NSW GOVERNMENT | Office of Environment & Heritage

Our reference: MP08_0246
Contact: Suzie 6229 7117

Karen Jones
Director Infrastructure projects.
NSW Department of Planning & Environment
GPO Box 39
SYDNEY NSW 2001

Dear Ms Jones

This letter delivers the results of Office of Environment and Heritage's (OEH) assessment of the biodiversity and Aboriginal Cultural Heritage impacts associated with Yass Valley Wind Farm, project reference MP08_0246.

Background

As you are aware, there have been extensive negotiations and consultation between your Department (DPE), Epuron, NGH Environmental (NGH) and the OEH since February this year. These consultations have focused on the Yass Valley Wind Farm Preferred Project and Submissions report (PPSR) and respective reports, in particular the Supplementary Ecology Report (SER).

Since 2008, OEH has endeavoured to provide timely and helpful advice through letters, meetings, phone hook-ups and on-site inspections. OEH has engaged positively with your Department, the proponent and their consultants on matters related to the project.

An overview of the significant consultations that have taken place this year are provided in Table 1 below. There have been a large number of phone calls and emails between Epuron and OEH outside of these significant events. Please do not hesitate to contact me if you require any further details on these.

Table 1: 2014 timeline of consultation and engagement in relation to Yass Valley Wind Farm

Date	Correspondence / Event	Parties involved
24 February	Letter OEH provided a response to DPE on December 2013 PPSR.	OEH to DPE
15 May	Response from proponent to letter OEH received Epuron's response from DPE.	Epuron to DPE to OEH
26 May	Letter OEH responded to DPE with an initial response regarding the May 2014 PPSR and Epuron's submission.	OEH to DPE
2 June	Letter OEH responded to DPE with a comprehensive response regarding the May 2014 PPSR.	OEH to DPE
4 June	Joint meeting - Sydney DPE, Epuron, NGH and OEH had a joint meeting to discuss OEH's assessment findings.	DPE, Epuron, NGH and OEH

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13 June	Exchange of final meeting minutes from the 4 June meeting.	DPE, Epuron, NGH and OEH
17 & 18 June	Site visits of project site Joint site visits took place on the project site on	Epuron, NGH and OEH
24 June	Teleconference/Meeting	DPE, Epuron, NGH and OEH
25 June 2014	Letter Epuron sent a letter to DPE regarding the removal of 10 turbines.	Epuron to DPE
26 June	Exchange of meeting minutes between parties	DPE, Epuron, NGH and OEH
30 June	Exchange of final site visit notes	DPE, Epuron, NGH and OEH
30 June – 20 August	Provision of information by Epuron and NGH and assessment of information by OEH Epuron provided the last piece of verified information required for OEH's assessment on 20 August 2014.	Epuron, NGH and OEH

What was included in the assessment

As a result of these consultations, Epuron have provided the following documents and information packages to OEH for this assessment:

- Revised Statement of Commitments.
- Revised turbine and infrastructure design for the project.
- Updated 'high constraint' shapefiles with attributed explanations of the high constraint areas.
- High constraint explanatory document.
- Updated vegetation mapping shapefiles with results from the joint site visits.
- Results of the new hollow-bearing tree assessment and corresponding shapefiles.
- Clarification of transmission line requirements and easements.

The 2013 cultural heritage addendum and associated mapping appendices were assessed and reviewed in conjunction with the 2009 proposed archaeological and cultural heritage assessment.

OEH has assessed this information and documentation in conjunction with the May 2014 PPSR.
Currently none of the information above has been consolidated in to a report and the revised impact figures and infrastructure layout are not reflected in the most recent PPSR or SER.

Throughout our assessment, we have identified many inaccuracies in the information and mapping products provided by the proponent which has led to delays in our assessment. There have been multiple inconsistencies or issues identified with the vegetation mapping polygons, high constraint polygons, accuracy of the turbine and infrastructure layouts and hollow-bearing tree information. OEH endeavoured to resolve these issues directly with Epuron. Most of these matters were subsequently resolved; however outstanding matters that could not be resolved by in this manner have been included in this response.

Results of the assessment

OEH's assessment has found that there have been a number of improvements made to the vegetation mapping products and the hollow-bearing tree assessment method since February 2014. There has also been useful clarification provided around the proponent's definition of what is considered 'high constraint' and transmission line impacts. The

enhancement of this work has provided OEH with better insight about the quantum of impacts this project is likely to have.

OEH's main concerns from the assessment are:

- the proximity of some turbines to high constraint or woodland areas with high number of hollow-bearing trees,
- the reliability of the infrastructure mapping,
- the lack of detail and nomination of specific sites in the Offset Strategy.

OEH endorses the cultural heritage strategies of salvage excavation and minimisation of the extent of impacts. However, OEH still considers there is reduced capacity to adequately consider all Aboriginal heritage values up front because of the continuing proposal to undertake further heritage assessment after Project design is completed. This does not allow for appropriate consideration of management measures prior to proposed impacts. OEH therefore recommends all new and un surveyed areas of the project site be surveyed by a qualified Archaeologist, this should include all transmission lines underground cabling roading and the new turbine locations.

These matters are important because it is OEH's role to provide accurate advice to your department about the adequacy of the impact assessments and about how to avoid, mitigate and properly offset impacts for the project.

A detailed response relating to each component of OEH's assessment has been provided in **Attachment 1 and 2**. This includes comments on the Statements of Commitments and suggested rewording.

Please do not hesitate to contact me on 02 6229 7082 if you have any questions or wish to discuss our assessment.

Yours sincerely

Allison Treweek 22/8/14

ALLISON TREWEEK
Senior Team Leader Planning – South East
Regional Operations Group
Office of Environment & Heritage

Enclosure: Attachment 1

Attachment 1: OEH's Assessment of the Biodiversity and Aboriginal Cultural Heritage Impacts Associated with Yass Wind Farm May 2014

Review of May 2014 Preferred Project Report and Supplementary Information

The removal of 10 turbines in cluster M4

On 25 June 2014 Epuron sent a letter to the Department of Planning and the Environment (DPE) notifying of the removal of ten wind turbines adjacent to high constraint areas in the M4 cluster.

The removal of these turbines is likely to minimise the impacts of the project on threatened biodiversity in the Yass Valley area. For example, it is likely to reduce the risk of turbine-strike collisions with threatened fauna inhabiting the neighbouring woodland whilst also minimising the loss of hollow-bearing trees and vegetation in an already over-cleared landscape.

OEH understands that these turbines have been removed for reasons outside of OEH's scope but we support the removal of these turbines and have excluded these turbines from our assessment.

Hollow-bearing Tree Assessment

There have been extensive negotiations between OEH, Epuron and NGH since November 2013 about adopting a suitable method for sampling hollow-bearing trees (HBTs) across the impact area. Epuron settled upon a final sampling method of using aerial imagery to identify tree canopies over 15m diameter as an indicator for trees likely to contain hollows in June 2014. Using this method, the numbers of trees with potential hollows were quantified around each turbine.

OEH acknowledges that the removal of 10 turbines from cluster M4, for reasons not communicated to OEH, will reduce impacts of this project on HBTs.

Results range from zero to 73 potential HBTs around each turbine, with a total of 467 HBTs likely to be impacted on across the development envelope. OEH views this number as a significant impact on HBT resources in an over-cleared and fragmented landscape, such as the Yass Valley Area. These trees offer a very important habitat feature for threatened species such as the Superb Parrot, which is likely to occur in the study area. Removal of these trees is a key threatening process for many hollow-dependent species.

Specific turbine numbers 145, 56, 27 and 25 are all expected to impact on over 20 potential HBTs within 100m. These four turbines account for over 33% of the HBTs to be impacted on across the whole project. Turbine 145 in its own right accounts for 15% of potential impacts to HBTs, with potentially 73 HBTs within vicinity.

OEH has continuously recommended that impacts on biodiversity should be avoided where possible, as a first step. This includes avoiding situating turbines adjacent to woodland and forest remnants which are most likely to contain high numbers of HBTs. This approach has not been adhered to at these turbine locations.

The impacts on the HBTs still adjacent to turbines have not been appropriately mitigated in the PPR, SoCs or project design. As such, these impacts must be accounted for in the Offset Strategy. These impacts have not been quantified in the offset strategy as yet, nor potential sites nominated that may contain suitable compensation for this impact. Furthermore, fauna surveys to determine what species may be using these hollows have not yet been done. OEH does not support the placement of turbines adjacent to woodland and forested areas, especially those containing hollows, but if DPE decide to approve this design then the impacts must be monitored and offset.

Vegetation & Endangered Ecological Community Mapping

OEH has reviewed the most recent vegetation mapping provided by Epuron on 8 July 2014. This mapping included results of the joint site visits on 17 and 18 June 2014, which ground-truthed a number of turbine sites and resulted in a number of changes. These changes included OEH's request to more accurately map the previously mapped 'pasture'/'Box Gum Woodland low condition' areas into four new categories:

1. Box Gum Woodland overstorey with exotic understorey
2. Box Gum Woodland overstorey with native understory
3. Box Gum Woodland Derived Grassland with more than 50% native ground cover but <4% overstorey
4. Exotic dominated pasture.

These changes were made in areas visited during the site visit and areas that could be further defined from previous work.

In OEH's view, this exercise has increased the reliability of the vegetation mapping associated with this project and the dependability of the total impact area calculations. There are some areas where the mapping has not been verified on the ground which is likely to have been conservatively classified into Endangered Ecological Community (EEC) rather than into the 'pasture' category.

OEH views this mapping is sufficient for this development application but contends that it should not be relied wholly upon when selecting offset sites. OEH must inspect and verify the potential offset sites' suitability before they are confirmed for offsets.

High Constraint Layer

In OEH's letter dated 24 February 2014, we raised the matter that there were a number of inconsistencies with the high constraint layer and that it was not clear why certain areas were of high, medium, low constraint, or not ranked. There were a large number of turbines (nearly 45%) where the constraint level had not been mapped around them.

Following the joint meeting on 4 June 2014, the proponent provided a document summarising the decision making processes behind the categorisation of constraints (dated 13 June 2014). This document defined 'High Constraint' as mainly woodland in moderate condition or above or areas of connectivity or high value for fauna within the development envelope.

NGH provided a revised high constraint GIS layer on 08 July 2014 that included some reasoning behind why areas were nominated as 'high constraint'.

Based on NGH's classification approach, OEH identified a number of parcels that were within the development envelope that were moderate condition woodland or above that had

not been classified as high constraint. OEH provided this feedback to Epuron about a number of polygons that should have been considered high constraint. Epuron made most of these changes and provided an updated high constraint layer to OEH on 13 August 2014.

OEH has reviewed this layer and does not consider that the current high constraint layer is a complete reflection of the environmental values across the site. It does provide some guidance about some constraints and will hopefully result in the avoidance of some areas but it is not wholly reliable. There is still one turbine (#138) that is within a high constraint area and there are a number of other turbines within 50m of high constraint areas. There are multiple access tracks and electrical reticulation lines that also pass through high constraint areas.

The high conservation value of all vegetation on site is beyond question, given that the predominant vegetation type in the impact area is a listed EEC and a highly cleared vegetation type. Other woodland and forest types that are not listed EECs are environmentally sensitive areas. Some of the vegetation on site is in good condition which would likely 'red-light' impacting on this vegetation.

OEH contends that placing turbines within close proximity of woodland areas is likely to quarantine the value of that habitat for many species. As previously recommended to the proponents, OEH considers that it is best practice to implement a buffer between the turbines and woodland areas in line with the distance adopted by the University of Bristol and the Bat Conservation Trust (2009) – Diagram sent to DPE and Epuron in February 2014.

During the field visit (June 2014), there were a few turbines that were identified as 'higher risk', in particular turbine number 102 which is very close to a woodland area. This patch of woodland had a much higher diversity of understorey compared to other areas. Epuron have moved the location of this turbine approximately 45m meters away from the woodland which is appreciated.

Total Impacts on Vegetation

The total expected impact of this project on native vegetation is 225.39 ha. Of this amount, 196.44 ha (87.6%) are predicted to be in Box Gum Woodland, ranging between poor and good condition and includes Box Gum Woodland derived grassland areas. Most of the impact to BGW is deemed to be in poor-moderate condition which corresponds to 'moderate to good' Biometric condition.

OEH contends that is a large impact to Box Gum Woodland in the Yass Valley area and should be offset accordingly, using ratios obtained with the Biobanking calculator.

Offset Strategy and Package

Although a lot of progress has been made in this project, OEH still has significant concerns about the Offset Strategy presented for this project in the Supplementary Ecology Report (SER).

During the joint teleconference on 24 June 2014, NGH raised the point that Martin Henery (a previous OEH employee) reviewed the Yass Wind Farm Offset Strategy. NGH sent the corresponding emails through to OEH on 24 June 2014. However, upon reviewing this correspondence, it became clear that NGH had requested Martin review an Offset Strategy for Liverpool Wind Farm. Martin's comments state that:

> *"Words to that effect plus the details of potential offset sites would probably satisfy one half of the offset equation in the case of Yass Valley WF" (from email dated 22 November 2013).*

However, upon comparing the Liverpool Wind Farm example from the email with the current Offset Strategy (from the SER, received May 2014), it is clear that there are some vast differences between documents. For example, the sections on "establishing baseline data", "Site specific management actions", "Monitoring, Requirement to monitor the offset site", are not included in the Yass Valley Wind Farm Offset Strategy. Some of these features have been absorbed in different wording and sections however there are some features that have been left out from the example reviewed by Martin. Furthermore, Martin raised concerns in his email that:

> *"We are not comfortable with allowing the development to proceed to the approval stage without accounting for hollow bearing trees and without fully identifying proximity of turbines to areas of woodland that might be more important as habitat than previously thought based on current assessment data" (from email dated 22 November 2013).*

Details of the potential offset site and the inclusion of hollow-bearing tree quantities, as requested by Martin in November 2013, have not been incorporated into the current version of the strategy and are therefore still outstanding.

Core requirements that OEH wants to see included, or changed, in the Offset Strategy are as follows:

Ref	Issue, Inclusion or change required	Reason
1	The removal of nest boxes as a suitable offset	OEH does not support the use of nest boxes as an offset for hollow-bearing trees. There is mounting evidence that they do not successfully replace natural hollows. OEH also does not support a 1:1 ratio for the replacement of a natural hollow with a nest box.
2	"High conservation" habitat is not clearly defined in the strategy	High conservation habitat is not clearly defined in the strategy but it is offset at a higher rate.
3	Offset ratios in the strategy are not supported by OEH. OEH recommends the use of the Biobanking methodology to ascertain precise offset requirements, rather than the use of previous ratios.	It is OEH policy to use a metric such as Biobanking to ascertain independent and reliable figures required for offsetting.
4	No specific sites have been selected, discussed or indicatively mapped in the strategy.	OEH needs confidence and evidence that a suitable offset site is achievable in terms of interested landholders, similar vegetation types and quantities, and ability to apply a covenant or similar protection to the parcel of land. No specific sites have been nominated in the strategy. Only general statements have been made. Without this information, OEH has not

		been able to determine whether the offset strategy is feasible, suitable or likely to achieve the required compensatory habitat objectives. This is particularly important considering some of the feedback from the EPBC Act Referral where neighbours of this project raised concerns that their sites had been nominated as potential offset sites without their permission.
5	An old map provided by the proponent illustrated a number of potential offset sites in locations adjacent to turbines.	OEH does not support the selection of offset sites within close proximity to turbines as it can significantly reduce the value of these sites for birds and bats. During the November 2013 site inspection, OEH advised the proponent and NGH that offset areas should be as far away from turbines and infrastructure as possible. OEH also advised that appropriate offsets could include low-lying areas that are currently grazing farmland that comprise EEC woodland vegetation with a native ground cover. Several of these areas were pointed out to the proponent during the site inspection. In correspondence from the consultants dated December 2013, many of the nominated offset areas were very close to turbines.
6	Impacts to native vegetation and threatened species habitat (including HBTs) have not been quantified in the strategy. The strategy refers to a table in the SER which is no longer accurate.	As SoC 12 states (discussed below) "Final impact areas will be equal to or less than those identified in Table 7-13 Vegetation Impacts". Therefore the vegetation types have been quantified and finalised and no greater impacts should occur than what has been calculated and should be included in the strategy.
7	Update offset figures. The strategy states that the offset is likely to equate to 211 ha although this seems to be very low in comparison to the impact areas.	OEH assumes this figure is incorrect when compared to the total impact area calculations provided by Epuron.
8	The strategy declares that only the permanent habitat loss will be offset; however, there is little proof that rehabilitation of "habitat modification" and "temporary habitat loss" can be rehabilitated successfully. Therefore all impacts should be considered permanent and offset accordingly.	OEH maintains that all vegetation is habitat, all vegetation is highly likely to be considered permanent and therefore should be included in the total impact area calculations and included in the offset strategy. OEH acknowledges that vegetation with an overstorey that is to be removed for easements has been included in the calculations but not non-treed areas. There are portions of loss of Derived Grassland that is consistent with the definition of Box Gum Woodland EEC, and has been classified as the proponent as 'temporary loss'. OEH maintains that although some rehabilitation of disturbed understorey patches could be possible, the level of rehabilitation is unlikely to constitute a reinstatement of habitat (i.e. value to

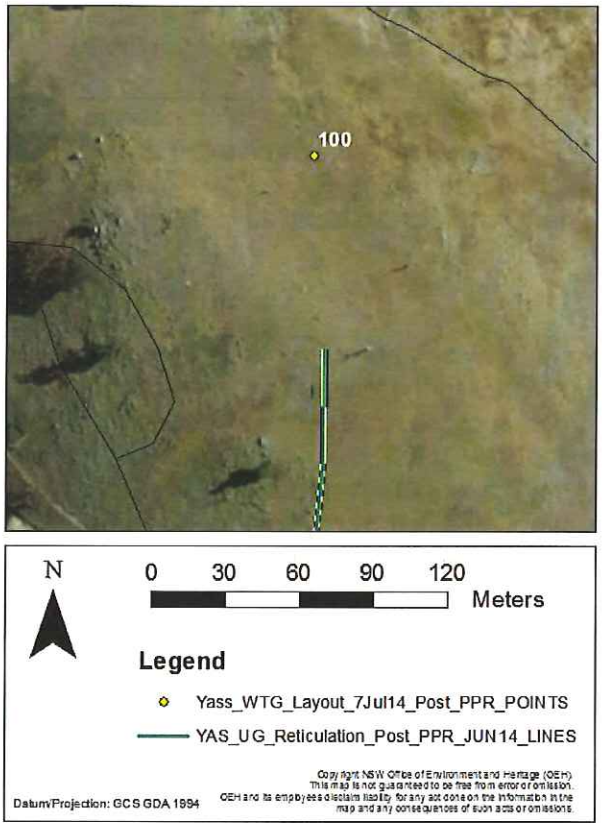
		biodiversity). It is highly unlikely that an area of diverse native grassland can be successfully reinstated.
9	An acknowledgement that on-going management costs are the responsibility of the wind farm owner in most cases, unless a BioBanking agreement is secured and a total funds deposit is included in the project.	Offsets require the landholder to manage the land for conservation outcomes into perpetuity and improve the values of the site. This requires consistent funding and detailed roles and responsibilities.
10	Timeline of securing an offset.	Unless otherwise agreed to by the Director-General, prior to the commencement of construction of the project, the Proponent shall in consultation with OEH secure a biodiversity offset package of a suitable amount of native vegetation identified through Biobanking or through negotiations with OEH. This should be done in perpetuity through the Biobanking mechanisms.

Mapping Queries

In emails between Epuron and OEH on 20 August 2014, Andrew Wilson explained the following in relation to the current infrastructure layout:

> *"The proposed access track and underground electrical reticulation routes are our best estimate at this time and are intended to show the route between turbine locations rather than a very detailed zoomed-in location – this is part of the reason why on a large scale view of particular turbine locations it appears that the track & underground reticulation route appears not to reach the centre of the turbine location. Depending on the final shape, size and orientation of the hardstand area (different turbine models and different cranes will require different hardstand configurations), the furthest edge of the hardstand area could be up to 65m from the centre point of the turbine location. In practice, the access track and hardstand are constructed together and the track could be considered to stop at the edge of the hardstand."*

This is in response to OEH's enquiry about why there are numerous turbine locations where the reticulation lines do not lead to the turbine location. The explanation covers most of the turbine locations assessed, except for turbine 100 which is over 65m beyond the end of the reticulation lines (see figure below).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ATTACHMENT 2 - OEH detailed Aboriginal Cultural Heritage comments on the PPR Yass Valley Wind Farm (May 2014)

OEH has undertaken a review of Attachment 4 of the May 2014 PPR titled "*Response to Heritage Comments*" prepared by New South Wales Archaeology Pty Ltd (dated 25 October 2013). OEH provided comments on a draft version of the PPR dated August 2013 and notes that this current version of the PPR (dated May 2014) has considered and incorporated previous OEH comments as required.

OEH acknowledges that the additional SoC recommended by New South Wales Archaeology Pty Ltd (dated 25 October 2013) has been included in the Revised Statement of Commitments in the July 2014 PPR. OEH also acknowledges that Aboriginal Site Recording Forms have been submitted for all new sites recorded since the original 2008 survey.

OEH has the following advice in relation to the PPR:

Although OEH has provided previous advice supporting the conduct of archaeological assessment of any additional areas prior to any construction activities, OEH has also provided advice regarding concerns about the continuing proposal to undertake further heritage assessment after Project design is completed. OEH still considers there is reduced capacity to adequately consider all Aboriginal heritage values up front and thereby allow for appropriate consideration of management measures prior to proposed impacts. For example the additional turbine ridge in the Coppabella Precinct has not been surveyed to date.

The Archaeological Assessment in section 13 currently has two recommendations regarding salvage excavation. OEH seeks clarification regarding the level of salvage excavation which will be undertaken within the impact areas. The SoC's currently indicate salvage will be undertaken in a sample of impact areas and in areas identified in Tables 19, 20,21, it is not clear from the documentation why these two measures are proposed.

As outlined in the SoCs, OEH agrees with the commitment to:

- undertake subsurface salvage excavation of sites identified in Tables 20 and 21 of Section 12 of the 2008 Archaeological survey (SoC 27). As the Carrolls Ridge precinct is no longer in the proposed development area only Tables 20 and 21 are relevant to the proposed salvage excavation.
- conduct additional archaeological assessment in areas of proposed development that have not been previously surveyed including underground transmission lines and access tracks as outlined in SoC 28.
- consider all available management measures including changing the project layout in order to avoid any highly significance heritage areas located during additional survey or salvage excavation (SoC 30); and
- develop a Cultural Heritage Management Protocol as outlined in SoC 29.

Clarification of the management measures and procedures to be followed must be clearly documented in a Cultural Heritage Management Plan (CHMP) for the Project with a commitment made to addressing any management measures that may be recommended as part of the results of the additional surveys or archaeological excavations.

The CHMP should be developed in consultation with an archaeologist, registered Aboriginal stakeholders and OEH and be submitted to the Secretary for approval prior to carrying out any development on the site; and include:

- description of the methodology for identifying sample areas to be salvaged, as described in SoC 26;

- provide research aims, sampling strategy, methodology, recording and analysis of objects, and care and control of objects post salvage;
- methodology to protect areas containing artefacts that are located within 50m of any proposed works in order to minimise the potential for inadvertent damage to those objects;
- description of the measures that would be implemented if any new or any unanticipated Aboriginal objects are discovered during the development and the measures that would be followed to manage these objects;
- description of the procedures that would be implemented if any Aboriginal skeletal remains are discovered during the development and the measures that would be followed to manage these objects; and
- description of the procedures should damage to Aboriginal objects or sites occur outside the proposed development areas.

In addition to the mitigation tasks outlined at SoC 29 and 30, the CHMP should also include:

- definition of what comprises a highly significant heritage area within the project area;
- procedure to follow when a highly significant heritage area is identified through additional survey or salvage excavation;
- a map at an appropriate scale that illustrates the location of known Aboriginal objects or sites (using polygons to illustrate the site dimensions) within the development area;
- a commitment that the proponent will provide a report to OEH and registered Aboriginal stakeholders on the results of subsurface testing;
- a commitment that the proponent will complete an Aboriginal Site Impact Recording Form and submit it to the Aboriginal Heritage Information Management System (AHIMS) Registrar, for each AHIMS site that is harmed or excavated through the proposed development; and
- the process that will be followed for continuing consultation with the Aboriginal stakeholders and OEH, where required.

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OEH Comments on the Yass Valley Wind Farm statement of commitments (SoC) – received from Epuron (Donna Bolton) on 29 July 2014 via email. Note these are an updated version of the SoC and differ from the May 2014 PPSR

9.1.3 Flora and Fauna						
SoC	***Impact***	***Objective***	***Mitigation Tasks***	***Project Phase***	***Auditing***	***OEH comments and wording suggestions***
12	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	Table 7-13 in the May PPR is "Prediction of electromagnetic fields at residences". This SoC reference needs updating. OEH suggested rewording: "All wind turbines **must** 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."
15	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	OEH suggested rewording: "All Yass Daisies must be protected on-site from direct and indirect impacts. A 20m buffer must be imposed around any individual or group of Yass Daisies, or where records were previously documented. These buffers must be implemented prior to the commencement of any construction for the project and maintained and enforced till after construction is complete and equipment is off-

						site. The buffer must exclude all vehicle and human traffic.
16	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	OEH question – are these areas mapped? Are there any known areas that will require disturbance for infrastructure for this project?
17	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	OEH question – are there any known dams that will require moving? For what purpose/animals will alternative water points be established? OEH does not consider this to be a mitigation technique for threatened species in the area and is unlikely to have any benefit on threatened species.
18	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		CEMP	OEH Questions: Haven't Conroy's Gap turbines been removed from this application? What is an "identified area" – please define in SoC. How will the results of the surveys be incorporated in to the project to avoid impacts?
19	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	There are a number of environmentally sensitive areas outside of the high constraints map that require protection. Can these be included?
20	Loss or modification of habitat	Avoid, minimise, offset	A buffer twice the distance of the tree drip-line would be established in sensitive areas identified in the Biodiversity Assessment constraint map set for each precinct to ensure indirect impacts (such as compaction, noise and dust) are minimised where practical.	Construction	CEMP	It is not clear what this SoC is trying to achieve. Will the buffer distance mean that no turbines of infrastructure can be placed within two drip-lines of high constraint areas? The current design of the project would not comply with this and it would also contradict with SoC 12 above for access tracks and electrical lines, etc.

21	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].	Detailed design of infrastructure layout	CEMP	OEH raised serious concerns about the current version of the offset strategy. OEH suggested rewording: "The Proponent would commit to preparing and implementing an Offset Plan, to offset the quantum and condition of native vegetation to be removed, **modified or impacted on**, 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 **must** be prepared in consultation with OEH, prior to construction."
22	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. Project phase: Prior to construction Auditing: OEMP CEMP	OEH suggested rewording: Prior to the commencement of construction, the Proponent shall prepare and submit for the Approval of the Director-General a Bird and Bat Adaptive Management Program, which takes into account bird/ bat monitoring best practice methods. The Program shall be prepared and implemented by a suitably qualified expert, in collaboration with OEH and approved by the Director-General. The Program shall incorporate Monitoring, and a Decision Matrix that clearly sets out how the Proponent will respond to the outcomes of monitoring. It shall: (a) incorporate an ongoing role for the suitably qualified expert; (b) set out monitoring requirements in order to assess the impact of the Project on bird and bat populations, including details on survey locations, parameters to be measured, frequency of surveys and analyses and reporting. The monitoring program shall be capable of detecting any changes to the population of birds and/ or bats that can reasonably be attributed to the operation of the Project, that is, data must be also collected prior to the commencement of construction; (c) incorporate a decision making framework that sets out specific actions and when they may be required to be implemented to reduce any impacts on bird and bat populations that have been identified as a result of the monitoring; (d) identify 'at risk' bird and bat groups, seasons and/or areas within the Project site which may attract high levels of mortality and include monthly mortality assessments and periodic local population census' and bird utilisation surveys;		

				(e) identify potential mitigation measures and implementation strategies in order to reduce impacts on birds and bats such as minimising the availability of raptor perches, swift carcass removal, pest control including rabbits, use of deterrents, and sector management including switching off turbines that are predicted to or have had an unacceptable impact on bird/bat mortality at certain times; and (f) identify matters to be addressed in periodic reports in relation to the outcomes of monitoring, the application of the decision making framework, the mitigation measures identified, progress with the implementation of such measures, and their success. The Reports referred to under part (f) shall be submitted to the Director-General and OEH on an annual basis for the first five years of operation and every two years thereafter (unless otherwise agreed to by the Director-General), and shall be prepared within two months of the end of the reporting period. The Director-General may, at the request of the Proponent at anytime, vary the reporting requirement or period by notice in writing to the Proponent. The Proponent is required to implement reasonable and feasible mitigation measures as identified under part (e) where the need for further action is identified through the Bird and Bat Adaptive Management Programme, or as otherwise agreed with the Director-General.		
23	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 Golden Sun Moth Striped Legless Lizard Eastern Bentwing Bat Survey approach would be developed in consultation with OEH.	Construction	CEMP	OEH Suggested rewording: "A Biodiversity Management Plan must be prepared within the CEMP to document the how biodiversity protection measures will be implemented on site and how this will be ensured. This plan will build on the Biodiversity Assessments prepared for each precinct for area specific measures. This would include construction and operational activities and must be developed in cooperation with OEH. 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 Golden Sun Moth Striped Legless Lizard Eastern Bentwing Bat

						Survey approach would be developed in consultation with OEH."
25	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	No comments.

9.1.4 Aboriginal Archaeology

SoC	*Impact*	*Objective*	*Mitigation Tasks*	*Project Phase*	*Auditing2*	*OEH comments and wording suggestions*
26	Unavoidable disturbance to Aboriginal objects (stone artefacts) located in generally continuous albeit low density distribution across the proposal area.	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 an archaeologist, the relevant Aboriginal communities and the NSW Department of Conservation and Climate Change.	Construction and decommissioning	CEMP	OEH seeks clarification on why two excavation programs are proposed.
27	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	OEH endorses minimising the extent of impacts and subsurface salvage excavation prior to construction which should be documented in the Cultural Heritage Management Plan. As the Carrolls Ridge precinct is no longer in the proposed development area only Tables 20 and 21 are relevant to the proposed excavation program.
28	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	OEH endorses additional archaeological assessment in impact areas that have not been previously surveyed including the additional turbine ridge in the Coppabella Precinct, underground reticulation, switchyards, concerete batch

						plants, transmission lines and access tracks.
29	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 Department of Conservation and Climate Change.	Construction and decommissioning	CEMP	Do you mean Cultural Heritage Management Plan (CHMP)? OEH endorses the development of a CHMP and has provided a list of the management measures and procedures to be included (see Attachment B).
30	Disturbance to significant areas recorded subsequent to the EA	Minimise risk	The Proponent would consider all available management measures, 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 (CHMP) would set out management measures and procedures to be implemented for sites and archaeological deposits that are found during any additional surveys or salvage excavations.	Pre-construction and decommissioning	CEMP	OEH endorses changing the project layout to avoid any highly significant heritage areas located during additional survey or salvage excavation. Definition of what constitutes a "highly significant" site must be provided in the CHMP.