - SW (100)	7.9 km - S (R1)	Negligible
M24	1.9 km - SW (100)	8.0 km - S (R1)	Negligible
M42	1.1 km - S (114)	9.7 km - SE (R1)	Negligible
C01	2.7 km - NE (63)	24.1 km - SE (R1)	Nil
C37	2.5 km - SE (126)	25.9 km - SE (R1)	Nil
C67	3.3 km - NE (74)	8.7 km - E (R1)	Nil
G29	2.5 km - NE (95)	3.4 km - E (S3)	Medium
Goondah	2.2 km - SW (100)	8.3 km - S (R1)	Negligible
Bookham	3.9 km - E (95)	7.6 km - E (R2)	Negligible

7.1.4 Conclusion

The supplementary visual impact assessment concluded that the proposed Yass Valley Wind Farm will have a generally low visual impact on its surrounds, and the site is suitable landscape for the construction of a wind farm.

7.2 Noise Impact Assessment

An updated Noise Impact Assessment (NIA) has been completed by Marshall Day Acoustics, see Attachment 9. The updated NIA is based on a layout consisting of 147 turbines, however, the PP&SR layout now has 134 turbines. Thirteen turbines were included in the noise impact assessment which have since been removed (Turbines 89, 90, 91, 93, 94, 95, 96, 97, 98, 99, 107, 108 and 109 as per the numbering of the NIA). The conclusion from the report is still valid as the removal of turbines will further reduce predicted noise levels at some impacted receivers, but for most receivers will not be significant. Due to the inclusion of the thirteen turbines in the assessment, the predicted noise levels are considered conservative particularly for the closest receivers to the removed turbines i.e. receivers G15, M48, G16, M32, G29, G31, M18, C25 and C26. The conservative nature of the assessment following the removal of 13 turbines from the commissioning of this report applies to all that follows. As the removal of turbines minimises impacts the report has not been updated.

The assessment updated the previous assessment included in the EA and includes:

- Operational noise predictions for the revised turbine layout for all identified receivers;
- Identifying any receivers where the noise criteria will be exceeded;
- Assessment of construction noise for receivers in proximity to the revised transmission line route;
- A worst case noise contour map with all identified receivers; and
- A consideration of the draft *NSW Planning Guidelines: Wind Farms* including the assessment of low frequency noise.

7.2.1 Predicted Operational Noise

The worst case noise level predictions for the relevant receivers are summarised in Table 7-4. The results show compliance for all relevant receivers with the MM92 turbine (typical proposed turbine model) and the V90 turbine (worst case turbine model).

Table 7-4 Worst case operational noise level predictions from non-involved receivers

	MM92 Turbine (typical)	*Criteria at 10m/s (hub height)#*	*Compliance at all wind speeds?*	*V90 Turbine (worst case)*	*Criteria at 15m/s (hub height)~*	*Compliance at all wind speeds?*
C74	<35	37.5	✓	35.2	44.5	✓
G11	<35	44	✓	37.2	47	✓
G14	37.3	44	✓	39.3	47	✓
G16	39.5	44	✓	41.7	47	✓
M08	<35	44	✓	36.2	47	✓
M20	<35	43.8	✓	35.2	50.8	✓
M42	35.1	39.4	✓	36.3	43.8	✓

Table 7-5 Worst case operational noise level predictions for involved receivers

	MM92 Turbine (typical)	*Criteria at 10m/s (hub height)#*	*Compliance at all wind speeds?*	*V90 Turbine (worst case)*	*Criteria at 15m/s (hub height)~*	*Compliance at all wind speeds?*
C02	37.8	45	✓	39.7	45	✓
C03	37.1	45	✓	39.3	45	✓
C04	35.7	45	✓	37.9	45	✓

	MM92 Turbine (typical)	Criteria at 10m/s (hub height)#	Compliance at all wind speeds?	V90 Turbine (worst case)	Criteria at 15m/s (hub height)~	Compliance at all wind speeds?
C25	39.9	45	✓	42.2	45	✓
C26	35.8	45	✓	38.2	45	✓
C27	37.1	45	✓	39.3	45	✓
C55	35.8	45	✓	38.1	45	✓
C56	37.8	45	✓	40.1	45	✓
C68	36.5	45	✓	39.1	45	✓
G12	37.0	45	✓	38.9	45	✓
G13	35.1	45	✓	37.4	45	✓
G15	40.2	45	✓	42.3	45	✓
G31	37.4	45	✓	39.6	45	✓
G38	35.8	45	✓	38.1	45	✓
M18	41.0	45	✓	43.1	45	✓
M21	35.2	45	✓	37.1	45	✓
M32	<35	45	✓	36.0	45	✓
M41	<35	45	✓	37.5	45	✓
M48	39.5	45	✓	41.3	45	✓

hub height wind speed at which MM92 turbine is at maximum sound power level (104.2dB) i.e. 10m/s
~ hub height wind speed at which V90 turbine is at maximum sound power level (107.1dB) i.e. 15m/s

7.2.2 Cumulative Noise

Cumulative noise impact calculations include the consented Conroy's Gap Wind Farm, which comprises of 18 REpower MM92 turbines locations. When including noise emissions from Conroy's Gap Wind Farm, the predicted noise has increased at 5 receivers (3 involved and 2 non-involved) when compared to Yass Valley Wind Farm predicted noise levels alone and where the cumulative noise level is greater than 35dB. The cumulative predicted noise level is less than the World Health Organisation limit of 45dB for all 3 involved receivers as shown in Table 7-6. The predicted noise level shown in Table 7-6 is calculated for the wind speed that corresponds to the maximum sound power levels. The predicted noise level at all other wind speeds will be lower than that presented in Table 7-6, as such if compliance is achieved at the wind speed that corresponds to the maximum sound power level, compliance will be achieved at all other wind speeds as the base line limit doesn't change with wind speed and the predicted noise is lower at other wind speeds.

The cumulative predicted noise level is less than the criteria at each wind speed as shown in Table 7-7 for the 2 non-involved receivers when using both the MM92 and V90 at Yass Valley Wind Farm. Table 7-7 is for non-involved receivers where the criteria is based on background noise levels and as such has been presented for every wind speed. This is different to Table 7-6 for involved receivers as it is only if the base line limit is exceeded that the criteria which is dependent upon background noise levels come into effect. As the predicted noise levels for involved receivers does not exceeded the base line limit, background noise levels are not required.

Table 7-6 Cumulative predicted noise levels in dB for involved receivers

Dwelling	Conroy's Gap noise level	Yass noise level		Cumulative noise level (Yass + Conroy's Gap)		Base line limit	Comply
		MM92#	V90~	MM92#	V90^		
G12	24.2	37	38.9	37.2	39.1	45	✓
G13	21.2	35.1	37.4	35.3	37.5	45	✓
M32	23.0	<35	36	34.2	36.2	45	✓

hub height wind speed at which MM92 turbine is at maximum sound power level (104.2dB) i.e. 10m/s
~ hub height wind speed at which V90 turbine is at maximum sound power level (107.1dB) i.e. 15m/s
^ predicted level using maximum sound power level for MM92 turbine (which occurs at hub height wind speed of 10m/s) and V90 turbine (which occurs at hub height wind speed of 15m/s)

Table 7-7 Cumulative predicted noise levels in dB for non-involved receivers

Receiver	Yass turbine	Cumulative noise level (Yass + Conroy's Gap)											
	Wind Speed (m/s)	4	5	6	7	8	9	10	11	12	13	14	15
G11	MM92	33.5	33.5	33.5	33.5	33.5	34.6	35.2	35.2	34.8	34.1	n/a	n/a
	V90	30.3	30.3	30.3	32.1	33.8	35.6	36.6	37.1	37	36.8	36.8	37.2
	Background	31.1	32	33	34.1	35.2	36.4	37.5	38.6	39.8	40.8	41.8	42.7
	Criteria	36.1	37	38	39.1	40.2	41.4	42.5	43.6	44.8	45.8	46.8	47.7
	Compliance	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
G16	MM92	38.1	38.1	38.1	38.1	38	39.1	39.7	39.7	39.3	38.6	n/a	n/a
	V90	34.2	34.2	34.2	36.2	38	39.8	40.9	41.3	41.3	41.1	41.3	41.7
	Background	35.2	35.8	36.3	36.7	37.1	37.6	38.1	38.8	39.5	40.5	41.6	43
	Criteria	40.2	40.8	41.3	41.7	42.1	42.6	43.1	43.8	44.5	45.5	46.6	48
	Compliance	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

7.2.3 Substation and Transformer Noise

Noise levels have been predicted for the receivers closest to each substation location based on a single (Option A) and double substation (Option B) configuration. Both configurations were found to comply with the NSW Industrial Noise Policy criteria as shown in Table 7-8.

Table 7-8 Noise level compliance at substations and transformers

Dwelling	Distance to closest substation (km)	Option A Predicted noise level (dB L_{Aeq})	Option B Predicted noise level (dB L_{Aeq})	Night-time RBL	INP intrusiveness criteria (L_{A90} +5dB)	Comply?
C04	3.6	<10	<10	36	41	✓
C25*	1.4	19	18	30	35	✓
C67	0.8	<10	31	30	35	✓

Note: * Denotes involved residence

7.2.4 Construction Noise

7.2.4.1 Construction noise prediction

Site construction noise has been re-assessed including for the revised transmission line route and associated substations. No receivers are classified as 'highly noise affected' and hence don't trigger the recommended management measures required in the Interim Construction Noise Guidelines (ICNG). Some receivers are classified as 'noise affected' based on the minimum management level of 40dB which would require the management measures as per the ICNG. Table 7-9 shows the distance a receiver must be within to be considered 'noise affected' and also the 'noise affected' receivers.

Table 7-9 Estimate of distance when construction noise levels are above ICNG management levels

Receiver status	Management level	Turbine construction	Batching plant	Transmission line construction
Noise affected	40dB LAeq	Within 2km	Within 800m	Within 1.25km
Noise		C25, M18, C27, G16,	None	M13, M81, C25, M31, M9,

Receiver status	Management level	Turbine construction	Batching plant	Transmission line construction
affected receivers		M42, G15, C68, M21, M41, C56, C02, G14, C26, G31, M48, C02, C55, G11, G12, G38, M32, M20, M22, M24, C05,G13		C67, M30, M29, M28, M25, M32, G31, M26, C79, C78, M18, C80,C66
Highly noise affected receivers		None	None	None

Detailed noise levels at worst case receivers have been assessed. These receivers are nearest to the proposed turbine sites and the revised transmission line. The six closest receivers to turbine construction noise, transmission line and batching plant locations are shown in Table 7-10. A total of 9 receivers are shown as some receivers are close to multiple sources of construction noise. No receivers would be considered as being 'highly noise affected' as defined by the guidelines. As the worst case receivers are not 'highly noise affected' all other receivers are not 'highly noise affected'. Table 7-10 shows that if all construction activities occurred simultaneously (cumulative level) than all receivers listed would be 'noise affected' however this is worst case and unlikely to occur in reality as construction activities occur in stages and are localised in certain areas for short periods of time. This is further detailed in Section 7.2.4.2.

Table 7-10 Predicted construction noise level (L_{Aeq}) at worst case receiver locations

	Management level	Access road construction	Turbine foundation construction	Cable trench digging	WTG assembly	Batching plant	Transmission line construction	Cumulative level	Noise affected	Highly noise affected
C25*	40	45-50	45-50	40-45	30-35	30-35	45-50	50-55	Yes	No
C27*	40	40-45	40-45	35-40	25-30	15-20	25-30	40-45	Yes	No
C67	40	25-30	25-30	20-25	15-20	15-20	40-45	40-45	Yes	No
G15*	44	40-45	40-45	35-40	30-35	15-20	25-30	45-50	Yes	No
G16	44	40-45	40-45	40-45	30-35	10-15	25-30	45-50	Yes	No
M13*	44	25-30	25-30	25-30	15-20	<10	45-50	45-50	Yes	No
M18*	40	35-40	35-40	30-35	20-25	25-30	40-45	45-50	Yes	No
M42	40	35-40	35-40	35-40	25-30	10-15	20-25	40-45	Yes	No
M48*	40	40-45	40-45	35-40	25-30	15-20	25-30	40-45	Yes	No

7.2.4.2 Mitigation and management measures

The ICNG noise management level is used as a trigger for the construction site to implement all feasible and practicable work practices and measures. Once this is triggered i.e. noise management levels are exceeded at at least one receiver, then all feasible work practices and measures need to be carried out. These feasible work practices and measures are usually carried out at the noise source at the construction activity. This differs from wind farm operational noise management measures which usually occur at either the noise receiver or noise source. One of the main differences is due to the fact that operational noise occurs for extended period of time over many years whereas construction noise is temporary and localised for short periods of time.

The ICNG emphasises implementing feasible and practical noise reduction measures. It does not provide mandatory standards or criteria. The ICNG stipulates a quantitative method where a target level is used as a trigger for the construction site to implement all feasible and practicable work practices and measures. There is also an upper limit of 75dB which should only be exceeded in exceptional circumstances and for short period of

time, acknowledging that construction activity is intermittent and for some processes the application of noise reduction measures may not be reasonable or feasible. The noise management level and recommended action is taken from the ICNG Section 4.1.1 page 12 and provided below.

Table 7-11 Noise management level and management measure from ICNG

Time of day	*Management level L_{Aeq} (15min)*	*How to apply*
Recommended standard hours: Monday to Friday 7 am to 6 pm Saturday 8 am to 1 pm No work on Sundays or public holidays	Noise affected RBL* +10 dB	The noise affected level represents the point above which there may be some community reaction to noise. ▸ Where the predicted or measured L_{Aeq} is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level ▸ The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly noise affected 75dB(A)	The highly noise affected level represents the point above which there may be strong community reaction to noise. ▸ Where noise is above this level, the relevant authority (consent, determining or regulator) may require respite periods by restricting the hours that the very noise activities can occur, taking into account: ▸ times identified by the community when they're less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences ▸ if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.

*Rating background level (RBL) which is determined based on the background noise levels measured at a noise sensitive receiver

The actual noise levels experienced at a receiver and the duration of noise level above the management level will be dependent on the distance between the source and receiver, the intervening terrain as well as how long different items of equipment will be operating. The exceedances in noise management level is similar for both wind farm and transmission line construction as similar equipment and construction methodology is applied. The period where the noise management level is exceeded (noise affected classification) is affected by:

- Construction activity – construction activities are staged and different times use different equipment and hence have different associated noise levels that could cause noise levels to exceed the management level. As can be seen from Table 7-10 each activity in the construction of the wind farm has a different predicted noise level e.g. wind turbine assembly is lower than turbine foundation construction. Each stage typically lasts for a few days and hence the period of noise management level exceedence would only occur for less than a few weeks in total. In addition within each stage there will be periods of varying noise levels e.g. in turbine foundation construction, excavation will produce higher noise levels than concrete pouring and hence while turbine foundation construction is noted to occur for a few days per turbine, the highest emission activities which result in noise levels above the minimum noise management level will only occur for a limited portion of this period.
- Construction location – construction activities (all stages) are transient and only last for a few weeks at each location at most. As the construction activities move to another part of the site the contribution to predicted noise levels will decrease. Hence the any noise management levels that are exceeded would be short term only.
- Construction timing – All noise management level exceedances would only occur during standard construction hours as it is being proposed to only construct in standard construction hours.

As per the ICNG recommendations, where receivers are noise affected then the proponent should apply all feasible and reasonable work practices to meet the noise affected management level and the proponent

should also inform all potentially impacted residents of the nature of the works to be carried out, the expected noise levels and duration, as well as contact details.

Monitoring will occur if a complaint is issued and if monitoring will assist in managing of future works to avoid any similar impact during subsequent works.

The construction activities and equipment considered in this study are representative of the types of work associated with construction of a wind farm. Actual noise levels in practice will depend on the specific working methods and equipment selected to construct the project. In light of the above findings with respect to the management levels, a construction noise management plan will be developed when a construction contractor has been engaged for the project, and working methods and equipment selections are sufficiently well defined. The purpose of the construction management plan would be to define the best practicable working methods to be adopted for the control of construction noise, and the types of matters to be addressed in the construction noise management plan include:

- Revised noise level predictions for key construction stages and key receptor locations and determine the extent of noise affected receivers.
- Proposed scheduling of construction activities to minimise the noise impact, including confirmation of regular working days and hours, the timing of any noisier activities
- Selection of equipment with lower overall sound power levels
- Installing broadband/white noise reversing alarms on relevant equipment
- Investigation of the use of local screens or positioning of equipment to utilise screening provided by intervening terrain
- Key noise considerations to be included as part of the induction of site workers
- Procedures for notifying residences of particular activities, such as an essential out of hours work (e.g. turbine erection or deliveries)
- Procedures on how to deal with noise complaints

7.2.5 Consideration of Draft NSW Planning Guidelines

7.2.5.1 Night-time noise criteria

In general, the night-time criteria for a given receiver are lower than the 24 hour or daytime criteria. To provide an indication of the potential affect the application of night-time noise criteria could have for the project, the predicted noise levels for the identified relevant receivers have been compared to the night-time criteria developed from the data collected for the 2009 assessment.

The analysis shows only one receiver, receiver M42, may be affected by the application of night-time criteria. Based on the 24hr criteria, the predicted noise levels achieve compliance at all integer wind speeds. When considering the night-time noise-criteria, the predicted noise levels for the V90 turbine exceed the criteria by up to 0.6dB between 10 and 13m/s and the predicted levels for the MM92 turbines exceed the criteria by up to 0.1dB between 10 and 11m/s.

Should it be demonstrated that non-compliance does occur during operation this can be ameliorated through turbine optimised de-rating.

7.2.5.2 Low Frequency Noise

Detailed guidance on proposed noise assessment methods is contained in Appendix B of the draft NSW Planning Guideline: Wind Farms and does not explicitly indicate a requirement to predict low-frequency noise levels. The proposed methodology does however nominate a method of identifying the presence of low frequency special audible characteristics which may result in the application of a 5dB penalty to predicted or measured noise levels.

The Site Compatibility Certificate application referred to in Section 1.3 of the Guidelines makes reference to the prediction of low-frequency noise levels at dwellings within 2km where consent has not been obtained. Whilst specific details of the low frequency noise predictions that are required are not specified in Section 1.3, we

anticipate that the intent of the Guidelines is that the prediction of C-weighted noise levels is required, in line with the advice provided in Appendix B of the Guidelines.

The C-weighting refers to the way in which the frequency content of the noise is adjusted to produce a total decibel value for the noise level. The most common form of assessment relies on the A-weighting which is intended to adjust noise frequencies in a way that results in a total noise level corresponding to general human perception of loudness. The A-weighting is however recognised as being less appropriate for noise levels characterised by significant or prominent low-frequency components (specifically, frequencies of noise lying below approximately 200Hz). The value of noise levels which are predicted or measured using the C-weighting are more sensitive to the influence of low-frequency noise, and are therefore often referred to as an indicative measure when evaluating low-frequency considerations. For a given noise source and character, the noise level measured using a C-weighting will be greater than measured using an A-weighting in most cases.

The low frequency noise criteria presented in the Guidelines are summarised as follows:

- Day: 65 L_{Ceq} dB
- Night: 60 L_{Ceq} dB

In the absence of an international standard engineering prediction method specifically developed for the prediction of C-weighted noise levels, the ISO 9613 methodology has also been used with a set of adjustments to low frequency noise level predictions at non-involved receivers within 2km of a proposed turbine location. Specifically, reference has been made to Danish Statutory Order No. 1284, dated 15 December 2011 (DSCO 1284), which provides a methodology for predicting low frequency noise between 10-160Hz. These predictions are provided to address the information requirements proposed in the draft NSW Guidelines. The prediction of low frequency noise levels are however subject to increased margins of uncertainty. This uncertainty relates to the use of sound power level data below the normal frequency range reported by turbine manufacturers, combined with the application of engineering prediction methods specifically intended for the calculation of A-weighted noise levels. Based on this the C-weighted noise levels can only be regarded as indicative predictions. The uncertainty associated with the C-weighted predicted noise levels is expected to be similar to, or greater than the uncertainty associated with the C-weighted sound power of the turbines.

For the MM92 turbine, the predicted C-weighted noise level is below both the daytime and night-time criteria for all non-involved receiver locations within 2km of a turbine. For the worst case V90 turbine, the predicted C-weighted noise levels are below the daytime criteria of 65dBC but exceed the night-time criteria 60dBC for four non-involved receiver locations within 2km of a turbine. Additional modelling has been carried out to determine all non-involved receivers which would have a predicted C-weighted noise level that exceeds the daytime or night-time criteria, including those outside of 2km. One non-involved receiver M8 outside of 2km has been identified that exceeds the threshold, note this exceedance is for the V90 only. The results are shown in Table 7-12. Prior to final turbine selection there will be an updated C-weighted noise level prediction.

Table 7-12 Maximum C-weighted predicted receiver noise levels

Dwelling	Nearest turbine	Distance to nearest turbine (km)	Predicted noise level MM92, L_{ceq} dB	Threshold exceeded?		Predicted noise level V90, L_{ceq} dB	Threshold exceeded?	
				Daytime	*Night-time*		*Daytime*	*Night-time*
G11	143	1.71	56	No	No	61	No	Yes
G14	136	1.42	58	No	No	63	No	Yes
G16	95	1.15	60	No	No	64	No	Yes
M20	100	1.87	55	No	No	60	No	No
M24	100	1.90	55	No	No	60	No	No
M42	114	1.15	58	No	No	63	No	Yes
M8	136	2.40	56	No	No	61	No	Yes

In summary there is no requirement to predict Low Frequency Noise but it is in the best interests of the proponent and the community to attempt to do so. Regardless of the current limitations and inadequacies described above no exceedence is anticipated with the typical turbine (MM92).

Contingency strategies

Information is presented here regarding mitigation options available for the reduction of C-weighted noise levels. The primary mitigation or contingency strategy would be to enforce specifications of the total noise emission and permissible characteristics in the procurement contract and a noise reduction management strategy utilising the wind farm control systems.

Procurement contract: The procurement contract for the supply of turbines to the site will typically include specifications concerning the allowable total noise emissions from the turbine, and the permissible characteristics of the turbine and can include requirements extending into the low frequency region (for example, down to 20Hz). In the event that the turbine emissions are found to exceed the contracted values, the supplier can be required to implement measures to reduce the noise to the contracted value. This can include measures to rectify manufacturing defects or appropriate control settings.

Noise reduction management strategy: modern wind farms include control systems which enable the operation of the turbines to be varied according to environmental constraints. Specifically, variable pitch turbines as proposed for this site include control functions which enable the noise emissions of the turbines to be selectively controlled; by adjusted the pitch of blade, the noise emissions of the turbine can be reduced. In addition, where required, the turbines can be selectively shut down under relevant wind speeds and directions. These types of control measures can be used separately, or in combination, to achieve C-weighted noise reductions for predetermined wind speed ranges and directions.

The need for such measures would be dependent on the outcome of a future detailed design and procurement process, should the scheme be approved, and would be determined according to the emission characteristic of the final selected turbine. In particular, the adoption of control modes of operation for turbines would involve verification of frequency characteristics of the control modes.

7.2.6 Conclusion

The updated assessment has demonstrated there would be full compliance with the operational noise criteria for all relevant receivers. None of the adjacent residences will be highly noise affected during construction activities.

7.3 Ecology Assessment

Biodiversity is considered in the EA, the supplementary ecology assessment (Refer Attachment 1 PPR Nov 2012) and the revised assessment in Tables 7-13 and 7-14 below.

In November 2013 and June 2014 personnel from the Office of Environment and Heritage, ngh Environmental and Epuron visited the site to consolidate their understanding of the vegetation classification from the various surveys and assessments which have been undertaken since 2009. In some cases low diversity native pasture has been re-classified which has resulted in minor changes to the estimated impact area calculations – see Table 7-13 below.

Information gathered on site has guided revised mapping of the receiving environment to enable OEH to better understand the impact of the wind farm. Following the site visits in June 2014 a new methodology for counting Hollow Bearing Trees (HBT) was agreed and completed. It is included in Attachment 1.

Following discussion of potential impacts to avifauna from wind turbines adjacent to woodland, ten wind turbines have been removed from the Marilba precinct and a revised table of impacts has been produced – see below - which considers the final proposed infrastructure layout.

ngh Environmental have further responded to OEH in a letter dated 17 December 2013 (see Appendix 2) which addresses quantification of impacts and provides suitable protocols for addressing them. It considers and sddresses:

- Incomplete surveys (response to survey outcomes)
- Impacts to Box Gum Woodland EEC
- Additional information on how vegetation of conservation significance is defined
- Calculation of areas of impact
- Finalisation of offsets locations of turbines and infrastructure in areas of high conservation significance

Yass Wind Farm						Vegetation Impact											
Infrastructure		**Quant'y**	**Width (m)**	**Length (m)**	**Total Footprint (ha)**	**Pasture**	**Exotic Pasture**	**BGW Derived Grassland**	**BGW**	**BGBPF**	**DSTF**	**LBDGF**	**RRG**	**Ripa-rian**	**Aqua-tic**	**BGWke**	**Total all veg types**
Turbine footing		134	25	25	8.38	0.00	2.11	5.01	1.19	0.05	0.00	0.01	0.00	0.00	0.00	0.00	8.38
Crane hardstand		134	22	40	11.79	0.00	2.96	7.38	1.37	0.00	0.00	0.09	0.00	0.00	0.00	0.00	11.79
Tracks		1	8	105,600	84.48	0.00	10.59	48.15	22.03	0.17	0.00	0.18	0.00	0.00	0.00	0.00	81.12
Underground powerlines onsite (total on site)**		1	2	71,830	14.37	0.00	0.30	0.61	0.29	0.00	0.00	0.03	0.00	0.00	0.00	0.00	1.24
U/G powerlines onsite (Not within access tracks)		1	2	7,078	1.42												
Overhead 33kV powerline cabling / easement *		1	14	17,940	25.12	0.00	0.00	10.19	12.23	0.00	0.00	0.20	0.00	0.00	0.00	0.00	22.62
Overhead 33kV power pole footings		72	1	1	0.007	0.000	0.000	0.003	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.01
Electrical Connection to TransGrid 330kV	O/H powerline *	1	16	25,810	41.30	0.00	0.00	26.66	13.20	0.00	0.00	0.00	0.57	0.00	0.00	0.00	40.43
	O/Hpower pole footings	104	1	1	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	Substation & control bldg	2	150	150	4.50	0.00	0.00	2.25	2.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.50
	Switchyard	1	150	150	2.25	0.00	0.00	2.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.25
Electrical Connection to TransGrid 132kV ***	O/H 132kV powerline *	1	15	22760	34.14	0.00	3.59	15.45	13.95	0.17	0.00	0.79	0.00	0.12	0.07	0.00	34.14
	O/H power pole footings	92	1	1	0.01	0.000	0.001	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009
	Substation & control bldg	2	150	150	4.50	0.00	0.00	2.25	2.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.50
Concrete batch plant		2	75	100	1.50	0.00	0.00	0.75	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50
Construction compound, staging and storage		2	300	100	6.00	0.00	0.00	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00
Total Impacts * **					**225.39**	**0.00**	**19.55**	**123.96**	**72.52**	**0.38**	**0.00**	**1.31**	**0.57**	**0.12**	**0.07**	**0.00**	218.49
*Note: Overhead cabling has no permanent impact on pasture and other vegetation < 4.5m in height																	
** Impact only calculated where undergroud powerlines **are not** within Tracks impact area																	
*** See staging section of PP&SR. All 330kV and 132kV impacts have been included but only one stage will be connected via 132kV before the 330kV line is required.																	
BGW: Box Gum Woodland, BGBPF: Brittle Gum – Broad-leaved Peppermint Forest, DSTF: Dry Shrub – Tussock Grass Forest, LBDGF: Long-leaved Box Dry Grass Forest, BGWke: Box-Gum Woodland – *Kunzea ericoides,* RRG: River Red Gum Woodland.																	

Table 7-13 Vegetation Impacts

Infrastructure		Quantity	Width (m)	Length (m)	Total Footprint (ha)	Poor	Poor - Moderate	Moderate	Moderate - Good	Good	Total
Turbine footing [a]		134	25	25	8.38	0.53	5.23	0.44	0.00	0.00	6.20
Crane hardstand		134	22	40	11.79	0.76	7.37	0.62	0.00	0.00	8.75
Tracks		1	8	105,600	84.48	10.32	52.55	6.47	0.56	0.23	70.13
Underground powerlines onsite (total on site)**		1	2	71,830	14.37	0.05	0.71	0.13	0.00	0.02	0.90
Underground powerlines onsite (Not within access tracks)		1	2	7,078	1.42						
Overhead 33kV powerline cabling / easement *		1	14	17,940	25.12	7.09	13.42	1.79	0.13	0.00	22.43
Overhead 33kV power pole footings		72	1	1	0.007	0.002	0.004	0.001	0.000	0.000	0.006
Electrical Connection to TransGrid 330kV	Overhead powerline *	1	16	25,810	41.30	6.25	29.75	0.80	3.06	0.00	39.87
	Overhead power pole footings	104	1	1	0.010	0.002	0.007	0.000	0.001	0.000	0.010
	Substation and control bldg	2	150	150	4.50	2.25	2.25	0.00	0.00	0.00	4.50
	Switchyard	1	150	150	2.25	0.00	0.00	2.25	0.00	0.00	2.25
Electrical Connection to 132kV Line	Overhead 132kV powerline cabling / easement *	1	15	22760	34.14	2.48	25.36	0.66	0.00	0.90	29.40
	Overhead 132kV power pole footings	92	1	1	0.009	0.001	0.007	0.000	0.000	0.000	0.008
	Substation and control bldg	2	150	150	4.50	1.50	3.00	0.00	0.00	0.00	4.50
Concrete batch plant		2	75	100	1.50	0.75	0.75	0.00	0.00	0.00	1.50
Construction compound, staging and storage		2	300	100	6.00	3.00	3.00	0.00	0.00	0.00	6.00
Total Impacts					**225.39**	**34.99**	**143.41**	**13.15**	**3.75**	**1.15**	196.44
*Note: Overhead cabling has no permanent impact on pasture and other vegetation < 4.5m in height											
BGW: Box Gum Woodland, BGBPF: Brittle Gum – Broad-leaved Peppermint Forest, DSTF: Dry Shrub – Tussock Grass Forest, LBDGF: Long-leaved Box Dry Grass Forest, BGWke: Box-Gum Woodland – *Kunzea ericoides,* RRG: River Red Gum Woodland.											

Table 7-14 Impacted vegetation condition

7.4 Archaeology and Heritage Assessment

An additional archaeological field survey and assessment (Refer Attachment 3) was carried out by NSW Archaeology for the revised transmission line route and associated substations. The field work was carried out in conjunction with the Buru Ngunawal Aboriginal Corporation. Three previously recorded Aboriginal object sites have been relocated and a number of new Aboriginal object sites have been recorded. One European historic feature, a dead tree with a surveyor's mark, has been recorded. The tree will be avoided during construction.

The field survey results are in keeping with the patterns of site distribution identified in the original 2008 assessment. The recorded sites do not pose a constraint to the proposal. A number of management and mitigation measures have been recommended to conserve the identified sites.

The proposed wind turbine locations in the north west of the site which were introduced in the PPR were considered in the assessment, but based on the original assessment of the adjacent areas it was not considered necessary to include these areas in the field survey. Any areas proposed to be impacted by the proposal not covered by the field surveys to date will be included in the pre-construction surveys in accordance with Statement of Commitment 24.

The consultation process for the archaeology and heritage assessment commenced in 2008 and was undertaken in accordance with the *NSW DECC Interim Guidelines for Aboriginal Community Consultation – Requirements for Applicants (DEC 2004 & 2005)* which forms part of the *Guidelines for Aboriginal Cultural Impact Assessment and Community Consultation (DEC 2005)*. For the additional assessment an advertisement was placed in the Yass Tribune on 6th February 2013. One of the original registered Aboriginal stakeholders responded to the advertisement. A copy of the draft report was distributed to all three registered Aboriginal stakeholders for comment in accordance with the requirements of the guidelines. An endorsement from the Buru Ngunawal Aboriginal Corporation was received which supported the report's recommendations.

7.5 Electromagnetic Fields

All electrical infrastructure is located at a sufficiently large distance from the nearest residence for the magnetic field and electrical field contribution from the wind farm infrastructure to be negligible as shown in Table 7-15.

Table 7-15 Prediction of electromagnetic fields at residences

Electrical Infrastructure	*Distance to nearest residence (m)*	*Residence ID*	*Contribution to magnetic field strength at residence (mG)*	*Contribution to electric field strength at residence (kV/m)*
330kV Switchyard	500	M81	<1	<0.1 kV/m
Substation COP	3,620	C04	<1	<0.1 kV/m
Substation MRL	1,370	C25	<1	<0.1 kV/m
330kV transmission line	470	M13	<1	<0.1 kV/m
Overhead 33kV powerlines	1,030	M18	<1	<0.01 kV/m
Underground 33kV powerlines	811	M18	<1	<0.01 kV/m
132kV substations:				
330 kV Central alternative substation	880	C67	<1	<0.1 kV/m
132 kV COP Alternative substation	1,350	C35	<1	<0.01 kV/m
132 kV MRL Alternative substation	820	G36	<1	<0.01 kV/m
132 kV transmission lines:				
COP Alternative 132 kV	1,210	C35	<1	<0.01 kV/m
MRL Alternative 132 kV	570	G12	<1	<0.01 kV/m

7.6 Traffic & Transport

A Traffic Impact Assessment was prepared as part of the Environmental Assessment in December 2008. The assessment was prepared in accordance with the DGRs and the Guide to Traffic Generating Developments (RMS, formerly NSW RTA). Following exhibition of the Preferred Project Report in December 2012 submissions were received in March 2013 from RMS and from Yass Valley Council.

The Traffic Impact Assessment was reviewed in consideration of the changes in the wind farm infrastructure reflected in this Preferred Project & Submissions Report and submissions received from RMS and the Councils in relation to traffic and access issues.

A Supplementary Traffic Impact Study (Refer Attachment 14) was prepared (April 2014) which addresses the additional issues raised. Since the Supplementary Traffic impact Study was prepared ten wind turbines in the Marilba stage have been removed so turbine parts delivery and civil construction traffice movements for this stage will be fewer than those stated.

All deliveries of wind turbine parts will be via the primary access points. Existing farm access may be used for survey work, geotechnical investigations and powerline infrastructure access.

7.6.1 Predicted Traffic and Transport Impacts

The current proposed wind farm site access has been developed in consideration of the traffic impact issues raised in the original traffic impact study and the feedback from agencies and Councils.

The assessment demonstrates that the proposed transport routes to the wind farm site are feasible and has identified a number of safeguards that will minimise the traffic impacts and reduce community disruption and risk of traffic accidents to an acceptable level.

7.6.2 Preliminary Swept Path Analysis

A preliminary swept path analysis has been completed for the five key intersections on the transport route. The results of the analysis supports the earlier conclusions reached that the proposed access routes are feasible and can be achieved without any significant constraints. Refer Attachment 15 for more details.

7.6.3 Structural Assessment of Bridges

Illalong Road is restricted by the Yass Valley Council to a 10 tonne limit in order to reduce the deterioration of the road pavement condition. The load limit is not related to any structural limit of the bridges on Illalong Road. An overmass and overdimensional permit will be required from the Yass Valley Council to allow use of the road during the construction phase for the delivery of the wind farm components. The permit application will require details of the loads as well as details of the transport vehicles to be used.

Following confirmation of the turbine overmass loads and transport equipment, a more detailed assessment may be applicable if any of the expected axle loads exceed the design capacity of the road or structure. In the event that any constraints are identified, mitigation measures such as bridge strengthening or alternate transport equipment with the capability of lower axle loads could be used.

As noted in the revised traffic impact assessment the old timber bridge at 3.32km on Illalong Road has been replaced and the new box culvert bridge has been assessed as capable of accommodating the overmass delivery vehicles which typically have an axle loading of up to 15 tonnes[1]. A more detailed assessment will be completed as part of the Traffic Management Plan, once the wind turbine component loads and delivery vehicle details are known. The worst case scenario, when the details of the loads are known, is that the new box culvert bridge on Illalong road would be strengthened to accommodate the load. This is considered feasible should it be required.

7.6.4 Structural Assessment of Existing Pavements

The proposed primary and secondary access routes have been assessed as being suitable for the typical transport loads associated with the delivery and construction of a wind farm with no significant impacts to the

[1] Vestas V90 Transport Manual

existing public roads. The current condition of the existing roads has been noted in the traffic impact studies e.g. the pavement condition of Burrinjuck Road is poor in some locations.

It was also noted that existing damage should not be accelerated by the passage of construction vehicles. Epuron has committed to a dilapidation survey of all public roads prior to the commencement of construction to ensure that the condition of the roads will be maintained to the same condition during the construction period and rehabilitated if required to at least that pre-existing condition on completion of the construction phase.

The dilapidation survey will be conducted by a qualified inspection service provider employing appropriate techniques to ensure adequate assessment on the condition of the existing pavements.

7.6.5 Traffic Volumes

The estimated traffic volumes have been reviewed based on the latest available RMS records and the observations made during the original assessment. There are no changes in the estimated traffic volumes which have been shown in the table on the following page. The accuracy of the adopted traffic counts on the minor roads is not significant in the assessment of traffic impacts, given the very low existing traffic volumes.

Road	*AADT (vehicles per day)*	*Information source*
Hume Highway at Bowning	7223	Obtained from RMS records
Burley Griffin Way Stn 94.085	1661	Obtained from RMS records
Burrinjuck Road	114	Obtained from RMS records
Paynes Road	Less than 200	Adjusted from quarry production rates
Illalong Road	70	Adjusted from counts taken
Whitefields Road	Less than 30	Adjusted from counts taken and discussions with land owners

Observations on the minor roads revealed hourly counts approaching zero as the traffic on these roads is generated primarily by the occupied properties.

Level of service

The increase in traffic as a result of the construction of the wind farm will not change the level of service on the proposed access roads.

7.6.6 Revised Transmission Line and 330kV Grid Connection Point

The traffic generated during the construction of a transmission line is not significant relative to the impacts from the delivery of the major wind turbine components on the wind farm site. The revised transmission line route which runs between the wind farm site and the grid connection point approximately 12km to the south will require access along the route for the installation of the power poles and stringing of the conductor cables. The transmission line construction will not require any oversize or overmass vehicles and the construction vehicles will use existing farm tracks as well as access from the switchyard and substation locations.

A 330kV switchyard will be required at the revised 330kV grid connection point at TransGrid's existing 330kV transmission line. The switchyard does not include a main transformer so will not require overmass vehicle access. The proposed access route for construction of the switchyard and associated infrastructure is via Burrinjuck Road as shown in the next section.

Access for the construction of the transmission line will be via the site access points for the switchyard (Burrinjuck Rd) and the substations (Whitefields Rd & Illalong Rd) as shown in the traffic impact assessment. The nature of the terrain (gently undulating) and vegetation (pasture) will allow access along the transmission line route for installation of power poles and stringing of conductors without the need to construct any additional permanent tracks.

7.6.7 Access Routes and Site Access Points

The main wind turbine parts haulage and access route to the wind farm will be via the Hume Highway. Four primary site access points are via:

- Hume Highway/Old Hume Highway (eastern junction) at Marilba
- Whitefields Road for the Coppabella precinct;
- Illalong Road for the Marilba precinct; and
- Paynes Road for the Conroy's Gap Extension precinct (south of the Hume Highway).

Secondary access and egress points from the site have been identified from Burrinjuck Road, Illalong Road and off the Hume Highway. Please refer Figure 7-2 for further details.

The primary access point for the Marilba precinct is via Illalong Road. Two secondary access (or potential egress) points to the Marilba precinct are shown from the old Hume Highway and the Conroys Gap truck stop on the northern side of the highway. All deliveries of wind turbine parts will be via the primary access points.

Existing farm access may be used for survey work, geotechnical investigations and powerline infrastructure access.

7.6.1 Additional Issues

No additional traffic and transport issues have been raised by the road authorities (RMS, Yass Valley Council and Harden Shire Council) in respect of the proposed changes to the infrastructure layout, including the revised transmission line route.

7.6.2 Mitigation Measures

The Traffic Impact Study (EA Appendix 6) recommended a number of safeguards and mitigation measures to be implemented to ensure the safety of all road users and for asset protection. Epuron has committed to developing a detailed Traffic Management Plan in consultation with the road authorities to reduce the traffic and transport impact, particularly during the construction phase. The Traffic Management Plan and other mitigation measures will be implemented in accordance with the process outlined in the RTA (now RMS) submission dated 16 December 2009.

A Traffic Impact Study will be undertaken as part of the Traffic Management Plan, as requested by Yass Valley Council – see Statement of Commitment 37.

7.7 Blade Throw

Blade throw refers to an event where ice or a turbine blade itself becomes separated from the nacelle into the surrounding environment. On the occasions where part of the blade has become separated from the tower, the most common causes are lightning strikes, storms, material fatigue or poor operation and maintenance practices. Wind turbines manufacturers have been implementing new design features to reduce the risk of these events occurring even further. Some of these advances include increasing lightning protection along the blades to reduce the damage from strikes and developing greater control systems to monitor any decrease in structural integrity and implement an automatic shutdown. Furthermore, modern turbines have an automatic braking system when wind speeds exceed a set value.

Ice throw occurs when the surrounding environment drops below freezing temperature and ice develops on the turbine blade. The ice is then dislodged when the turbine blade begins to rotate or the surrounding temperature increases. Rye Park and the surrounding regions have been known to regularly have sub-zero nights throughout winter and therefore this must be considered as a low possibility for the winter months.

While there is a possibility of these events occurring, the likelihood of a landowner being near a turbine during storms or freezing conditions is considered low; however, land owners will be advised to avoid turbines during these conditions.

7.7.1 Conclusion

Subject to the implementation of the proposed mitigation and control measures, the potential blade throw risks are considered acceptable.

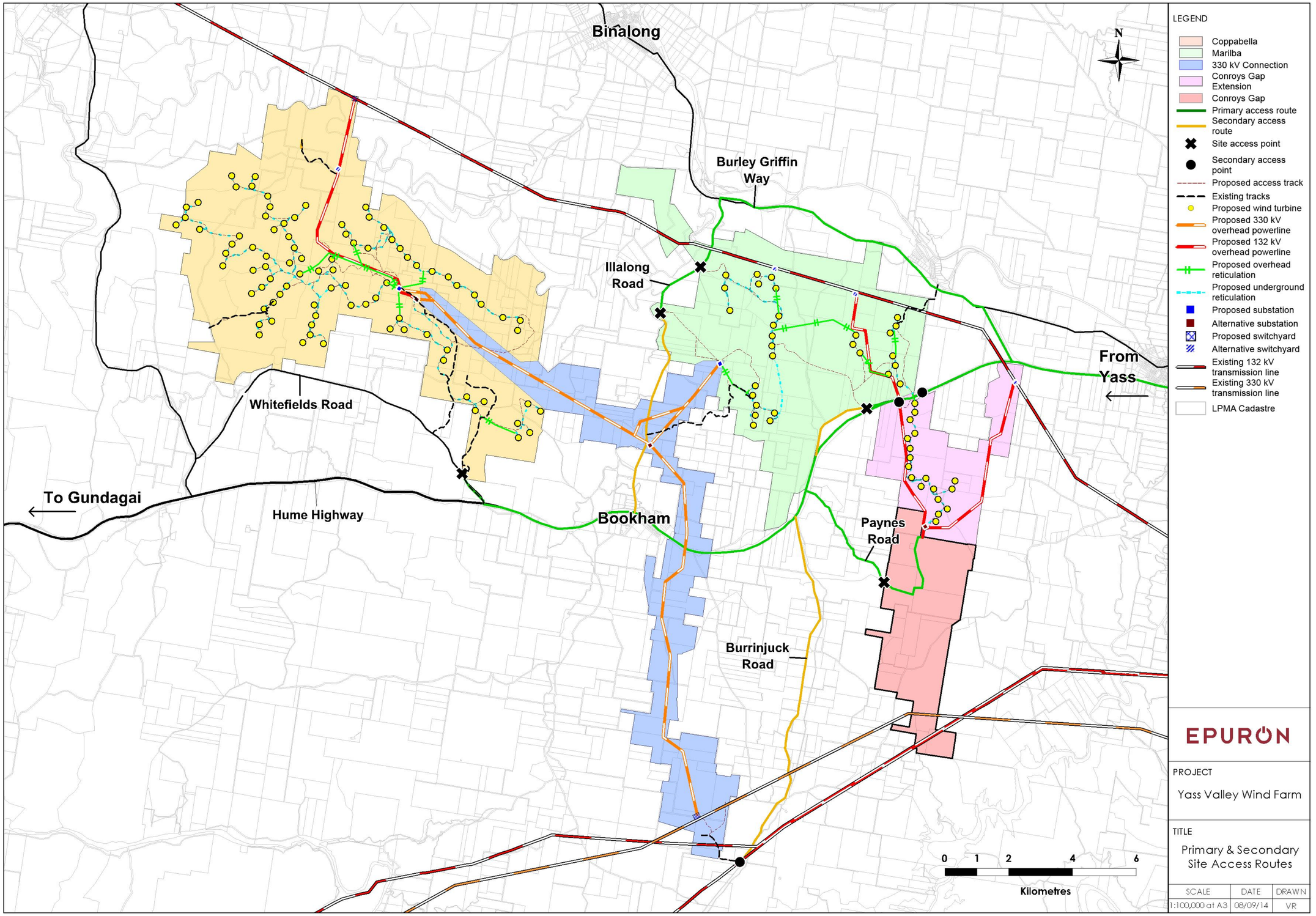


Figure 7-2 Wind farm access routes and site access points

7.8 Water Resources

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 (refer EA section 8.1.2 page 199). This includes water for the construction of concrete foundations for the wind turbines, control buildings and substations as well as for dust suppression and fire fighting. This equates to 8.1ML per annum or an average daily usage during construction of just over 31,000 litres.

The water could be sourced from any (or any combination) of potential sources assessed in Table 7-16.

Table 7-16 Water sources for the wind farm

Water source & available capacity	*Owner/Manager*	*Wind farm usage*	*Impact*
Yass Dam Yass, Bowning and Binalong are all provided with water via a pipeline from the Yass water treatment plant which sources water from the river via the Yass Dam. The Yass Dam is a concrete arch dam 12 m high with a crest length of 98 metres located just upstream of the township with an effective storage capacity of 850ML. The dam wall was raised in 2012/3 to create additional storage capacity of 1,500ML. Annual potable water production and usage is 800 - 900 ML. The water treatment plant has a capacity of 13ML/day.	Yass Valley Council	8.1/2,350 = 0.3% of storage capacity Annual usage = 8/800 = 1% of current usage Average daily usage 0.031/13 = 0.2% of water treatment plant capacity	Negligible
Murrumbidgee River Water is extracted from the Murrumbidgee River at Jugiong, treated and piped from Jugiong to Harden. The pipeline runs approximately 10 km west of the wind farm site. The water treatment plant has a capacity of 40ML/day.	Golden Fields County Council	Average daily usage 0.031/40 < 0.1% of existing daily capacity	Negligible
Lake Burrinjuck The off take from the Burrinjuck Dam provides 6,600 ML/day to the Main Canal.	NSW DPI Office of Water & Murrumbidgee Irrigation	0.031/6,600 = negligible % of existing daily capacity	Negligible
Groundwater Various registered ground water bores located within the vicinity of the proposed wind farm as per Figure 8-1 (page 196 of the EA) and subject to NSW Office of Water requirements	Existing water access and groundwater licence holders	Variable usage by wind farm depending on availability and requirements for other usage at the time (e.g. stock watering & irrigation).	Negligible

7.9 Private Airstrips Used for Aerial Agriculture

7.9.1 Potential Impact of the Wind Farm on Private Airstrips

Private airstrips used for aerial agriculture are not required to be registered with CASA and do not always appear on maps or other publically available sources of information. At the time that the EA was prepared (November 2009) three private airstrips were identified within the vicinity of the wind farm (Figure 7-14 on page 164 of EA).

Private airstrips are classed as “Aeroplane Landing Areas” by CASA in accordance with Civil Aviation Safety Regulations Part 139. CASA guidelines for these landing strips are contained in their *Civil Aviation Advisory Publication 92-1 (1) - Guidelines for Aeroplane Landing Areas* (CASA, 1992). The Aerial Agricultural Association of Australia (AAAA) acknowledges this CASA guideline in relation to the potential impact on take-off and landing at private agricultural airstrips. The CASA guideline specifies the physical characteristics that define the ‘surfaces’ which should be clear from obstacles around the runway approaches. A zone extending 900 metres

from the approach and take off area is required to be free from obstacles at an angle of 5% extending out from the end of the runway as shown below.

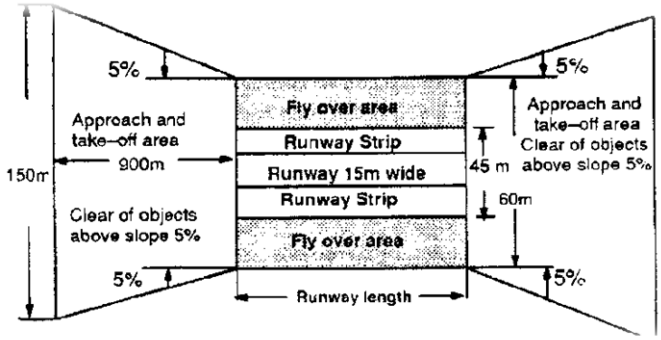


Figure 7-3 Agricultural Aeroplane Landing Area clearance surfaces

All of the identified airstrips were more than 2km from the nearest Yass Valley Wind Farm turbine, significantly greater than the minimum clearance zone specified in the CASA guideline. The initial assessment noted that it was "unlikely that the development would pose any additional hazard to the users of these airstrips."

A qualitative risk assessment on the potential impact of the wind farm on private airstrips and aerial agriculture prepared by The Ambidji Group concluded that the wind farm and its individual turbines will not impact on the safety of aerial applications provided pilots conduct proper pre planning of operations. Aerial agricultural operations are known to regularly occur in Australia and overseas within a few hundred meters of wind turbines and powerlines. The EA for the nearby Collector Wind Farm (June 2012) noted that "crop spraying has been ongoing within 1km of the Cullerin Range Wind Farm with few impacts to operations. The wind farm – being highly visible – was found to be a good indicator of when wind conditions would be unsuitable for aerial spraying. The operator also indicated that the main cause of turbulence in the locality was topography rather than the wind farm."

Based on all of the assessments completed to date and the separation distance of at least 2 km between the airstrips (including the most recently identified airstrips) and the nearest proposed turbine, the wind farm will not have any impact on the operation of aircraft at any of the private airstrips located within the vicinity of the wind farm.

7.9.2 Consultation with Owners/Users of Private Airstrips

In 2010 as part of an aeronautical impact assessment, consultation was carried out with the following aerial agricultural operators who operated at the private airstrips in the vicinity of the wind farm and service the area around the wind farm:

- Yass Air (Ted McIntosh)
- South West Helicopters (Terry McKenzie)
- Col & Scott Adams Ag Aerial Spraying (Col Adams)

No other aerial agricultural operators or users of the private airstrips are known to operate in the area.

7.9.3 Evidence of Consultation and How Concerns Have Been Addressed

Stakeholder consultation was documented in Appendix H of the Ambidji report, including the following notes from consultation with the aerial agricultural operators.

Table 7-17 Consultation history with aerial agricultural operators

Aerial Agricultural Operator	*Comments*	*Concern Addressed*
Yass Air	Wind farm will not impact on his operations.	Epuron's existing wind monitoring masts in

Aerial Agricultural Operator	*Comments*	*Concern Addressed*
Jindalee, Yass	Meteorological monitoring masts are of great concern to him and other ag pilots. Wants to see them marked on guy wires. Would prefer to have lighting of wind farm but did not provide any safety arguments.	the region include orange marker balls to aid visibility. Any additional masts would also be specified with orange marker balls.
South West Helicopters Cootamundra	Ops apparently all over Australia Conducts aerial spraying in Yass region for weeds and pests around Spring time for approximately a month Rural fire fighting – chartered by RFS for spotting, air attack, bucketing, bombing, infrared, hot spots Wind farms not an issue	
Col & Scott Adams Ag Aerial Spraying Cootamundra	All operations are Visual Flight Rules Spraying and fertilising in Yass region during winter and summer. Masts are a major issue; they're not marked and extremely dangerous. Must be marked and informed when putting up or taking down. Operate out of Cootamundra. Use many paddock strips all over, west of site and around Cootamundra, Jugiong, Sandy Tates. No maps of strips – all in head. Wind farms not an issue as yet, but will affect business in area and farmers. He is concerned about wind turbulence what they have read from US.	Epuron's existing wind monitoring masts in the region include orange marker balls to aid visibility. Any additional masts would also be specified with orange marker balls. Epuron provides regular notification to the Department of Defence, CASA, Airservices Australia, AAAA and NSW RFS on the location and height of all wind monitoring masts to enable these authorities to provide updated information to all aviation stakeholders.

Following information provided by members of the Community Consultation Committee identifying a number of landing strips not previously recorded, letters have been sent to the owners of additional identified landing strips within 12 km of the wind farm to advise them of the proposed wind farm in relation to their air strip and to ask if they have any concerns. Queries raised have been responded to and information has been provided. Consultation is on-going.

7.9.4 Wind Speeds for Aerial Agriculture and Turbulence

Aerial agricultural operations are normally carried out at low wind speeds or when it is calm, to reduce uneven application of fertiliser or pesticide. Wind turbines only start operation when the wind has reached a minimum cut-in speed, typically in the range of 2.5 to 3.0 m/s, depending on the specific turbine model.

Studies indicate that turbulence that is capable of posing a hazard to aviation will not be present at more than a few rotor diameters downwind of a turbine, where turbulence is found to reduce to ambient levels (Smedman et al, 2003).

The EA for the nearby Collector Wind Farm (June 2012) noted that "crop spraying has been ongoing within 1km of the Cullerin Range Wind Farm with few impacts to operations" and that "The operator also indicated that the main cause of turbulence in the locality was topography rather than the wind farm."

7.9.5 Identification of Private Airstrips

As noted above, identification of unregistered private airstrips is difficult as their location is not freely available on any maps or public databases. Aerial agricultural operators have confirmed the use of personal knowledge rather than any maps to locate these airstrips.

Through ongoing consultation with neighbouring landowners the location of additional airstrips has been identified and documented in an updated map (See Attachment 12). Not all of the airstrips were currently in use. None of the airstrips in use are located within 2 km of a turbine and use of airstrips will not be affected by the wind farm.

7.10 Air Traffic Control Radars

Airservices Australia's particular area of interest is impacts to effective radar coverage. Buildings, structures or terrain that is higher than the radar coverage or radar clearance plane can hide aircraft behind the particular object, placing a radar 'shadow' and reducing the ability of Air Traffic Control (ATC) to effectively control aircraft within the area of the shadow. Investigations to date have resulted in the following understanding on this issue.

There are two key effects of wind turbines on aviation interests:

- Physical – turbines can present a physical obstruction at or close to an aerodrome. This has been addressed in the Ambidji report which concludes there is no effect on Tumut, Young or Cootamundra aerodromes
- Radar/Air Traffic Services – turbine clutter appearing on radar display can affect the safe provision of air traffic services as it can mask unidentified aircraft from air traffic control (ATC) and/or prevent ATC from accurately identifying aircraft under ATC control. This is the subject of Airservices Australia's particular interest.

Secondary Surveillance Radars (SSR) are located at Mount Bobbara and at Mt Majura. The potential effects on secondary radars are:

- Physical *blanking and diffraction effects* – wind turbine effect can be caused due to the physical blanking and diffracting effects of the turbine towers depending on the size of the turbines and the wind farm, and that these effects are only a consideration when the turbines are located very close to the SSR i.e. less than 10 km.
- *Reflections causing false targets* – secondary radar energy may be reflected off the structures in both the uplink and downlink directions. This can result in aircraft, which are in a different direction to the way the radar is looking, replying through the reflector and tricking the radar into outputting a false target in the direction where the radar is pointing, or at the obstruction.
- Introducing *range and azimuth errors* – Monopulse secondary radar performance is also affected by the presence of wind turbines. The azimuth estimate obtained can be biased when the interrogated target emits its response when partially obscured by a large obstacle such as a wind turbine.

The Yass Valley wind farm is outside of the 10 km range attributed to blanking and diffraction effects. The Mt Bobbara radar is understood to have been upgraded to Mode S SSR which is even less susceptible to reflections than classic Mode A/C SSR.

7.10.1 Studies Commissioned

Under the direction of the previous proponent an aeronautical impact assessment was undertaken by Ambidji Group (November 2010). The key areas for assessment were impacts to the radar coverage of the two air traffic control radars which are located closest to the vicinity of the proposed Wind Farm – Mt Majura, approx. 33 NM (60 km) south east of the southern boundary of the wind farm and Mt Bobbara, a secondary surveillance radar, approx. 5 NM (10 km) north of the boundary of the Marilba precinct.

The report noted that the wind farm would not infringe any: PANS OPS surfaces, OLS, Air Route protection surfaces, Clearance Planes for Navigation Aids or the ATC radar clearance plane for the Mt Majura radar. However, some wind turbines would infringe upon the ATC radar clearance plane for the Mt Bobbara radar and consultation, including on mitigation options, should be undertaken with Airservices Australia.

A further study (November 2011) was then commissioned by the previous proponent and a European radar specialist carried out an evaluation of the effect of the wind farm on the Mt Bobbara secondary (SSR) ATC radar and Mt Majura primary (PSR) and secondary (SSR) ATC radar.

The report concluded:

- Mt Bobbara SSR ATC radar
    - false targets may occur up to 20 nm from the radar and will not occur at distances greater than 20nm.

- The percentage of false target reports based on real data is equal to 0.113% - beneath the value of 0.2% which is the prescribed limit (under International Civil Aviation Organisation (ICAO) Annex 10 Aeronautical Telecommunications Volume IV Surveillance and Collision Avoidance Systems – ICAO3).
- Extrapolating the real data out gives a false target report within the guideline limit (ICAO Doc 8071 Vol. III Testing of Surveillance Radar Systems – ICAO2)
- Antenna pattern degradation will not be significant.
- The radar shadowing effect will be negligible.

- Mt Majura SSR ATC radar
  - No impact, the wind farm is 30 nm away so falls into Zone 4 (criteria = further than 16 km or not in radar line of sight therefore no assessment required)
- Mt Majura PSR ATC radar
  - false targets will occur in the 310 deg to 330 deg sector up to 50 nm from the radar station and will not occur at distances greater than 50 nm.
  - The percentage of false target reports based on real data is equal to 0.024% - beneath the value of 0.2% which is the prescribed limit (under ICAO3).
  - Extrapolating the real data out gives a false target report is equal to 0.163% in class C and E and is negligible otherwise. In any case, turning of the Mt Majura PSR ATC radar using the STC map will mitigate the impact. The percentage of false target reports is always legible in class A airspace.
  - Antenna pattern degradation will not be significant.
  - The radar shadowing effect will be localised in the 310 deg to 330 deg angular sector from a distance of 30 nm to the designed radar coverage. Wind turbine echoes may be mitigated by specific radar processing techniques

On the basis of this report the first two items required no further assessment and the third item required an exploration of mitigation options.

Epuron commissioned a UK wind farm and aviation specialist company to consider operational impacts and mitigation of them. Their report (August 2013) concurred with the earlier report's conclusions that the impact on the SSR systems at Mt Bobbara and Mt Majura would be negligible and no mitigation measures would be required.

In relation to the Mt Majura PSR system, the UK report confirmed that the turbines would be detectable and that false targets may appear on the ATC display system. The false targets on the PSR will appear on the ATC display system and have the potential to interfere with the provision of safe ATC services. The false targets are not expected to have an impact on published arrival and departure procedures at Canberra Airport, except possibly to impose some procedural restriction on RNAV (area navigation which permits aircraft operation on any desired flight path within the coverage of a network of ground based navigation aids rather than flying point to point between them) or GNSS (Global Navigation Satellite System) arrivals via the Yass Non Directional Beacon (NDB).

The remaining impact of the detectable turbines will be on ATC situational awareness when providing the Surveillance Information Service (SIS) to non-transponding general aviation users in the Class G and Class E airspace above the turbines. It is the UK specialist's opinion based on current trends in the UK that mitigation may be required for this impact.

Mitigation of impacts to radar operation will involve strategies including:

- Filtering reflection and reducing the transmit power of the interrogator on a sector by sector basis.
- Reducing the receiver sensitivity

It is understood that processes would include:

- Base-lining – collecting and analysing the radar data for reflection sources and split track areas;

- repeating the collection and analysis post construction and over a period of time to compare against the baseline
- Optimising the radar through an iterative process to finalise changes, document and publish them.

7.10.2 UK specialist's Recommendations

The UK report concluded that it would be helpful to understand how Airservices has dealt with the existing wind developments located approximately 16 NM north east of Mount Majura PSR – Capital and Woodlawn Wind Farms. For example has procedural mitigation been sufficient for these two developments and if so, whether the same principles apply to the Yass Valley precincts.

Subject to the above, mitigation may be required for the impact on the Mount Majura PSR of the Coppabella turbines and for the 17 visible turbines at Marilba, if these are not tolerable. The need for mitigation will depend on the volume of traffic using RNAV/GSS navigation techniques or requesting SIS in proximity to the Wind Farm which is close to the Canberra Control Zone and other controlled airspace in the region. This issue is one of situational awareness.

The report suggested mitigation could be provided by any of four high technology mitigation techniques which have taken part in recent Ministry of Defence sponsored technology demonstrations in the United Kingdom. If mitigation is required, following assessment of the final turbine locations, a range of options are available from baseline and optimisation to technologies such as the Watchman PSR manufactured by BAE Systems. This Watchman PST System is in use at all military and some civilian aerodromes in the UK and provides a 360° solution. The authors consider it is likely to be effective for both the Coppabella and Marilba precincts, subject to CASA approval.

7.10.3 Timing and Further Action

The UK report was provided to Airservices Australia. The proponent intends to undertake further resource intense studies to identify whether or not mitigation is required. Following discussions with Airservices Australia (Pers comm Joe Doherty December 2013) it was agreed that such work is required when the specific wind turbine has been selected and the detailed final location of each wind turbine is known. This would be at the detailed design stage, post approval, once the turbine model and micro-siting details have been finalised.

The key factors to be addressed pre-approval are whether there are likely to be any significant impacts or risks and whether these can be avoided, mitigated or managed.

In line with *Guideline D of the National Airports Safeguarding Framework, Managing the risk to aviation safety of wind turbine installations (Wind Farms)/ Wind Monitoring towers, July 2012*, which states:

> *The guidelines rely on an approach of risk identification and management to ensure risks to aviation are minimised in the most effective and efficient manner possible. It is not the intention to adopt an overly restrictive approach to wind farm development, rather to ensure risks are identified early and mitigation measures are able to be planned and implemented at an early stage.*

It is considered that the risks have been identified and impacts can be managed or mitigated. A range of costs for potential mitigation options have been advised to the proponent who considers them acceptable should the requirement for such mitigation eventuate.

As a further radar study cannot be undertaken until the specific wind turbine is selected and the final location of each wind turbine is determined at detailed design, Airservices consider a planning condition requiring assessment of impacts to radar with suitable mitigation or wind turbine removal may be the best way forward. Epuron has consulted with Airservices on a suitable condition and Statement of Commitment 28 has been added

8 Statement of Commitments

The Statements of Commitment below apply to each stage of the project should it proceed on a staged basis as referenced in the Staging provisions in clauses A8 to A10 of the Standard and Model Conditions for Wind Farms as at http://www.planning.nsw.gov.au/en-us/developmentproposals/standardandmodelconditions.aspx accessed 24/7/2014

8.1.1 Visual

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
1	Deterioration of visual amenity at surrounding residences	Mitigate impacts	The proponent would offer vegetative screening of any **existing** residences**,** within ~~3~~ **5** km of a wind turbine **where an assessment shows that visual screening might improve visual amenity from the residence**. The proponent would write to the owner of each residence outlining the offer and process. A site visit would determine the extent and type of planting required. Species selection would be determined in consultation with landholders using specialist advice. This offer would be made within 6 months of commencement of operation (of that part) of the wind farm. to allow people time to either adjust or to decide that landscape filtering or screening is warranted. Planting would be completed within 2 years of completion of project construction.	Detailed design	CEMP
2	Deterioration of visual amenity at surrounding residences	Mitigate impacts	The Proponent would make reasonable efforts to locate powerlines, substations and control buildings in areas which minimise the visual impact where practical. Vegetative screening would be provided around substations and control buildings where they are visible from neighbouring residences.	Planning	DoP

8.1.2 Noise

8.1.2.1 Construction

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
3	Construction noise	Minimisation	The Proponent will employ appropriate noise reduction strategies to ensure the recommendations of the NSW Environmental Noise Control Manualand Interim Construction Noise Guidelines are met. Strategies may include the re-orientation of machinery, rescheduling of noisy activities, installation of temporary noise barriers, improved vehicle noise control and the use of 'quiet work practices' (such as reducing or relocating idling machinery).	Detailed design	CEMP
4	Construction noise	Minimisation	The Proponent would undertake construction activities associated with the project that would generate audible noise **from site construction works** at any residence during the hours: • 7:00 am to 6:00 pm, Monday to Friday,	Detailed design	CEMP

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
			▸ 8:00 am to 1:00 pm Saturday; and ▸ At no time on Sundays or public holidays		
5	Construction noise	Minimisation	Meet ANZECC guidelines for control of blasting impact at residences.	Detailed design	CEMP

8.1.2.2 Operation

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
6	Operational noise	compliance	The Proponent will ensure final turbine selection and layout complies with the SA EPA Noise Guidelines of 35 dB(A) or background plus 5 dB(A) (whichever is higher) for all non-involved residential receivers (SA EPA, 2003). (Other than those which have entered into a noise agreement with the Proponent in accordance with the SA EPA Noise Guidelines)	Detailed design	OEMP
7	Operational noise	Compliance	The Proponent will ensure final turbine selection and layout complies with the World Health Organisation Guidelines for Community Noise requiring 45 dB(A) or background plus 5 dB(A) (whichever is higher) for all involved residential receivers and all non-involved residential receivers which have entered into noise agreement with the Proponent in accordance with the SA EPA Noise Guidelines	Detailed design	OEMP
8	Operational noise	Compliance	Prior to construction, the Proponent will prepare and submit to the Department of Planning a noise report providing final noise predictions based on any updated background data measured, the final turbine model and turbine layout selected, to demonstrate compliance with the relevant guidelines for all residences	Detailed design	OEMP
9	Operational noise	Mitigate	If operational monitoring identifies exceedances, the Proponent would give consideration to providing mechanical ventilation (to remove the requirement for open windows), building acoustic treatments (improving glazing) or using turbine control features to manage excessive noise under particular conditions.	Operations	OEMP
10	Operational noise	Compliance	Develop and implement an operational noise compliance testing program. The compliance program will commence 3 months before construction commencement and continue on a permanent basis for 2 years post commissioning. Permanent noise loggers will be installed at selected receivers for the duration of the compliance program, with noise data regularly downloaded and any potential exceedances noted for detailed analysis. The selected house locations will include all houses within 2km of a turbine and selected representative houses within 2-5km, subject to owner's consent.	Operations	OEMP

8.1.3 Flora and Fauna

SoC	Impact	Objective	Mitigation Tasks	Project Phase	Auditing[2]
11	Loss or modification of habitat	Avoid, minimise, offset	All wind turbines would be sited to avoid high constraint areas (including high constraint habitat features) For those tracks and power lines where high constraint areas cannot be avoided, micro siting of infrastructure would be undertaken with input from an ecologist to minimise impacts. Final impact areas will be equal to or less than those identified in Table 7-13 Vegetation Impacts.	Detailed design of infrastructure layout	CEMP
12	Loss or modification of habitat	Avoid, minimise, offset	A 20m buffer will be imposed during construction to ensure there are no direct or indirect impacts from construction activities on the identified Yass Daisy populations.	Detailed design of infrastructure layout	CEMP
13	Loss or modification of habitat	Avoid, minimise, offset	Where rocks and boulders cannot be avoided, they would be placed directly adjacent to the works area to preserve the availability of refuge.	Construction	CEMP
14	Loss or modification of habitat	Avoid, minimise, offset	Should dams be required to be removed during site development, alternative watering points would be established to compensate for their loss, where practical and with the agreement of the landowner.	Construction	CEMP
15	Loss or modification of habitat	Avoid, minimise, offset	Additional targeted surveys would be undertaken as part of the pre-construction surveys, if the identified areas would be impacted by the proposal. These areas include: **Coppabella:** Hollow-bearing trees targeted for removal. **Marilba:** Hollow-bearing trees targeted for removal. **Conroy's Gap Extension:** Hollow-bearing trees targeted for removal. Refer Appendix G of the SER for details of these surveys that have been completed	Detailed design of infrastructure layout	CEMP
16	Loss or modification of habitat	Avoid, minimise, offset	Contractors and staff would be made aware of the significance and sensitivity of the constraints identified in the Biodiversity Assessment constraint map set for each precinct or stage during the site induction process.	Construction	CEMP
17	Loss or modification	Avoid,	A buffer twice the distance of the tree drip-line would be established in sensitive areas identified in	Construction	CEMP

[2] The Construction and Operation Environmental Management Plans (CEMP and OEMP) are documents submitted to Dept. Planning & Infrastructure prior to construction and operation. Incorporation of these commitments within these management plans allows each commitment to be auditable.

SoC	Impact	Objective	Mitigation Tasks	Project Phase	Auditing[2]
	of habitat	minimise, offset	the Biodiversity Assessments for each precinct to ensure indirect impacts (such as compaction, noise and dust) are minimised where practical.		
18	Loss or modification of habitat	Avoid, minimise, offset	The Proponent would commit to preparing and implementing an Offset Plan, to offset the quantum and condition of native vegetation to be removed, in order to achieve a positive net environmental outcome for the proposal. Offset areas would reflect the actual footprint of the development (i.e. footing areas and new tracks) not the maximum impact areas. The Offset Plan would be prepared in consultation with OEH, prior to construction. The Offset Plan would be prepared in accordance with the offset strategy included as Appendix H of the SER. Note the offset strategy sets out the method to calculate, manage and secure appropriate offsets.	Prior to construction	CEMP
19	Loss or modification of habitat	Avoid, minimise, offset	An adaptive Bird and Bat Monitoring Program would be developed prior to construction and would include the collection of baseline (pre-operation) as well as operational monitoring data.	Prior to construction	CEMP, OEMP
20	Loss or modification of habitat	Avoid, minimise, offset	A Biodiversity Management Plan would be prepared within the CEMP to document the implementation of biodiversity measures, sourcing the Biodiversity Assessments prepared for each precinct for area specific measures. This would include construction and operational activities. The plan would include specific additional survey work which would be used to microsite infrastructure, where practical, and offset impacts, where they cannot be avoided. The target features / species include: ▸ Hollow bearing trees ▸ Striped Legless Lizard ▸ Eastern Bentwing Bat Survey approach would be developed in consultation with OEH.	Prior to construction	CEMP
21	Loss or modification of habitat	Avoid, minimise, offset	A flora and fauna assessment would be undertaken prior to decommissioning to identify biodiversity constraints and develop specific impact mitigation measures.	Decommissioning	OEMP

8.1.4 Aboriginal Archaeology

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
22	Unavoidable disturbance to Aboriginal objects	Mitigate disturbance	A salvage program of archaeological excavation and analysis would be undertaken in a sample of impact areas prior to construction. The development of an appropriate research project would be undertaken in consultation with	Construction and decommissioning	CEMP

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
	(stone artefacts) located in generally continuous albeit low density distribution across the proposal area.		an archaeologist, the relevant Aboriginal communities and the NSW OEH.		
23	Disturbance to an Aboriginal object of low/moderate or moderate significance	Minimise disturbance	The Proponent would minimise the extent of impacts to areas assessed to be of low/moderate or moderate archaeological significance, where possible. A program of salvage subsurface excavation would be undertaken in impact areas at these locales prior to construction as a form of Impact Mitigation. The scope of this program is provided in Tables 19, 20 and 21 of Section 12 of the Archaeological Assessment, which identify the survey units that would be targeted in the program.	Construction and decommissioning	CEMP
24	Disturbance to an unidentified Aboriginal object	Minimise risk	The Proponent would conduct additional archaeological assessment in any areas which are proposed for impacts that have not been surveyed during the current assessment.	Construction and decommissioning	CEMP
25	Inadvertent impacts to Aboriginal objects	Minimise risk	The Proponent would develop a Cultural Heritage Management Protocol which documents the procedures to be followed for minimising risk and implementing mitigation strategies. This would be undertaken in consultation with an archaeologist, the relevant Aboriginal communities and the NSW OEH.	Construction and decommissioning	CEMP
26	Disturbance to significant areas	Minimise risk	The Proponent would consider all available management measrues, such as changing the project layout and avoiding any high significance heritage areas which may be located during any additional surveys or salvage excavations. The Cultural Heritage Management Plan would set out management measures and procedures to be implemented for sites and archaeological deposits that are found during any adiditional surveys or salvage excavations.	Pre-construction and decommissioning	CEMP

8.1.5 Aircraft Hazards

SoC	Impact	Objective	Mitigation Tasks	Project Phase	Auditing
27	Creation of Hazard	Minimise risk	The Proponent would liaise with all relevant authorities (CASA, Airservices, and Department of Defence) and supply location and height details once the final locations of the wind turbines and wind monitoring masts have been determined and before construction commences.	Pre-construction	DoP

SoC	Impact	Objective	Mitigation Tasks	Project Phase	Auditing
28	Potential impacts on air traffic control radars	Avoid operational impacts	Following detailed design of each project stage to determine the final placement of wind turbines, and prior to construction, a detailed radar impact assessment would be undertaken, in consultation with Airservices Australia, to assess any material impacts to effective radar coverage resulting from that stage of the wind farm. The assessment would outline mitigation options and be provided to Airservices Australia for their review and consultation with respect to mitigation options. Mitigation would be implemented at the cost of the proponent, and may include removal of wind turbines or other measures. Where mitigation options require modification to the design or operation of the radar this would only be undertaken with the consent of Airservices Australia. Any mitigation required is to be to the satisfaction of Airservices Australia.	Pre-construction	DoP

8.1.6 Communication

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
29	Deterioration of signal strength	No deterioration of signal strength	The Proponent would locate wind turbines to avoid existing microwave link paths that cross each precinct, or liaise with the owners of such links to relocate services to avoid potential impacts from turbines.	Pre-construction	
30	Deterioration of signal strength	No deterioration of signal strength	The Proponent would undertake a detailed investigation to develop appropriate mitigation measures associated with potential impacts to navigational aids from each of the precints or construction stages. The Proponent would liaise with Airservices Australia to ensure all mitigation measures are acceptable.	Pre-construction and operation	
31	Deterioration of signal strength	No deterioration of signal strength	Ensure adequate television reception is maintained for neighbouring residences as follows: ▸ Undertake a monitoring program of houses within 5km of the wind farm site or construction stage, if requested by the owners, to determine a baseline of reception against which to review any loss in television signal strength. ▸ In the event that after construction television interference (TVI) is experienced by existing receivers within 5km of the site or construction stage, investigate the source and nature of the interference. ▸ Where investigations determine that the interference is cause by the wind farm, establish appropriate mitigation measures at each of the affected receivers in consultation and agreement with the landowners. Specific mitigation measures may include:	Pre-construction and Operation	

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
			▸ Modification to, or replacement of receiving antenna ▸ Provision of a land line between the effected receiver and an antenna located in an area of favourable reception ▸ Improvement of the existing antenna system ▸ In the event that interference cannot be overcome by other means, negotiating an arrangement for the installation and maintenance of a satellite receiving antenna at the Proponents cost		

8.1.7 Electromagnetic Fields

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
32	Radiation exposure from EMFs	Minimise exposure	Adhere to standard industry approaches and policies with respect to EMF through maintenance of adequate easements around transmission lines.	Operation	OEMP
33	Radiation exposure from EMFs	Minimise exposure	The turbines, control building, substation and transmission lines would be located as far as practical from residences, farm sheds, and yards in order to reduce the potential for !exposure.	Operation	OEMP

8.1.8 Traffic and Transport

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
34	Safety and asset protection	Minimise Risk	The Proponent would develop and implement a Traffic Management Plan (TMP) in consultation with roads authorities to facilitate appropriate management of potential traffic impacts. The TMP would include provisions for: ▸ Scheduling of deliveries and managing timing of transport ▸ Limiting the number of trips per day ▸ Undertaking community consultation before and during all haulage activities ▸ Designing and implementing temporary modifications to intersections, roadside furniture, stock grids and gates ▸ Managing the haulage process, including the erection of warning and/or advisory speed signage prior to isolated curves, crests, narrow bridges and change of road conditions	Construction	CEMP

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
			▸ Designation of a speed limit would be placed on all of the roads that would be used primarily by construction traffic ▸ Preparation of a Transport Code of Conduct to be made available to all contractors and staff ▸ Identification of a procedure to monitor the traffic impacts during construction and modify work methods (where required) to reduce the impacts ▸ Provide a contact phone number to enable any issues or concerns to be rapidly identified and addressed through appropriate procedures ▸ Reinstatement of pre-existing conditions after temporary modifications to the roads and pavement along the route. The Traffic Management Plan and other mitigation measures will be implemented in accordance with the process outlined in the RTA (now RMS) submission dated 16 December 2009.		
35	Safety and Asset protection	Minimise Risk	The Proponent would use a licensed haulage contractor with experience in transporting similar loads, responsible for obtaining all required approvals and permits from the RTA and Councils and for complying with conditions specified in those approvals.	Construction	CEMP
36	Safety and Asset protection	Minimise Risk	In the case of any existing or proposed connection for access from the wind farm onto a Classified Road the proponent would obtain RMS and the council's concurrence under section 138 of the Roads Act (1993) prior to the commencement of any work as noted in the RTA (now RMS) submission dated December 2009.	Construction	CEMP
37	Safety and Asset protection	Minimise Risk	The Proponent would prepare a Traffic Impact Study (as per the submission requests of both councils) including road dilapidation reports covering pavement and drainage structures in consultation with roads authorities for the route prior to the commencement of construction and after construction is complete. The Proponent would repair any damage resulting from the construction traffic (except that resulting from normal wear and tear) as required during and after completion of construction at the Proponent's cost	Detailed design & Construction	CEMP
38	Safety and Asset protection	Minimise Risk	Route specific mitigation measures, as detailed Section 5.2 of the Traffic Impact Study, would be adopted where significant increases in use are anticipated as a consequence of the proposal.	Construction	CEMP

8.1.9 Fire and Bushfire

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
39	Bushfire risk	Minimise risks	The Proponent would prepare a Bushfire Management Plan as part of the Construction Environmental Management Plan. The Rural Fire Service and NSW Fire Brigade would be consulted in regard to its adequacy to manage bushfire risks during construction, operation and decommissioning. The plan would as a minimum include: • Hot-work procedures, asset protection zones, safety, communication, site access and response protocols in the event of a fire originating in the wind farm infrastructure, or in the event of an external wildfire threatening the wind farm or nearby persons or property • Flammable materials and ignition sources brought onto the site, such as hydrocarbons, would be handled and stored as per manufacturer's instructions. • During the construction phase, appropriate fire fighting equipment would be held onsite when the fire danger is very high to extreme, and a minimum of one person on site would be trained in its use. The equipment and level of training would be determined in consultation with the local RFS • Substations would be bunded with a capacity exceeding the volume of the transformer oil to contain the oil in the event of a major leak or fire. The facilities would be regularly inspected and maintained to ensure leaks do not present a fire hazard, and to ensure the bunded area is clear (including removing any rainwater) • Substations would be surrounded by a gravel and concrete area free of vegetation to prevent the spread of fire from the substation and reduce the impact of bushfire on the structure. The substation area would also be surrounded by a security fence as a safety precaution to prevent trespassers and stock ingress • Asset protection zones (APZs), based on the RFS Planning for Bushfire Protection, would be maintained around the control room, sub-station and in electricity transmission easements. Workplace health and safety protocols would be developed to minimise the risk of fire for workers during construction and during maintenance in the control room and amenities • Fire extinguishers would be stored onsite in the control building and within the substation building • Shut down of turbines would commence if components reach critical temperatures or if directed by the RFS in the case of a nearby wildfire being declared (an all hours contact point would be available to the RFS during the bushfire period). Remote alarming and maintenance procedures would also be used to minimise risks • Overhead transmission easements would be periodically inspected to monitor regrowth of encroaching vegetation	Construction Operation Decommissioning	CEMP and OEMP

8.1.10 Hydrology

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
40	Deterioration of water quality (Surface Water)	Minimise risk	Infrastructure placement, including turbines, substations, switchyards, batching plants and construction compounds would not be sited within 40 metres of a major drainage line or major water course. Where access tracks are required to cross water courses they will be designed in consultation with NSW Office of Water and DPI (Fisheries).	Detailed design	CEMP
41	Deterioration of water quality (Surface Water)	Achieve neutral or beneficial water quality impact	The Proponent would prepare a Sediment / Erosion Control Plan (SECP) as a sub plan of the Construction Environmental Management Plan. This plan would include the following provisions: ▸ Sediment traps would be installed wherever there is potential for sediment to collect and enter waterways ▸ Stockpiles generated as a result of construction activities would be bunded with silt fencing, (mulch bunds or similar) to reduce the potential for runoff from these areas ▸ On the steeper slopes check banks would be installed across the trench line, as appropriate, following closure of the trench. These would discharge runoff to areas of stable vegetation ▸ Stabilisation and site remediation would be undertaken as soon as practicable throughout and post construction. ▸ Soil and water management practices would be developed as set out in Soils and Construction Vol. 1 (Landcom 2004)	Construction	CEMP
42	Deterioration of water quality (Surface Water)	Minimise risk	Design water crossings to minimise impact on existing banks, water flow and animal passage.	Construction	CEMP
43	Water supply	Minimise risk	Undertake liaison with representatives of Golden Fields County Council regarding the potential supply of construction water	Construction	CEMP
44	Deterioration of water quality (Surface Water)	Minimise risk	All vehicles onsite would follow established trails and minimise onsite movements	Construction Operation	CEMP OEMP
45	Deterioration of water quality	Minimise risk	Machinery would be operated and maintained in a manner that minimises risk of hydrocarbon spills	Construction Operation	CEMP OEMP

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
	(Surface and Ground Water)				
46	Deterioration of water quality (Surface and Ground Water)	Minimise risk	Maintenance or re-fuelling of machinery would be carried out on hard-stand in accordance with industry standards for fuel transfer	Construction	CEMP
47	Deterioration of water quality (Surface and Ground Water)	Minimise risk	Design of concrete batch plants would ensure concrete wash would not be subjected to uncontrolled release. The batch plant area would be bunded to contain peak rainfall events and remediated after the completion of the construction phase. Waste sludge would be recovered from the settling pond and used in the production of road base manufactured onsite. The waste material would be taken from the batching plant to be blended in the road base elsewhere onsite. Roads are first thing – is this sludge from concrete for foundations in which case aren't all the roads already in? What settling pond?	Construction	CEMP
48	Deterioration of water quality (Surface and Ground Water)	Minimise risk	Carry out dust suppression as required through either watering or chemical means (environmentally friendly polymer based additives to water).	Construction Decommissioning	CEMP
49	Deterioration of water quality (Surface Water)	Achieve neutral or beneficial water quality impact	A Site Restoration Plan (SRP) would be prepared as part of the Construction Environmental Management Plan. This would set out protocols for restoration works including: • Site preparation • Stabilisation • Revegetation • Monitoring	Construction Decommissioning	CEMP
50	Deterioration of water quality (Surface and Ground Water)	Minimise risk	A Spill Response Plan would be prepared as part of the CEMP and OEMP including: • Identify persons responsible for implementing the plan if a spill of a dangerous or hazardous chemical/waste would occur • Identify all chemicals required for the Proposal, including physio-chemical properties, risks posed to water quality objectives and appropriate methods of storage of these chemicals. • Locate Material Safety Data Sheets (MSDS) for all chemical inventories at on site and readily available • Comply with manufacturers recommendations in relation to application and disposal where chemicals are used • Report any spill that occurs to the Construction Manager regardless of the size of the	Construction Operation Decommissioning	CEMP OEMP

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
			spill ▸ Establish clearly defined works and refuelling areas ▸ Spill protocols in this plan would dictate when the EPA would be notified ▸ Chemical / fuel storage areas would be identified, and be bunded to prevent loss of any pollutants ▸ Hydrocarbon spill kits would be stored at the site. A number of site staff are to be trained in the use of the spill kits		
51	Deterioration of water quality (Surface and Ground Water)	Minimise Risk	The Proponent would notify the NSW DECC EPA in the event of any spill that had the potential to pollute waters.	Construction Operation	CEMP OEMP
52	Protection of ground water	Minimise risk	Undertake investigations, as part of the geotechnical investigation, to ensure that the project would have no material adverse effect on groundwater/aquifers as a result of blasting activities.	Pre-construction	CEMP
53	Deterioration of water quality (Surface and Ground Water)	Minimise risk	Monitor bunded infrastructure to ensure that volume of oil could be fully contained in the event of leak	Operation	OEMP
54	Deterioration of water quality (Surface and Ground Water)	Minimise risk	Maintain septic systems, if installed, to meet appropriate Australian standards	Construction Operation Decommissioning	CEMP OEMP

8.1.11 Soils and Landforms

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
55	Landform stability	Minimise risk	The Proponent would undertake geotechnical investigations in the area of the proposed turbines to determine ground stability.	Pre - construction	DoP
56	Contamination	Minimise risks	Consult with involved property owners in relation to areas of land potentially contaminated by past land use and manage impacts in these areas to avoid disturbing any areas of contamination.	Pre - construction	CEMP
57	Soil quality	Minimise	Where soil is excavated subsoil would be separated from topsoil for rehabilitation purposes.	Construction	CEMP

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
		risks	Topsoil from the excavation sites would be stockpiled and replaced. On steep slopes, topsoil would be stabilised. Any excess subsoil would be removed from the site and disposed of at an appropriate fill storage site.		
58	Soil quality	Minimise impact	Avoid compaction of soil resulting from unnecessary vehicle access over ground not excavated during construction. Avoid laying of materials during wet saturated soil conditions.	Construction	CEMP
59	Soil quality	Minimise impact	The Proponent would prepare a protocol for instances of suspected contamination being unexpectedly found. Should contamination or potential contamination be disturbed during excavation works, the area would be assessed by appropriately qualified consultants. OEH would be notified if warranted.	Pre-construction	CEMP
60	Soil loss or stability of landform loss	Minimise risks	Concrete wash would be deposited in an excavated area, below the level of the topsoil, or in an approved landfill site. Where possible, waste water and solids would be reused onsite.	Construction	CEMP
61	Soil loss or stability of landform loss	Minimise risks	Access routes and tracks would be confined to already disturbed areas, where possible within the constraints of construction requirements. All contractors would be advised to keep to established tracks.	Construction	CEMP

8.1.12 Mineral Exploration

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
62	Conflict with mineral exploration	Minimise conflict	The Proponent would liaise with the current mineral licence holder providing a final turbine and infrastructure layout, prior to the construction phase	Pre-construction	CEMP
63	Conflict with mineral exploration	Minimise conflict	The Proponent will continue to liaise with the holder of EL7984 which is the only mineral licence which overlaps with the wind farm site.	Pre-construction / Construction	CEMP
64	Conflict with mineral exploration	Minimise conflict	The Proponent would provide a point of contact to the current mineral licence holder	Pre-construction	CEMP
65	Conflict with mineral exploration	Minimise conflict	The Proponent would liaise with the involved land owners and current mineral lease holders prior to rehabilitation, to ensure that any project access roads that they may wish to retain are retained. Several of these access roads are likely to be of benefit both to routine agricultural activities as well as to exploration activities onsite	Construction	CEMP

8.1.13 Economic

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
66	Effect on local community	Maximise positive impact of Proposal	Liaise with local industry representatives to maximise the use of local contractors and manufacturing facilities in the construction and decommissioning phases of the project.	Construction	CEMP
67	Effect on local community	Maximise positive impact of Proposal	Liaise with the local visitor information centres to ensure that construction and decommissioning timing and haulage routes are known well in advance of works and to the extent practical coordinated with local events	Construction	CEMP
68	Effect on local community	Maximise positive impact of Proposal	Liaise with Yass Valley and Harden Shire Councils and the Department of State and Regional Development to assist in advising the local community and where necessary attracting people to the local area to work in both construction and operation of the Proposal	Construction Operation	CEMP
69	Effect on local community	Maximise positive impact of Proposal	Make available employment opportunities and training for the ongoing operation of the wind farm to local residents where reasonable	Operation	OEMP

8.1.14 Community Wellbeing

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
70	Community wellbeing	Provide accurate information	Dissemination of accessible and independent information on wind farm impacts	Pre-construction	CEMP
71	Community wellbeing	Provide accurate information	Biodiversity monitoring information collected during the operation of the wind farm would be made publicly available	Operation	OEMP
72	Community wellbeing	To provide a benefit to those residents that are most affected	From commissioning the Proponent will contribute $2,500 per wind turbine built per annum to a Community Enhancement Program. The Proponent will pay the annual contribution to the CCC for distribution. At least 50% of the funds may be allocated to residential clean energy improvements such as solar water heating or solar PV panels or similar benefit to non-involved properties within 5kms of a wind turbine. When the wind farm construction contracts are finalised a new CCC is to be elected to represent the neighbouring community and Councils through the construction and operation phase and manage the Community Enhancement Program.	Construction & Operation	OEMP

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
			The CCC is to be constituted in line with Appendix C of t*he Draft NSW Planning Guidelines: Wind Farms* or as updated. The allocation of funds will be determined by the elected CCC to ensure the community benefit is distributed in line with the impacted community's own view of an equitable distribution of funds.		

8.1.15 Tourism

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
73	Effect on local activities	Minimise disruption	Co-ordinate construction activities with local tourist operators. The Proponent would liaise with the local visitor information centres to ensure that construction and decommissioning timing and haulage routes are known well in advance of works	Pre-construction	CEMP
74	Effect on local activities	Maximise benefits	The Proponent would work with the involved landowners, the community and both Yass Valley and Harden Shire Councils to allow for the development of the wind farm as a tourist attraction, if this option becomes desirable to these three parties.	Operation	OEMP

8.1.16 Agricultural

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
75	Impact on current land use	Minimise disruption	Stock would be restricted from works areas where there is a risk stock injury or where disturbed areas are being stabilised.	Construction	CEMP
76	Impact on current land use	Minimise impact	Develop, implement and monitor the effects of a Site Restoration Plan for each construction stage. The plan would aim to stabilise disturbed areas as rapidly as possible after practical completion of the construction stage of the project. The Plan would consider: ▸ Appropriate stabilisation techniques across the stages/precincts ▸ Suitable species for re-seeding (native species would be given preference due to their superior persistence and for conservation purposes) ▸ Monitoring for weed and erosion issues	Construction and Decommissioning	CEMP
77	Impact on current land use	Minimise disruption	Liaison would be undertaken with neighbouring landowners and landowners adjoining access roads, to provide information about the timing and routes to be used during construction and decommissioning. This could be in the form of advertising and provision of a contact point for further inquiries. The aim would be to reduce the risk of interference with agricultural activities	Construction	CEMP

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
			on affected roads and road verges.		
78	Impact on current land use	Minimise impacts	Ensure that the switchyard and substation is appropriately fenced to eliminate stock ingress.	Operation	OEMP
79	Impact on current land use	Minimise impacts	Should the costs of aerial agriculture (as undertaken at any non-associated property adjacent to the site prior to construction) increase as a result of the operation of the proposed wind turbines, the proponent of the relevant stage shall fully re fund to the affected landowner the increase in costs of that aerial agriculture attributable to the operation of the wind turbines.	Construction and Operation	CEMP and OEMP

8.1.17 Health and Safety

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
80	Safety of persons or stock	Minimise risks	A detailed Health and Safety Plan (H&SP) would be prepared, as a sub plan of the Construction Environmental Management Plan, identifying hazards associated with construction works, the risks of the identified hazards occurring and appropriate safeguards would be prepared prior to the commencement of construction works. The Plan would include, but not be limited to: • Inductions for all contractors requiring site access. • Ensure all staff are appropriately qualified and trained for the roles they are undertaking	Construction	CEMP
81	Safety of persons or stock	Minimise risks	Site fencing would be installed where there is a risk to the safety of the general public (i.e. when the trench is left open for extended periods)	Construction and Decommissioning	CEMP
82	Safety and Asset protection	Minimise Risk	Establish procedures to ensure that soil is not carried onto the Hume Highway on the wheels of construction traffic	Construction	CEMP
83	Safety / nuisance to persons or stock	Minimise risks	If shadow flicker is found to be greater than 30 hours per annum and a nuisance to any nearby residents, the wind farm control system would be programed so the offending wind turbines are automatically shut down whenever these conditions are present.	Operation	OEMP
84	Safety of persons or stock	Minimise risks	Shadow flicker effects on motorists would be monitored following commissioning and any remedial measures to address concerns would be developed in consultation with the RTA and the Department of Planning (what might they be?)	Operation	OEMP
85	Safety of persons	Minimise risk	Establish a turbine maintenance program in accordance with industry standards.	Operation	OEMP

8.1.18 Historic Heritage

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
86	Disturbance to a non-Indigenous potential heritage item	Minimise disturbance	The Proponent would limit the extent of impacts to the three identified heritage items identified to date as well as any other heritage items subsequently identified.	Construction and decommissioning	CEMP

8.1.19 Climate and air quality

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
87	Air quality	Minimise risks	Investigate and apply the best available methods for dust suppression, for inclusion in the CEMP.	Construction	CEMP
88	Air quality	Minimise risks	Dust levels at stockpile sites would be visually monitored as appropriate. Dust suppression would be implemented if required. Stockpiles would be protected from prevailing weather conditions	Construction	CEMP
89	Air quality	Minimise risks	Undertake ongoing visual dust monitoring and suppression (if required) during the construction phase. Monitoring would regularly assess the effectiveness of dust suppression activities. Monitoring would regularly assess the effectiveness of dust suppression activities.	Construction	CEMP
90	Air Quality	Minimise risks	Should a complaint relating to dust by a resident be received, monitoring at the boundary of the construction site would be undertaken using dust gauges. The Proponent would assess the dust gauges and identify additional mitigation measures, where required.	Construction	CEMP
91	Air quality	Minimise risks	Should blasting be required, it would be carried out in accordance with all relevant statutory requirements and residences within 1km of blasting activities would be informed prior to blasting	Construction	CEMP
92	Air quality	Minimise risks	Dust filters would be installed on silos, where required	Construction	CEMP

8.1.20 Resource impacts

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
93	Waste generation	Minimise waste and maximise	The Proponent would prepare a **Waste Management Plan** to be included within the **Construction Environmental Management Plan**. It would include but not be limited to the	Construction Operation	CEMP OEMP

SoC	Impact	Objective	Mitigation tasks	Project phase	Auditing
		recycling of materials	following: ▸ The scope for reuse and recycling would be evaluated ▸ Provision for recycling would be made onsite ▸ Wastes would be disposed of at appropriate facilities ▸ Toilet facilities would be provided for onsite workers and sullage from contractor's pump out toilet facilities would be disposed of at the local sewage treatment plants or other suitable facility agreed to by Council ▸ Excavated material would be used in road base construction and as aggregate for footings where possible. Surplus material would be disposed of in appropriate locations on site (with the agreement with the landowner), finished with topsoil, and revegetated		

9 Conclusion

This Preferred Project and Submissions Report describes the preferred project for which the proponent is seeking approval. It includes minor changes to the wind farm infrastructure layout since it was last on public exhibition in March 2013. These changes have reduced the impact to surrounding residences and generally improved the project. This Preferred Project and Submissions Report describes the preferred project for which the proponent is seeking approval.

Submissions on the project were received following the public exhibition of the Preferred Project Report from 14 December 2012 to 1 March 2013. Additional information and clarifications were also requested by NSW Planning & Infrastructure. This report provides detailed responses to all submissions and where appropriate modifications to the project have been made. Effects on stakeholders to the project have therefore been minimised as a result.

The Yass Valley Wind Farm will have considerable benefits when fully built including:

- more than 1,056,000 MWh of electricity generation per year – sufficient for the average consumption of around 132,000 homes.
- greenhouse gas emissions savings by approximately 1,021,000 tonnes of carbon dioxide equivalent (CO_{2e}) per annum relative to the emissions intensity of the current electricity generation profile.
- significant domestic renewable energy solutions installed on neighbouring residences and opportunities for notable community and environment programs resulting from a proposed $360,000 per annum community contribution fund
- approximately $2 million in payments to host landowners, much of which would be spent or invested locally or regionally.
- up to $3.7million in accommodation, food and other services spent regionally per construction year. This would result in increased local services.

For more detail on the project benefits see section 4.

The proposal meets a number of state and federal policy objectives as detailed in section 4

The proposed wind farm is permissible and the assessment and determination will be completed under the NSW government's new State Significant Development (SSD) assessment system.

Environmental assessments for the preferred project infrastructure layout have been updated and demonstrate compliance with all relevant criteria and result in an acceptable environmental impact including for the key assessment requirements:

- Visual impacts
- Noise impacts
- Indigenous heritage
- Hazards and Risks (including potential impacts on aerial agriculture and radar interference)
- Traffic and transport

The revised Statement of Commitments listed in section 8 of this report will ensure that the proposed Yass Valley Wind Farm can be constructed while minimising any residual impacts to the existing environment and the surrounding community.

Approval for the Proposal is requested based on assessment of the contents of this report together with the Environmental Assessment (2009).

10 References

AEMO (2012) "Electricity Statement of Opportunities." Australian Electricity Market Operator. Retrieved April 2014, from http://www.aemo.com.au/Electricity/Planning/Archive-of-previous-Planning-reports/2012-Electricity-Statement-of-Opportunities

AMA (2014) "Position Statement: Wind Farms and Health." Australian Medical Association. Retrieved April 2014, from https://ama.com.au/position-statement/wind-farms-and-health-2014

CASA (1992) "Civil Aviation Advisory Publication 92-1 (1) - Guidelines for Aeroplane Landing Areas." Civil Aviation Safety Authority. Retrieved April 2014, from http://www.casa.gov.au/wcmswr/_assets/main/download/caaps/ops/92_1.pdf

CEC (2012) "*Clean Energy Council response to the National Airports Safeguarding Framework.*" Clean Energy Council. Retrieved July, 2013, from https://www.infrastructure.gov.au/aviation/environmental/airport_safeguarding/nasf/files/Clean_Energy_Council.pdf

CEC (2013) "Wind Energy." Clean Energy Council. Retrieved April 2014, from http://www.cleanenergycouncil.org.au/technologies/wind-energy.html

Colby, W. D., et al. (2009) *Wind turbine sound and health effects: An expert panel review*, American Wind Energy Association.

DCPD (2012) *Policy and Planning Guidelines for the Development of Wind Energy Facilities in Victoria*. Department of Planning and Community Development.

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

EPHC (2010) *Draft National Wind Farm Development Guidelines*. Environmental Protection and Heritage Council.

Epuron (2009) Environmental Assessment Proposed Yass Valley Wind Farm

Epuron (2012) Preferred Project Report Yass Valley Wind Farm

Essential Vision (2013) "*Wind farms.*" Essential Vision. Retrieved July, 2013, from http://essentialvision.com.au/wind-farms

Hall, N., et al. (2012) *Exploring community acceptance of rural wind farms in Australia: A snapshot*. CSIRO Science into Society Group. Commonwealth Scientific and Industrial Research Organisation.

NHMRC (2010) *Wind Turbines and Health*. National Health and Medical Research Council,.

OEH (2013) "*NSW Wind Farm Greenhouse Gas Savings Tool.*" Office of Environment & Heritage. Retrieved July, 2013, from http://www.environment.nsw.gov.au/climatechange/greenhousegassavingstool.htm

ODPMUK (2004) *Planning for Renewable Energy A Companion Guide to PPS22*. Office of the Deputy Prime Minister United Kingdom.

Planning SA (2002) "*Wind Farms, Draft for Consultation.*" South Australian Government.

SA EPA 2003 Environmental Noise Guidelines, Wind Farms

SAEMET (2013) South Australian Electricity Market Economic Trends report 2013.

Smedman, L.J., et al (2003) "Wind turbine wake aerodynamics", *Progress in Aerospace Sciences*

SKM (2012a) "Benefit of the Renewable Energy Target to Australia's Energy Markets and Economy", Report to the Clean Energy Council, August 2012

SKM (2012b) "Wind farm investment, employment and carbon abatement in Australia Report" Sinclair Knight Mertz, June 2012

SKM (2013) "Estimating the Impact of Renewable Energy Generation on Retail Prices" FINAL REPORT SH43457 | 20 June 2013

VIC Health (2013) "Wind farms, sound and health – Community information." Department of Health Victoria. Retrieved April, 2013, from http://docs.health.vic.gov.au/docs/doc/03C56A16FC34F658CA257B5E00164599/$FILE/1212016_wind_turbine_community_WEB.pdf

11 Glossary and acronyms

Abbreviation	*Description*
An	Annum
APZ	Asset Protection Zone (for bushfire compliance)
CASA	Civil Aviation Safety Authority
CEEC	Critically Endangered Ecological Community
CEMP	Construction Environmental Management Plan
CMA	Catchment Management Authority
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
dB(A)	Decibels (A weighted loudness measure)
DEC	NSW Department of Environment and Conservation (now OEH)
DECC	NSW Department of Environment and Climate Change (now OEH)
DECCCW	NSW Department of Environment, Climate Change and Water (now OEH)
DGRs	Planning Department's Director General's Requirements.
DPE	Department of Planning and Environment (DP&I renamed in 2011)
DP&I	NSW Department of Planning and Infrastructure
DPI	Department of Primary Industries
EA	Environmental Assessment report (2009)
EEC	Endangered Ecological Community
EMF	Electromagnetic fields
EMP	Environmental Management Plan
EP&A Act	NSW Environmental Planning and Assessment Act 1979
EPA	Environmental Protection Agency
EPBC Act	Federal Environmental Protection and Biodiversity Conservation Act 1999
GHG	Greenhouse Gas
Guidelines	Draft NSW Planning Guidelines: Wind Farms
GWh	gigawatt-hour
ha	hectare (unit of area 100m x 100m)
HBT	Hollow-bearing tree
HF	High Frequency
kg	kilogram
kL	Kilolitres
km	kilometre
kV	kilovolt
LAeq	Equivalent Sound Power (A weighted)
LEP	Local Environmental Plan
LGA	Local Government Area
LVIA	Landscape and Visual Impact Assessment

Abbreviation	*Description*
m	metre
m/s	meters per second
mG	milligauss
ML	Megalitres
MW	megawatt
MWh	megawatt-hour
ODPMUK	Office of the Deputy Prime Minister United Kingdom
OEH	Office of Environment and Heritage
OEM	Original Equipment Manufacturer
OEMP	Operational Environmental Management Plan
OLS	Obstacle Limitation Surface
PPR	Preferred Project Report (November 2012)
PP&SR	Preferred Project & Submissions Report (May 2014)
RET	Renewable Energy Target
RFS	Rural Fire Service
RMS	Roads and Maritime Service
SA EPA Guidelines	South Australian Environment Protection Authority Environmental Noise Guidelines: Wind Farms (2003)
SIS	Species Impact Statement
SoC	Statement of Commitments
TMP	Traffic Management Plan
TVI	Television Interference
V	volt
VHF	Very High Frequency
W	watt
WHO	World Health Organisation
WTG	Wind Turbine Generator

Attachment 1 – Hollow Bearing Tree methodology & desktop assessment

Attachment 2 – Further Response to OEH

Attachment 3 –Archaeological & Heritage Assessment Addendum

Note: This report is based on 144 rather than current project of 134 wind turbines

Attachment 4 – Response to Heritage Comments

Attachment 5 – Supplementary Landscape and Visual Impact Assessment

Note: This report is based on 144 rather than current project of 134 wind turbines

Attachment 6 – Response to Comments on Supplementary LVIA

Attachment 7 – Table of Residences to 8.5 km & Visual Impact

Note: This report is based on 144 rather than current project of 134 wind turbines

Attachment 8 – ZVI Map with residences to 8.5 km

Note: This report is based on 144 rather than current project of 134 wind turbines

Attachment 9 – Noise Assessment Addendum

Note: This report is based on 152 rather than current project of 134 wind turbines

Attachment 10 – Shadow Flicker Addendum Report

Note: This report is based on 144 rather than current project of 134 wind turbines

Attachment 11 – Aviation Impact Assessment

Note: This report is based on 156 rather than current project of 134 wind turbines

Attachment 12 – Map & Details of Agricultural Aircraft Landing Areas

Attachment 13 – Community Consultation Information

Attachment 14 – Supplementary Traffic Impact Study

Note: This report is based on 144 rather than current project of 134 wind turbines

Attachment 15 – Preliminary Transport Vehicle Swept Path Analysis

Attachment 16 – Turbine Coordinates

Attachment 17- Indicative Wind Monitoring Mast Locations

Attachment 18 – Land & Infrastructure Details

Attachment 19 – Indicative Layouts for Ancillary Infrastructure

Attachment 20 – Draft Decommissioning and Rehabilitation Plan

Attachment 21 – Consideration of draft NSW Planning Guidelines: Wind Farms

Attachment 22 – Response to EA submissions

Attachment 23 – Previous changes to project layout

Attachment 24 – Site Map (A1 size)