Proposed Development of

Sapphire Wind Farm

Northern, New South Wales

Preferred Project Report and Response to Submissions

May 2012

Prepared for Sapphire Wind Farm Pty Ltd by Wind Prospect CWP Pty Ltd

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1. INTRODUCTION

Sapphire Wind Farm (the Project) has been proposed to consist of up to 159 wind turbines and ancillary structures on an area of the Northern Tablelands, 18 km west of Glen Innes and 28 km east of Inverell, New South Wales (NSW).

The Project is a Part 3A Major Project under the *NSW Environmental Planning and Assessment Act 1979* and the consent authority is the Minister for Planning and Infrastructure. Part 3A was repealed on the 1 October 2011 and the Project is now subject to the transitional provisions identified in Schedule 6A of the Act. The Project is also consistent with the criteria of *Critical Infrastructure* as it is a power generator with the capacity to generate in excess of 30 MW (previously 250 MW). Subsequent applications for approval may be sought under Section 78A of the *Environmental Planning and Assessment (EP&A) Act 1979 (NSW)* associated with the lease of land for the turbine sites and associated infrastructure.

The Project is being developed by Wind Prospect CWP Pty Ltd (WPCWP), on behalf of Sapphire Wind Farm Pty Ltd (the Proponent), a wholly owned subsidiary of the Wind Prospect Group and Continental Wind Partners (CWP). WPCWP is a joint venture partnership between the Wind Prospect Group and Continental Wind Partners (CWP).

The Project was publicly announced in May 2009, at the commencement of detailed feasibility studies and early stages of planning. The Environmental Assessment was submitted to the NSW Department of Planning and Infrastructure (DoPI) on the 11th November 2012 and placed on public exhibition from the 23rd November 2011 to the 1st March 2012. During this period, submissions were sought from the local community, government agencies, interested parties and other stakeholders. The DoPI accepted submissions up to the 1st March 2012, though a few late submissions were also received and included.

Purpose of this Report

The DoPI provided individual submissions from members of the public and government agencies and asked the Proponent to respond to the issues raised in accordance with Section 75H of the *NSW Environmental and Planning Assessment Act 1979*.

This Preferred Project Report and Response to Submissions considers and responds to the issues raised in the submissions on the Sapphire Wind Farm Environmental Assessment (EA).

Modifications to the Project

During ongoing consultation with landowners and further investigation of potential ecological and geophysical conditions on the site, several modifications are proposed to the wind farm layout. The modifications have resulted in the minor repositioning of access tracks and power lines, but no relocation or removal of wind turbines. Detailed maps showing the changes can be seen in **Appendix A**, as follows:

- Figure 1: Lochlea, Sapphire Cluster
- Figure 2: Derra Downs, Sapphire Cluster
- Figure 3: Yarrandoo, Sapphire Cluster

- Figure 4: Tralee, Sapphire Cluster
- Figure 5: Tauranga, Swan Vale Cluster

These maps show how the modifications have altered the impact on ecological communities, and have been reviewed by the OEH initially. Changes have been accepted in principle by OEH, on the understanding that the offset areas reflect the impacts based on final turbine selection and predicted construction impacts. As the current EA assesses worst-case impacts, including 12 m roads and maximum turbine numbers, there is expected to be a reduction of impacts even with these changes.

The Project still consists of two design layouts as shown in Layout Option 1 and Layout Option 2, Overview (**Figure 3.1A**). **Figure 3.1A** also shows an overview of all proposed changes to access tracks and internal electrical easements.

Offset Areas

Since presenting the EA for exhibition, further discussions have taken place with landowners hosting potential offset sites for the Project. This has resulted in one landowner withdrawing their property from consideration. The Proponent has replaced this property (Property 2) with another offset site within the wind farm area, as shown in **Figure 10.4A**.

It has also been necessary to re-calculate the available area of offset across all three properties, due to the overlap of infrastructure on the potential offset sites on Properties 2 and 3. **Figure 10.4A** shows the revised offset areas currently being negotiated with the landowners. As stated in the EA, the calculation of the required offset areas is based on worst case impacts, including the greatest number of turbines and 12 m wide roads. The Proponent is committing (Statement of Commitment 022) upon final turbine selection and layout design to re-calculate the offset requirement prior to construction, with the intention of ensuring the relevant offset package is adequate for the level of impact.

2. SUMMARY OF SUBMISSIONS

Responses Received

The DoPI received a total of 19 submissions during the public exhibition period, terminating on the 1st March 2012. This consisted of the following:

Submission Number[1]	Name
23959	Lindsay Simonsen of Bondi, NSW
25474	David Durrheim of NSW Health Hunter New England Local Health District
25537	Richard Ennis of Swan Vale, NSW
25540	Ian Whitten of Matheson, NSW
26043	Marie Burton of Forest Reefs, NSW
26045	Ronald Burton of Forest Reef, NSW
26455	Maria Burnham of Sapphire, NSW
26611	Robert Allen of Valbob Mining Pty Ltd
26712	Chris Voll of Church Communities Australia Ltd
26726	Joe Sparks of Glen Innes, NSW
26856	Anthony Alliston of Inverell Shire Council
26858	RL & HM Hewens of Sapphire, NSW
26970	Paul Hutchings of CMA – Border Rivers-Gwydir
26974	Mark Mignanelli of NSW Office of Water
27052	Andrew Scott of Department of Primary Industries
27297	GW Price of Glen Innes Severn Shire Council
27324	Mark Paterson of Department of Trade & Investment
27368	Robert O'Hern of Environmental Protection Authority
35959	Martin Holberton of Civil Aviation Safety Authority

[1] *Submission numbers are as assigned by DoPI*

As can be seen from the above table, ten submissions came from members of the public and nine came from government agencies, local councils and the like. In accordance with section 75H of the *Environmental Planning and Assessment Act 1979*, this response to submissions report considers the issues raised in the submissions received in relation to the EA for the Project.

Format of Response to Submissions

The response to submissions has been structured to mirror the original EA chapter format, as follows:

Chapter	Title	Issues Raised?	Number of Statements
1	Executive Summary	No	-
2	Introduction	No	-
3	Project Description	Yes	5
4	Project Justification	Yes	5
5	Planning Context	Yes	9
6	Stakeholder Consultation	Yes	10
7	Assessment of Key Issues	No	-
8	Landscape and Visual Impact Assessment	Yes	28
9	Noise Assessment	Yes	2
10	Flora and Fauna Assessment	Yes	8[1]
11	Cultural Heritage Assessment	Yes	1
12	Traffic and Transport Assessment	Yes	4
13	Aviation Assessment	Yes	5
14	Communications Assessment	No	-
15	Electromagnetic Fields	No	-
16	Fire and Bushfire Assessment	Yes	1
17	Water Assessment	Yes	3
18	General Environmental Assessment	Yes	1
19	Socio-Economic Assessment	Yes	16
20	Statement of Commitments	Yes	1
21	Conclusion	No	-

[1] The detailed response to OEH's submission is dealt with separately in Section 4.

Due to the low number of submissions received, individual issues were extracted from the relevant submissions, tabulated and responded to accordingly. Where a submission raises an issue which is similar to, one previously covered then reference is made back to the original comment to avoid duplication, where possible.

The Submission Statement number (e.g. Submission Statement (27368-4)) is a unique identifying number assigned by DoPI to each submission (27368-X) together with an internal reference number (XXXXX-4) for WPCWP.

Revised Statement of Commitments

In response to several submissions, the Proponent has revised or added to the original Statement of Commitments as shown in **Chapter 20** of the EA. This resulted in 5 commitments being amended, 0 deleted and 8 added. These amendments are contained in a revised Statement of Commitments as shown in **Section 5**.

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3. MAIN RESPONSE

Chapter 1: Executive Summary

No responses received.

Chapter 2: Introduction

No responses received.

Chapter 3: Project Description

Submission Statement (25537-5)
"The project talks about hooking into the grid which grid there are two and do they have permission to do so."
Response: In order to retain flexibility, the Proponent is seeking consent to connect into either the 132 kV power line to the south of the Gwydir Highway or the 330 kV power line running through the Sapphire Cluster. Both options have been considered in the EA, as described in **Chapter 3** Project Description, in terms of their impact and effect on the local environment. The Proponent is progressing both connection options with TransGrid, through a Connection Investigation and Negotiation Agreement (CINA). The preferred connection option will be finalised, and permission granted, prior to construction of the Project. It is not a requirement of submitting the EA to have a connection agreement in place prior to being granted planning consent, nor is it possible. Either connection option will allow Sapphire Wind Farm to export power from the installed wind turbines into the electricity network.
Submission Statement (26858-5)
"Please delete the Sapphire Cluster from the proposed Sapphire Wind Farm development project, we [Spring Creek] do not want to live next to a wind farm..."
Response: Removal of the entire Sapphire Cluster from the Project is not appropriate and would have significant implications for the overall operation and benefit of the wind farm. The impact of the Sapphire Cluster on the Spring Creek property has been assessed in the relevant sections of the EA, in particular **Chapter 8** Landscape and Visual Impact Assessment (LVIA) and **Chapter 9** Noise Assessment (in addition see **Appendix 7 and 8** respectively). The LVIA report has assessed and determined that a high visual impact will result from the construction of the Project (and specifically turbines within the Sapphire Cluster) for the Spring Creek residential dwelling. The Proponent is prepared to consider options to mitigate for the presence of the Sapphire Cluster, including but not limited to Statement of Commitment 005, 012 and 013, and has had extensive discussions with the landowner in this regard. The Proponent will work with the submitter and DoPI to arrive at a position which is satisfactory to all parties. As the Proponent is considering a staged construction programme (see **Chapter 3** Project Description), the exact date of constructing the Sapphire Cluster cannot be predicted and therefore an exact timeframe cannot be provided.

Submission Statement (26858-12)
"There is an old house site on our property...this old site would be approximately 1.42kms from the nearest wind turbine. We have thought that in the future we would build a new house on this old site."
Response: The site of a former house on the property was not identified during: • The original desktop study; • Fieldwork carried out during the LVIA; nor • Initial consultation with the landowner. Not until late in discussions was this property mentioned to the Proponent. At the time of writing this response, no development application has been submitted for construction on this site. Potential impacts from the Project have therefore been assessed from the existing dwelling in accordance with the planning regulations. Ultimately the potential level of impact for any approved residential dwelling would be determined by the design and orientation of the dwelling toward the wind farm, as well as the extent and location of any landscape works surrounding or beyond the residence.
Submission Statement (26858-23)
"If the timeline on Wind Prospect CWP Pty Ltd's online website is to be believed and they are telling the public the truth..."
Response: The timeline for the consent, construction and operation of the Sapphire Wind Farm as shown on the Project website and in the EA is indicative and subject to change due to matters which can be beyond the Proponent's control. Negotiation of a power purchase agreement and the procurement of turbine supply and construction contracts are dependent on a competitive tendering process which can take several months to complete. This will then dictate the construction timetable, with the inevitable impact on the commencement of construction and the final operation date.
Submission Statement (26856-5)
"Council respectfully asks that unless absolutely necessary, and extensively justified (on a case by case basis), all towers should respect the 2km minimum distance from non-project related dwellings. In the case of Sapphire Wind farm, complying with this setback requirement will not significantly inhibit the project.... Inverell Shire Council request that the Department give consideration to either: • A minor re-design of the project so that the turbines are 2km from non-project related dwellings; • Deleting from the project the turbines that encroach into the 2km setback from non-project related dwellings; or • A staged construction so turbines within 2km setback distance are built last and when more is definitively know about the impacts. In time new technology may be available and possible community acceptance / perception may also change.

Response: The Proponent acknowledges the presence of Development Control Plans (DCPs) for both Inverell Shire Council and Glen Innes Severn Council in **Chapter 5** Planning Context, Table 5.4. A merit based assessment has been conducted to determine whether the proposed wind turbine layouts are acceptable as outlined in the EA, in particular with respect to noise and visual impact.

With respect to noise, the Proponent has made a commitment (Statement of Commitment 012) to ensure that the final turbine layout, which is confirmed post consent as explained in **Chapter 3** Project Description, will be noise compliant with respect to the DGR's for all non-associated dwellings. This may result in turbines being constructed within 2 km of residential dwellings but on the understanding such placement of turbines meets all planning regulations.

As turbine selection is subject to a competitive tendering process it is not possible to confirm which turbine model will be used until post-consent. The Proponent agrees to modify the turbine layout by moving (micrositing) or removing turbines to ensure that the layout is noise compliant with all non-associated residential properties in the vicinity of the project.

The Draft NSW Planning Guidelines: Wind Farms were not in effect at the time of submitting the planning application for the Sapphire Wind Farm. However, non-involved residences within 2 km of wind turbines have been given full consideration within the EA as submitted, with appropriate noise monitoring and visual impact assessment provided to determine the potential impact. The merit-based assessment has determined that the majority of the impacts are acceptable and commitments made to ensure that all impacts will be acceptable once the final turbine selection has been made.

A staged construction to allow for building of wind turbines within 2 km last is not feasible due to the technical and financial burden it places on the Project by implementing such a procedure within the Construction Management Plan. The installation of turbines will follow a logical programme of works designed around constructing the Project as quickly and cost-effectively as possible.

Chapter 4: Project Justification

Submission Statement (25537-1)

"The windmills will be causing visual and environmental pollution. The damage that is going to be done to the environment and heritage in the construction of these eyesores in such a marginal wind area is beyond belief."

Response: The EA contains an extensive and detailed assessment of the impacts of the Sapphire Wind Farm on the surrounding area. This includes a comprehensive assessment of the environmental, cultural heritage and landscape and visual impact effects of the Project. The Proponent has undertaken steps to ensure that all impacts are mitigated for, based on the principles of avoid, manage or mitigate as necessary. All impacts are deemed acceptable, as documented in the EA for Sapphire Wind Farm.

The wind speed modelled and predicted at the site is more than adequate for a wind farm of this magnitude and the Proponent would not be considering a wind farm in this location unless it were cost-effective to do so.

Submission Statement (25540-4)

"Surely there are less-populated areas where these machines could be erected without making their presence known so obtrusively."
Response: When selecting a site for a wind farm, it is necessary to consider a range of factors, not least of which is population density and the distribution of residences within and around the proposed wind farm area. Another significant requirement for a wind farm is a connection into the electricity network, which is used to provide power to people across NSW. These two siting criteria are symbiotic, in that you have powerlines where people are located and vice-versa. It is therefore necessary to balance the need for a transmission line to connect the project and the density of residential properties. Sapphire Wind Farm was selected due to the two powerlines, 132 kV and 330 kV, which pass close to the site and the low density of residences in the area. The Project was progressed following consultation with members of the public in the vicinity of the wind farm, with limited objection to the development. This is demonstrated by the low number of public comments (10 public, 8 stakeholder) relating to the wind farm whilst on exhibition. It has not been possible to completely reduce all impacts on non-associated residential dwellings, as detailed in the EA.
Submission Statement (26043-1)
"No more wind farms should be approved until the Senate's recommendations for research into the effects of wind farm (actually industrial turbines complexes) on people and the environment through the CO2 emissions through their construction and costly inefficient provision of energy."
Response: The Senate Enquiry (*The Social and Economic Impact of Rural Wind Farms*, Commonwealth of Australia 2011) proposed seven recommendations as part of its enquiry into rural wind farms. Some of the recommendations have filtered thorough into the Draft NSW Planning Guidelines: Wind Farms which are presently being considered (Recommendations 1 and 3 in particular). None of the recommendations placed a requirement on the cessation of wind farm development in Australia whilst further research is undertaken. Wind farm developments already have a rigorous planning approval process through the preparation of an Environmental Assessment document, which ensures that all developments are appropriate.
Submission Statement (26045-1)
"I object because the research by independent people needs to be done before any more wind farms are approved as per the Senate Enquiry and their findings."
Response: See response to Submission Statement 26043-1 above.
Submission Statement (26858-1)
"We believe that not enough research has been done in Australia, and industrial wind farms should be located in more appropriate areas. Wind farm developments will say they are abiding by current guidelines set out; we believe these guidelines are not adequate."
Response: The installation of wind farms globally has been taking place for over 20 years, despite being a relatively new process in Australia. Even so, Australia has some of the most stringent guidelines for the siting of wind turbines compared to other countries, especially when considering

the assessment of noise on nearby residences.

All wind farm developments are expected to follow the relevant planning regulations as explained in **Chapter 5** Planning Context and until such time as the regulations are changed or amended, projects such as Sapphire Wind Farm can be approved if deemed to have adequately assessed all impacts.

Chapter 5: Planning Context

Submission Statement (25537-6)
"When I asked the Company about backing its claims I was told that information did not have to be produced. What assurances does the Government have in place to hold the Company accountable for what it claims it will and can do."
Response: It is unclear which 'claims' are being referred to in this statement. The EA outlines the scope of the Sapphire Wind Farm development, for which it is seeking planning consent. The EA provides a detailed account of the pre, during and post-construction (operational) impacts of the proposed development for which the Proponent will be held accountable following consent. The Statement of Commitments (**Chapter 20**) details the commitments the Proponent will be measured against when completing the Project. Once the Project is operational, the Proponent will be required to ensure that Sapphire Wind Farm is working within the parameters for which it was granted consent (including the Statement of Commitments). Should there be any issues with the Project, then the Proponent will be required to investigate any claims and remedy any faults.
Submission Statement (26045-2)
"Also inquiries should be made public as to the running costs paid by the taxpayer in subsidies to keep these industrial turbines running."
Response: There are no subsidies for wind farm developments which are paid for by the taxpayer. A wind farm is funded by two essential components, namely the sale of generated electricity and Large-scale Generation Certificates (LGCs) (formerly known as Renewable Energy Certificates (RECs)) to a supplier. On the assumption the submission is referring to the LGCs, it is not a tax on taxpayers but a requirement placed on electricity retailers to purchase and surrender a number of these certificates each year to satisfy the Renewable Energy Target (RET). This process incentivises the growth of renewable technologies, including wind farms, in order to meet the RET obligations. More information on the scheme can be found in the RET brochures located here: http://ret.cleanenergyregulator.gov.au/about-the-schemes
Submission Statement (26455-2)
"Our first concern is the distance the turbines will be from our house [Krystal Blue] which is approx 1.8 km and from our workshop sheds, cattle yards and sapphire mine approx 700-800m which we believe to not meet local council regulations or other government recommendations.
Response: The EA has assessed the impact on the Krystal Blue property, more specifically the residence of primary occupation, based on current planning requirements as detailed in **Chapter 5**

Planning Context. The Proponent has given consideration to both Glen Innes Severn and Inverell Shire Council's Development Control Plans (DCPs) but is not obliged to adhere to their recommendations as the Project is assessed by at State level. A merit based approach has been used to determine the impacts of the Project, rather than work to a fixed 2 km separation limit. In considering the impacts, the merit based approach ensures that the wind turbines are sited appropriately, which can be less than 2 km.

The level of impact relates primarily to residences on properties. There is no requirement to consider the impact on sheds, cattle yards or other structures which are not used for residential purposes. However, given that such locations are typically associated with an increase in noise levels, due to noise generated by equipment, animals and vehicles, the added impact from wind turbines would theoretically be minimal.

Submission Statement (26858-2)

"Wind Prospect CWP Pty Ltd will not give a guarantee that their development will not harm us [Spring Creek] in any way."

Response: Wind Prospect CWP Pty Ltd is committed to ensuring that the Sapphire Wind Farm has no adverse impact on people, communities and the environment, as outlined in the EA submitted to the DoPI. The Proponent is willing to explore options in order to mitigate for any perceived impacts raised by the residents of Spring Creek.

At present, the EA shows a minor and moderate exceedance in noise for three of the four modelled turbine types. As the actual turbine to be used for the Project is not yet known, the Proponent is committed to ensuring that the chosen turbine meets the noise requirements at all residences within the vicinity of the Project, including the Spring Creek residence (Statement of Commitment 012). The Proponent has committed to a re-analysis of the noise modelling and to the modification of the turbine layout, including the micro-siting and ultimately removal of turbines where necessary. Once the Project is operational, the Proponent is committed to ensuring that the as-constructed turbine layout is noise compliant in line with its pre-construction modelling (Statement of Commitment 013).

The Proponent does not consider there are any other 'harmful' impacts on the Spring Creek property, nor have any other issues been highlighted in the EA which could be considered such.

Submission Statement (26858-11)

"This means that under Inverell Shire Council guidelines the wind turbines are too close to our existing dwelling"

Response: Please see response to Submission Statement 26858-2 above.

Submission Statement (26611-2)

"I am hoping the Departments can come up with some Rules Laws & Regulations so everyone knows they can and can't do in this situation before granting this application."

Response: The Proponent has prepared the EA in line with current planning regulations, as detailed in **Chapter 5** Planning Context. The Proponent is also aware of the Draft NSW Planning Guidelines:

Wind Farms which was released at the end of 2011 during the exhibition period. Consideration has been given to the guidelines where appropriate, but as they remain in draft and are subject to change, the Proponent is not obliged to adhere to the guidelines at this time.

Submission Statement (26970-4)

"The Border Rivers – Gwydir CMA is currently upgrading its current Catchment Action Plan (CAP). This will be implemented from early 2013."

Response: The Proponent will ensure that the revised CAP is integrated into the pre-construction and construction works related to the Sapphire Wind Farm. This is outlined in the amended Statement of Commitment 072 and 083.

Submission Statement (27297-1)

"That Council submits to the approval authority the Chapter D1 Wind Power Generation Glen Innes Severn DCP 2008 and Glen Innes Severn Section 94A Contribution Plan and request that the provisions contained within these aforementioned documents be incorporated into the Sapphire Wind Farm Development Consent;"

Response: Please refer to the response to Submission Statement (26856-5) in relation to the Sapphire Wind Farm's consideration of Local Council DCPs.

Under Section 94A(1) of the *Environmental Planning & Assessment Act 1979 (NSW):*

"A consent authority may impose, as a condition of development consent, a requirement that the applicant pay a levy of the percentage, authorised by a contributions plan, of the proposed cost of carrying out the development."

As Sapphire Wind Farm is considered a transitional Part 3A project, the consent authority is either the Planning Assessment Commission (PAC) or the DoPI. Therefore, the Proponent is not obliged to consider Section 94A contributions unless directed by the DoPI and will be guided by their decision in regard to this requirement.

The Proponent has already made a voluntary commitment (Statement of Commitment 104) to providing a Community Fund annually, based on the number and size of turbine selected for the site. Should the Project also be required to provide Section 94A contributions, then the Proponent will look to offset this cost from the Community Fund.

Submission Statement (27297-2)

"Further that the approval authority also be request to consider incorporating the principles enshrined within the "Draft NSW Planning Guidelines: Wind Farms" document as part of the approval process."

Response: Please see response to Submission Statement 26611-2 above.

Chapter 6: Stakeholder Consultation

Submission Statement (25540-1)

"Several turbines are planned to be very close to the farm run by my wife and I, and one would appear to be closer than 2km. Any objections we have raised to the company have been answered with an "it'll be all right" attitude, though very politely.

I feel that too many turbines are planned without thought to visual and noise impact to be endured by many farmers, including us."

Response: The EA contains a detailed and thorough consideration of the potential impacts of the Sapphire Wind Farm, including noise and visual impact. Photomontage 8.10 shows the proposed Project in proximity to the landowner's property, whilst the noise modelling work indicates no unacceptable audible impact from the modelled wind turbines. The shadow flicker assessment likewise indicates there will be no unacceptable impact.

The Proponent's discussions with the landowner have sought to reassure them that their concerns were being taken into consideration and that all potential impacts were being addressed correctly. The Proponent provided a photomontage to the landowner prior to submitting the EA to demonstrate the level of impact, as well as assuring the landowner that the issue of shadow flicker, noise and so on were going to be fully addressed in the EA. The Proponent undertook to explain that, based on their considerable experience in developing wind farms in Australia, all issues the landowner presented were to be adequately addressed.

Turbines are proposed to be closer than 2 km, possibly a reference to the Glen Innes Severn Council DCP, but in calculating the predicted impacts they are considered acceptable. Please also see response to Submission Statement 26856-5 regarding the Proponent's consideration of DCPs.

Submission Statement (26455-1)

"After consultation with him we believe our feelings towards the wind farm are being heard but maybe pushed aside."

Response: The Proponent has discussed the Sapphire Wind Farm on several occasions with the respondent. Photomontages (8.20 and 8.21) are presented in the EA showing how the wind turbines would look in proximity to the residence. Assessment within the EA has demonstrated that there will be no noise or shadow flicker from the wind farm. Visual impact is deemed to be high as demonstrated in the LVIA section of the EA (**Chapter 8** and **Appendix 7**).

Submission Statement (26858-3)

"Wind Prospect CWP Pty Ltd had their development plan for Sapphire Wind Farm well underway before they held their Open Days at Glen Innes and Inverell, and before we understood the magnitude of what this development would mean to us and our future."

Response: Open Days were held once the Sapphire Wind Farm turbine layout had been drafted, following detailed site assessment work. The proposed wind farm layouts were then showcased at the Open Days to invite public comment on their design, to ensure that no significant issues had been overlooked.

Prior to the Open Days, newsletters had been circulated to all residences within 3 km of the wind farm site, the Sapphire Wind Farm website was live and the development had received press coverage in the local media (newspapers and radio). Few responses were received on the occasions

where the Proponent undertook to promote or discuss the wind farm with local residents, possibly indicating a low level of concern at the time.

The Proponent accepts that detailed discussions with the landowner did not occur until the time of the Open Days, despite information being left at the landowner's property during door-knocking giving the landowner an earlier opportunity to consult with the Proponent. Since the Open Days the Proponent has actively engaged with the landowner in order to address their concerns. The Proponent has discussed a range of mitigation measures which can be further reviewed with the DoPI as required.

Submission Statement (26858-4)

"We now know the host landholders were all aware of what was going on, but we as adjoining neighbours were 'left out of the loop'. It would appear that we didn't matter and were not important enough to warrant any type of consultation, we were actually an impediment."

Response: A level of confidentiality is required when initially seeking to understand the potential of a wind farm in a particular area, to avoid generating a level of concern the development of a wind farm can convey to the broader community prior to determining its suitability. Commercially, this initial stage of development is also sensitive vis-a-vis competitors which could jeopardise the wind farm. Once the initial wind farm layout has been prepared and the Proponent is committed to actively progressing towards an EA, wider public consultation is undertaken as outlined in **Chapter 6** Stakeholder Consultation.

Submission Statement (26858-7)

"Sapphire Wind Farm web site, under their heading Consultation state "*We consult with all relevant affected parties early on in the process.*"...We strongly disagree with this statement. We were never told what impact it would have on us or our property and it was only by change that we stumbled upon the truth. Consultation was initiated by us not Wind Prospect CWP Pty Ltd."

Response: Please see response to Submission Statements 26858-3 and 4 above.

Submission Statement (26858-8)

"It is obvious that CCA and the Wellingrove Community had plenty of consultation: they had the numbers. And, it is also apparent to us [Spring Creek], that because we own a Lifestyle property and are only two persons we don't matter in the whole scheme of things."

Response: The Proponent has placed no weight, based on the number of people located in one particular location, on any consultation with nearby residents of the Sapphire Wind Farm. During the consultation process in preparation of the EA, it became clear that some residents chose to be more pro-active in discussing the impact of the Project on their properties, which included the Danthonia community and Wellingrove settlement. Discussions were also held with individual property owners who raised concerns in the preparation of the EA, including the owners of Spring Creek, prior to the submission of the EA and during the exhibition period. On all occasions, the Proponent has attempted to resolve the issue(s) that were raised to the satisfaction of the landowner(s), with the level of success depending on the appropriateness of the request.

Submission Statement (26856-6)
"If the Proponent wishes to pursue the current layout it is Council's view that more detailed justification (for R7, R10, R26 & R29), in-line with the Draft Wind Farm Guidelines December 2011 should be requested, and assessed, prior to the Department making a final decision on the project.
Response: The EA contains sufficient information to allow the DoPI to complete its assessment of the Project. Consideration has been given to the listed properties throughout the EA. The Proponent is not obliged to follow the Draft NSW Planning Guidelines: Wind Farms, however many of the issues raised in those guidelines are covered by the EA.
Submission Statement (26856-7)
Affected land owners Lot 2 & 3 DP 589446 – "Krystal Blue" "On the basis of the matter raised Council's suggests that a more detailed justification, in respect to the impacts on this property should be requested, and assessed, prior to the Department making a final decision on the project."
Response: The Proponent considers that the EA for Sapphire Wind Farm as submitted fully considers the potential impacts on all properties within the vicinity of the Project. The issues highlighted by the Council in respect of this property are detailed in the relevant chapters of **Volume 1** and in more detail in the associated **Appendices**. Further consideration of the specifics related to this property will not alter the conclusions reached with regard to the predicted impacts. Individual landowner comments are addressed under the relevant Chapter headings in **Section 3** of this report, as they have made separate submissions to Inverell Shire Council and the DoPI. The Proponent is prepared to consider mitigation measures in discussion with the DoPI and affected landowner, with a view to reaching an understanding to the mutual satisfaction of all parties.
Submission Statement (26856-8)
Affected land owners Lot 44, 45 & 189 DP 750121 – "Spring Creek" "On the basis of the matter raised Council's suggests that a more detailed justification, in respect to the impacts on this property should be requested, and assessed, prior to the Department making a final decision on the project."
Response: Please see response to Submission Statement 26856-7 above.
Submission Statement (26856-9)
"In addition Council also suggests that prior to the final decision being made that further negotiations between the Proponent and the owners of Spring Creek should be undertaken to discuss the impacts of the project on the property and potential mitigation measures. It is unlikely that the Proponent would consider deletion of the Sapphire Cluster from the project."
Response: The Proponent engaged in a lengthy consultation process with the residents of Spring Creek prior to submitting the EA for assessment and during the exhibition period. The Proponent has discussed several mitigation options and is prepared to work with the DoPI and landowner to

arrange at the most appropriate solution to the satisfaction of all parties.

Chapter 7: Assessment of Key Issues

No responses received.

Chapter 8: Landscape and Visual Impact Assessment

Submission Statement (25537-3)
"What about our property in the immediate vicinity that will be polluted by these eyesores."
Response: The property in question is 3.3 km away from the closest turbine and has been assessed as part of the Swan Vale Cluster. The visual impact from the property is predicted to be Moderate, as outlined in the Landscape and Visual Impact Assessment (LVIA) section of the EA (**Chapter 8** Landscape and Visual Assessment). At this distance noise and shadow flicker are not predicted to be an issue, though the property will have views towards the Swan Vale and, to a much lesser degree, Sapphire Clusters.
Submission Statement (25537-4)
"When I heard about the windfarm I approached the company about the landscaping they were advertising they were doing to do to places affected by these eyesores. They did not know of this place and that it had two dwellings on it adversely affected by the windfarm. So much for their community consultation. They have still have not come back to us with any proposed landscaping solutions and implied they will only be compensating the landholders whose places they are polluting and do not want to set a precedent by compensating any adjoining places that will be impacted by this pollution."
Response: The Sapphire Wind Farm LVIA (**Chapter 8** Landscape and Visual Assessment) notes that *"subject to DoPI determination, and any conditions of approval, the Proponent would consider implementing landscape treatments to screen and mitigate the potential visual impact of the wind farm for individual neighbouring properties within an appropriate and agreed distance from the wind farm project area, subject to consultation and agreement with individual property owners".* This is included in Statement of Commitment 005.
Submission Statement (25540-1)
"I feel that too many turbines are planned without thought to the visual... impact to be endured by many farmers, including us."
Response: Thought has been given to the potential visual impact of the proposed Sapphire Wind Farm via the LVIA report. These thoughts, assessments and determinations have been recorded in the Sapphire Wind Farm Landscape and Visual Impact Assessment report (**Appendix 7**).
Submission Statement (26712-1)
"It was a requirement of the Director General that '*a comprehensive assessment of the landscape character and values and any scenic or significant vistas of the area potentially affected by the*

project. This should describe community and stakeholder values of the local and regional visual amenity and quality'. It appears that these requirements have not been fully executed in the GBD report as the following elements are not included:

- A comprehensive assessment of the landscape character and values;
- An assessment of community and stakeholder values; and
- Mapping of the landscape character areas."

Response: The Sapphire Wind Farm LVIA report has been prepared with regard to each of the DGRs for the assessment of visual impact, as set out in the NSW DoPI DGRs dated 29th May 2009, and amended DGRs dated 21st February 2011 (Refer **Appendix 7** Table 1). The LVIA was reviewed by the DoPI for adequacy prior to public exhibition and we understand that the requirements of the DGRs have been fully executed by Green Bean Design.

A comprehensive assessment of landscape character and values has been undertaken and is detailed in the Sapphire Wind Farm LVIA report (**Appendix 7**, Sections 5, 6 and 7).

An assessment of community and stakeholder values have been undertaken and are detailed in the Sapphire Wind Farm LVIA report (**Appendix 7**, Section 15) and **Chapter 6** Stakeholder Consultation.

The mapping of landscape character areas is not a requirement of the DGRs.

Submission Statement (26712-2)

"...these LCAs [Landscape Character Areas] are not mapped and it is not clear where each of these areas are located in order to compare the analysis results."

Response: The LCA's are clearly identified and fully described in Section 7 Landscape Character Areas and Sensitivity Assessment within the LVIA report (**Appendix 7**).

Tables 9 to 13 within the Sapphire Wind Farm LVIA report provide an opportunity for a direct comparative analysis of the LCA's.

Submission Statement (26712-3)

"There is also no reference to landscape values as expressed by the community or stakeholders."

Response: Please refer to the response to Submission Statement 26712-1 regarding landscape values as expressed by the community or stakeholders.

Submission Statement (26712-4)

"...it is not apparent if this rating [medium] influences the assessment of the 'Overall Visual Impact'."

Response: The LCA ratings are taken into account in the assessment of overall visual impact as noted in Section 8 Visual Impact Assessment Criteria and Matrices (**Appendix 7**).

Submission Statement (26712-5)

"There is a lack of explanation in the methodology as to how the 'Number of Viewers' criteria has been determined. The criteria, ranging from 'very low' <100 people per day through to 'high' >500 people per day, seem to be very broad for rural areas. In our opinion, this results in the sensitivity of the residents being underestimated in the assessment and may contribute to an overall lower visual

impact rating...

If a finer breakdown of categories for the number of views was to be combined with the landscape character values this may provide a more accurate assessment."

Response: The criteria applied to the potential number of viewers within the Sapphire Wind Farm 10 km viewshed is both appropriate and applicable to the LVIA conducted for Sapphire Wind Farm, as outlined in **Chapter 8** Landscape and Visual Impact Assessment.

With specific reference to the Danthonia viewpoint Green Bean Design notes that if the number of viewers were determined as high (as opposed to medium), the outcome of a low to moderate visual impact would still result when the distance between this view point and the wind turbines is taken into account.

Submission Statement (26712-6)

"The viewer sensitivity is divided into seven categories, the highest sensitivity being residential properties the lowest being industry. There is no explanation within the methodology as to how these categories were arrived at and the broad divisions mean that single residence properties are rated with the same sensitivity as the Danthonia property...

View locations should therefore extend beyond the immediate surrounds of the buildings to other activity areas such as the recreational dam, the cemetery and Swan Peak."

Response: The categories for view location sensitivity have been broadly adapted from the *Guidelines for Landscape and Visual Impact Assessment published by the British Landscape Institute and Institute of Environmental Assessment (1995).*

The categories included in the Sapphire Wind Farm LVIA (**Appendix 7**) were determined and adopted to reflect the type of receptors as well and the nature of their activities within the landscape surrounding the proposed Sapphire Wind Farm.

The LVIA report included (in order of high to lower sensitivity):

- Residential properties
- Pedestrians (recreational)
- Public recreation space
- Rural employment/farming
- Motorists
- Commercial business
- Industry

The Sapphire Wind Farm LVIA report noted the Danthonia view location (R105) as comprising residents, employees or visitors (with facilities for medical, school, workshop and meeting hall activities). In this regard a number of view locations of varying sensitivity occur at this location, and include residential dwellings that have the same sensitivity rating to other residential dwellings within the Sapphire Wind Farm viewshed. An overall view location sensitivity for all view categories was determined as high (although a number of areas within Danthonia, including those for commercial activities, are considered as lower sensitivity).

The Sapphire Wind Farm LVIA report does not address broader landscape areas within private property that may be accessed and used for a variety of activities by owners or residents; however

the report acknowledges that "*the Sapphire wind farm will have the potential to be visible to people engaged in predominantly farming or recreational activities from both public and private land, where views toward wind turbines may occur from surrounding and non-associated rural areas. Ultimately the level of visual impact would depend on the type of activities engaged in as well as the location of the activities together with the degree of screening provided by local landform or vegetation within individual properties*".

It is highly unlikely that the Sapphire Wind Farm would preclude any existing rural activities undertaken within the broader landscape area within the Danthonia property.

Submission Statement (26712-7)

"Danthonia should also be assessed in the second category [for view location sensitivity], Pedestrians (recreational)."

Response: The category for pedestrians (recreational) is intended to apply to public rights of way and is not intended to address broader landscape areas within private property that may be accessed by owners or residents.

The LVIA report (**Appendix 7**) acknowledges that *"the Sapphire wind farm will have the potential to be visible to people engaged in predominantly farming or recreational activities from both public and private land, where views toward wind turbines may occur from surrounding and non-associated rural areas. Ultimately the level of visual impact would depend on the type of activities engaged in as well as the location of the activities together with the degree of screening provided by local landform or vegetation within individual properties".*

Submission Statement (26712-8)

"These divisions [levels of visibility] are quire broad and there does not appear to be an explanation as to how these levels of visibility have been determined. It would seem more accurate to assess the 'level of visibility' based on the percentage of the view which is affected by the proposed turbines rather than the number of turbines."

Response: In Green Bean Design's professional opinion, as well as experience gained from the preparation of a number of wind farm visual impact assessments in New South Wales, it is more accurate to assess the level of wind turbine visibility by direct reference to the number of turbines visible as well as the degree to which the wind turbines may be visible. Levels of visibility are illustrated within the Zone of Visual Influence diagrams included as Figures 4 to 9 within the LVIA report (**Appendix 7**).

Calculating levels of visibility based on a 'percentage of view' methodology for wind farm projects has a number of inherent difficulties. These include:

- The total field of view to be calculated as a percentage. As the human body (and our field of view) can rotate through 360 degrees – should this determine the potential field of view?
- Wind turbines may be visible in clusters or as individual structures separated by a clear visible gap. What is an acceptable distance between wind turbines that would not be factored into the percentage of view occupied by wind turbines?
- Would a 'percentage of view' methodology also incorporate the vertical human field of view, and if so, how would this be defined?

- If a 'percentage of view' methodology were to be based on the physical space occupied by a wind turbine relative to the surrounding view, would this not underestimate the level of visibility given the physical appearance (slender profile) of a wind turbine structure?

Given the above, the Proponent and Green Bean Design do not believe that a 'percentage of view' calculation would provide a more accurate assessment to determine levels of visibility.

Submission Statement (26712-9-)

"There is no explanation in the GBD report of how or why each of these viewpoints were chosen. Only one viewpoint was selected for Danthonia."

Response: Viewpoints comprise all residential dwellings identified within a 10 km offset from the proposed Sapphire Wind Farm turbines as well as local roads and highways, public lookouts, parks and gardens.

The Danthonia viewpoint incorporated a medical centre, school, accommodation, workshops and meeting hall, which are all located in excess of 8 km from the proposed wind turbines.

Submission Statement (26712-10)

"PM8 has been photographer on a relatively cloudy day with a grey sky which seems to lessen the appearance of the turbines against the sky. Good practice would typically convey the worst-case scenario which in this case would be a day with clear sky, as depicted in PM7."

Response: One of the most commonly referenced best practice guidelines for wind farm visual assessment (photomontage) work are the *Scottish Natural Heritage Visual Representation of Windfarms Good Practice Guidance*.

These best practice guidance state that "*whatever the weather and light conditions, the minimum requirement is for photographs to clearly show the proposed wind farm site and its context and, if they are to be used as the basis for photomontage, they should be able to have wind turbines clearly illustrated upon them.*"

The PM8 photo location is approximately 8.4 km from the nearest proposed Sapphire Wind Farm turbine and that achieving a clear illustration is restricted by practical limitations to photographic and printing outputs.

Whilst every effort is made to schedule site inspections to coincide with periods of clear weather, this is not always possible within existing project timeframes. Whilst some photographs were taken in overcast conditions, others included in the visual impact assessment were taken on clear days. Overall the panorama photographs illustrate a range of typical weather conditions (other than rain and fog) likely to be experienced in the locality of the proposed Sapphire Wind Farm.

Submission Statement (26712-7)

"It is not readily apparent how the range of criteria in the 'Residential View Location Matrix' (Table 17) combine to determine the overall visual impact assessment rating in the final column.

Table 15 the 'Visual Impact Criteria Matrix' appears to combine only three of the five criteria set out in Table 17 and it is therefore unclear how the other two criteria (view location sensitivity and

visibility rating) combine to result in the overall visual impact evaluation."

Response: The proposed Sapphire Wind Farm LVIA report notes that *"the visual impact criteria matrix outlined in Table 15 is used as a guide to determine levels of visual impact. The determination of visual impact for each view location is also considered against other factors, which include the sensitivity of the view category and overall visibility of the wind farm from surrounding view locations".* The criteria for View Location Sensitivity are set out in Table 16 within the LVIA report.

The criteria for Visibility Rating (levels of visibility) are set out at the conclusion of Section 4 Viewshed, Zone of Visual Influence and Visibility within the LVIA report (**Appendix 7**).

Submission Statement (26455-3)

"The number turbines visible will be 107!! Which we believe will place a huge impact on the rural setting that we call home."

Response: The LVIA report (**Appendix 7**) has assessed and determined that a high visual impact will result from the construction of the Sapphire Wind Farm (and specifically turbines within the Sapphire Cluster) for the 'Krystal Blue' residential dwelling.

Submission Statement (26455-6)

"Our son suffers from a number of problems…It is not only the noise but the constant flickering and spinning which can affect his focus and in turn will cause his safety to be at risk."

Response: The LVIA addresses issues related to shadow flicker (Section 11 Shadow Flicker Assessment Summary); however, neither Green Bean Designs or the Proponent are not qualified to assess individual instances of existing medical conditions that may or may not be exacerbated by the proposed Sapphire Wind Farm.

With regard to the issue of shadow flicker, the LVIA report determined that *"given the low flicker frequency associated with the Sapphire Wind Farm wind turbines, which falls below the range suggested by Epilepsy Action Australia as a potential trigger for photosensitive epileptic seizures; it is unlikely that the Sapphire Wind Farm wind turbines would present a risk to people with photosensitive epilepsy".*

It is noted that additional information regarding the potential impact of shadow flicker has been provided by the Australian Government, National Health and Medical Research Council, *Wind Turbines and Health, A Rapid Review of the Evidence July 2010*.

The Rapid Review (2010) states that according to the Environment Protection and Heritage Council (EPHC 2009), *"there is negligible risk of seizures being caused by modern wind turbines for the following reasons:*

- *less than 0.5 % of the population are subject to epilepsy at any one time, and of these, approximately 5 % are susceptible to strobing light;*
- *most commonly (96 % of the time), those that are susceptible to strobe lighting are affected by frequencies in excess of 8 Hz and the remainder are affected by frequencies in excess of 2.5 Hz. Conventional horizontal axis wind turbines cause shadow flicker at frequencies of around 1 Hz or less;*

- *alignment of three or more conventional horizontal axis wind turbines could cause shadow flicker frequencies in excess of 2.5 Hz; however, this would require a particularly unlikely turbine configuration".*

Environment Protection and Heritage Council (EPHC), (2009): *National Wind Farm Development Guidelines – Public Consultation Draft. Commonwealth of Australia, Adelaide*.

While the Proponent acknowledges that some individuals can be more sensitive to Project related impacts than others, the Proponent does not believe that, based on the information available at the time of preparing the EA, the Project will result in adverse impacts to members of the community surrounding the Project Site.

The Proponent has had several discussions with the family in order to determine the most suitable means of allowing the wind farm's construction without potentially disadvantaging the family in any way. The Proponent has offered to take the family to a wind farm in order to assist in acclimatising the landowner's son to the potential change brought by constructing a wind farm. The Proponent is committed to assisting the family in ensuring there is no adverse impact on the enjoyment afforded to the landowner's son once the wind farm has been constructed.

Submission Statement (26455-8)

"Our property is the neighbouring/closest to the wind farm which we will have the most visual...impact placed upon us".

Response: The LVIA report has assessed and determined that a high visual impact will result from the construction of the Sapphire Wind Farm (and specifically turbines within the Sapphire Cluster) for the Krystal Blue residential dwelling.

Submission Statement (26858-6)

"So, what is it ..... 56, 60 or 113 wind turbines visible from our residence????"

Response: The photomontage from PM7A Spring Creek (located in **Volume 2**, Sapphire Wind Farm EA and the LVIA report (**Appendix 7**) indicates that a total of 60 wind turbines would be visible from this photomontage location.

Submission Statement (26858-9)

"The siting of 113 wind turbines south east of our residence, by Wind Prospect CWP Pty Ltd, Sapphire Wind Farm will visually impact on us and our property dramatically....this is a major concern. The closest turbine to be located 1.80km east of our existing residence. The aesthetics and ambience of our property will be ruined...

R26 View Location sensitivity High and Overall Visual Impact for '80m' and '110m' layouts - high."

Response: The LVIA report (**Appendix 7**) has assessed and determined that a high visual impact will result from the construction of the Sapphire Wind Farm (and specifically turbines within the Sapphire Cluster) for the Spring Creek residential dwelling.

Submission Statement (26858-10)

"We expect the proposed turbines to have aviation lights on them due to our close proximity to Inverell and Glen Innes airports. This will eliminate any astrological viewing in that direction...our night sky will be visually impacted."

Response: The LVIA notes that *"the Sapphire wind farm may require obstacle marking and lighting at night time and during periods of reduced visibility. The requirement for lighting would be subject to the advice and endorsement of the Civil Aviation Safety Authority (CASA) and Department of Infrastructure and Transport (DIT). CASA is currently undertaking a safety study into the risk to aviation posed by wind farms to develop a new set of guidelines to replace the Advisory Circular with regard to lighting for wind turbines that was withdrawn by CASA in mid 2008".*

"However, in order to ensure that a full assessment was carried out, the Proponent proposes to commission an independent aviation safety expert to conduct an Aeronautical Impact Assessment, to first determine the risks posed to aviation activities by the wind farm. If recommended by the Aeronautical Impact Assessment expert, an Obstacle Lighting Assessment would be undertaken to stipulate the turbine lighting layout which would mitigate any risks to aviation. The outcomes of the Aeronautical Impact Assessment and the Obstacle Lighting Assessment would then be submitted to CASA for their comment".

The Proponent commissioned The Ambidji Group Pty Ltd to conduct an Aeronautical Impact Assessment, Qualitative Assessment and Obstacle Lighting Review as found in **Appendix 15**. On receipt of Development Approval for the Project, the Proponent will consult with CASA and DIT on the issue of obstacle lighting as noted in Statement of Commitment 040 and shielding provisions Statement of Commitment 041.

Submission Statement (26858-12)

"There is an old house site on our property...this old site would be approximately 1.42 kms from the nearest wind turbine. We have thought that in the future we would build a new house on this old site."

Response: Please see response to Submission Statement 26858-12 above.

Submission Statement (26858-24)

"We do not consider wind turbines to be aesthetically beautiful or elegant. We do not find "*the motion of the slow turning blades to be peaceful and feel that wind turbines make a positive contribution to the landscape*" (www.sapphirewindfarm.com.au/process/development/aesthetics)."

Response: The full text from the Wind Prospect CWP Sapphire Wind Farm website is included below:

(www.sapphirewindfarm.com.au/process/development/aesthetics)

"Aesthetics

Many people consider wind turbines to be elegant. They find the motion of the slow-turning blades to be peaceful and feel that wind turbines make a positive contribution to the landscape. However, not everyone agrees with this perspective and as such we recognise that turbines are not suitable to all geographic locations. We analyse any visual concerns that arise through close liaison with communities, landowners and local authorities.

As part of the design process Wind Prospect conducts comprehensive studies using specialist software to design an optimum site layout. Computer modelling techniques provide a realistic impression of the views that will be seen from various local vantage points. These photo montages are the most accurate representation of how the wind farm will look to the human eye. The final stage in this process is for a landscape analyst to evaluate any impact the turbines may have on the local community."

The statement does not assume that all people will find wind turbines to be elegant or that the motion of slow turning blades to be peaceful, making a positive contribution to the landscape.

Submission Statement (26858-Appendix 4)

Inverell Shire Council Development Control Plan Wind Power Generation 2009.

Response: Green Bean Design has reviewed the *Glen Innes Severn and Inverell Shire Council's Development Control Plans (DCP) – Wind Power Generation 2008 and 2009* respectively and GBD confirm that the Sapphire Wind Farm LVIA addresses a number of the key DCP requirements with regard to consideration of visual assessment, including provision for:

- Assessment of visual impact and scenic value;
- Assessment of cumulative impact;
- Viewshed mapping; and
- Photomontages.

Submission Statement (26858-Appendix 5)

Adverse Impacts from Wind Turbines in Waubra, Australia and surrounding area. Impact on view and aesthetics of rural environment.

Response: The opinions expressed in Appendix 5 of Submission 26858 do not appear to have any direct relevance to, or bearing upon, the proposed Sapphire Wind Farm project.

Submission Statement (26858-Appendix 6)

Inquiry into rural wind farms. Submission No.64 Ms Beth White (cumulative impact for visual amenity)

Response: The opinions expressed in Appendix 6 of submission 26858 do not appear to be directly relevant the proposed Project. It is noted that this submission was originally submitted to the New South Wales Government's Rural Wind Farm Enquiry. However, the reference to cumulative visual impact for visual amenity is noted.

A detailed cumulative visual impact assessment was carried out and is included in Section 9 Cumulative Visual Impact Assessment within the LVIA report.

Submission Statement (26856-7)

"On the basis of the matters raised Council's suggests that a more detailed justification, in respect to the impacts on this property [Krystal Blue and Spring Creek] should be requested, and assessed, prior to the Department making a final decision on the project."

Response: The proposed Sapphire Wind Farm LVIA report assessed and determined a high visual impact for both Krystal Blue and Spring Creek residential properties. A more detailed justification in respect to the visual impacts on these properties would not alter the determination of a high visual impact.
Submission Statement (26856-10)
"Affected land owners Lot 2 & 3 DP 589446 – "Krystal Blue" – 1522 Woodstock Road...Visual impact (107 turbines would be visible)..."
Response: Please refer to response to Submission Statements 26455 - 3, 6 and 8 regarding the visual impact at Krystal Blue.
Submission Statement (26856-11)
"Affected land owners Lot 44, 45 & 189 DP 750121 – "Spring Creek" – 2898 Kings Plain Road...Visual impacts (113 turbines would be visible); Aviation lights would hamper view of night sky..."
Response: Please refer to response to Submission Statements 26858 – 6, 9, 10, 12, 24, Appendix 4, Appendix 5 and Appendix 6 regarding the visual impact at Spring Creek.

Chapter 9: Noise Assessment

Submission Statement (27297-3)
"That Council objects to the location of any wind turbines which do not comply with the South Australian Environment Protection Authority's Wind Farms – Environmental Noise Guidelines."
Response: The EA for Sapphire Wind Farm has assessed the noise impact from four indicative turbine models which are representative of quieter to noisier machines available on the market today. The assessment has been carried out using the worst case site layout, representing the most number of turbines possible. The noise assessment has indicated that there will be one marginal exceedance at the Krystal Blue property, and one minor and one major exceedance at the Spring Creek property, depending on which of the turbines models is considered (see Table 9.3, p.146 of **Volume 1**). However, should the Gamesa G87 wind turbine be selected for the site, there are no exceedances at either property. As turbine selection is based on a competitive tendering approach following planning consent, it is not possible to fix, and therefore calculate the noise impact precisely, the turbine model which will be used with the Project. Removal of wind turbines prior to consent may result in the removal of turbines which would otherwise be compliant once the final turbine model is known. The Proponent is prepared to make the commitments to ensure that there are no adverse impacts post-consent, as shown in Statement of Commitment 012, to ensure that it is compliant with the South Australian Environment Protection Authority's *Wind Farms – Environmental Noise Guidelines* (2003).
Submission Statement (26858-14)

"Our concerns are for the extremely low frequency sound waves emitted by wind turbines that vibrate through the air causing all terrible types of illnesses."
Response: There are currently no documented health impacts from low frequency noise generated by wind turbines, according to current research on the matter to date (see Section 9.4.2, **Chapter 9** Noise Assessment).

Chapter 10: Flora and Fauna Assessment

Refer to **Section 4** of this report for the specific flora and fauna response to the OEH submission.

Submission Statement (26858-16)
"How will this development impact on bird life in the vicinity of our property?"
Response: The impact on bird species is detailed in **Chapter 10** Flora and Fauna Assessment and additional information is provided in **Section 4** of this report.
Submission Statement (26858-19)
"Are we going to find that wind turbines cause invasion to our pasture by distributing invasive and noxious seed species?"
Response: The Proponent has a detailed weed management programme on landowner properties to minimise the spread of noxious weeds and to eradicate any weeds introduced during the construction stage. Statement of Commitment 019 outlines the Proponent's intentions to ensure weeds are not introduced to the environment and are dealt with for the duration of the wind farm's life through the creation of a Weed Management Plan.
Submission Statement (26726-1)
"I'm concerned about the 116 ha of EEC (ribbon gum) that will be cleared for this project. And despite consultants/ your assurances that this impact will be "offset" this impact is not acceptable in 2012 for a supposed "green project". Aerial photographs of the project area reveal cleared land all around this project area if you are a truly green project wouldn't you use these areas that have already been cleared?"
Response: Although there appears to be a significant amount of cleared land within the site, such cleared areas do not necessarily coincide with the upland areas and hilltops where wind turbines are to be sited. The Proponent has designed the project to minimise the level of impact on ecological communities following the avoid, mitigate, manage or offset approach and is committed to minimising all impacts (Statement of Commitment 020). Unfortunately it is not possible to avoid all impacts across the site and some loss of ecological communities will occur. Wind turbines have been positioned to avoid significant stands of trees; access tracks follow existing tracks where possible and likewise avoid treed areas where not (Statement of Commitment 093). To compensate for the loss of habitat, the Proponent as put forward an offset strategy to preserve the equivalent impacted communities elsewhere, in perpetuity (Statement of Commitment 021). These offset areas are significantly greater than the level of impacted habitat and ensure that no

further developments or farming will affect them. By using offsets, we ensure that key developments like wind farms can proceed whilst preserving ecological communities elsewhere for generations to come.

Submission Statement (26726-2)

"My main concern is the clearing of wood land and older trees (the core 75 ha) as these treed areas are rare as on table lands and are not only hard to replace (or off set) but are good habitat for threatened species like the koala, black throated finch or square tailed kite. The negatives of not clearing this land would be made up by the actual Green credentials that the project would gain."

Response: Please see response to Submission Statement 26726-1 above.

Submission Statement (26726-3)

"please include following

1. Adopt the 6 m road width option
2. Please review the 75 ha of "core mature" forest earmarked to be cleared for this project to ensure there are no alternatives to clearing theses areas of prime threatened species habitat."

Response: The widths of the access tracks will be determined post-consent during the pre-construction phase of the project, once final turbine selection is known. The Proponent has calculated worst-case impact in preparing the EA and anticipates reducing the road widths to 6 m with passing bays prior to construction and in consultation with the preferred construction contractor.

The Proponent, working with its ecological consultant, has ensured that the wind farm layouts have the least amount of environmental impact. With regards to the removal of trees, pre-construction surveys will determine which trees are hollow-bearing and have the potential to contain species requiring relocation. Pre-clearance surveys will be undertaken to ensure that these species are relocated prior to the removal of trees, ensuring that only the trees themselves are removed from the site (Statement of Commitment 020).

Submission Statement (26970-1)

"We would strongly suggest that any replanting, rehabilitation or landscape planting to be undertaken on the project uses locally endemic native species. This could be undertaken using a local provenance seed bank of vegetation communities in the area."

Response: The re-introduction of vegetation to the site due to replanting or rehabilitation will be done using native species appropriate to the region. Weeds will also be controlled during and post construction to ensure that native species are given full opportunity to re-colonise affected areas. Please see Statement of Commitments 019 and 020.

Submission Statement (26858-17)

"How will wind turbines affect dung beetles and pasture pollution?...

What studies have Wind Prospect CWP Pty Ltd conducted to ensure our dung beetle population will

not be adversely affected by wind and vibration, created by the wind turbines of the proposed Sapphire Wind Farm?"
Response: Dung beetles are not listed on any protected species list and have no specific protection status in NSW. Eco Logical Australia contacted the Australia Museum, Sydney, regarding the potential impact of wind farms on Dung Beetles, specifically wind and vibration as was raised in the submission. They were unaware of any potential impacts from the operation of a wind farm.
Submission Statement (26858-18)
"What studies have Wind Prospect CWP Pty Ltd done in relation to the affects wind turbines are going to have on both species of bees? How will this affect the essential pollination of our land and pasture, and commercial apiarists?"
Response: Common bee species are not listed on any protected species list and have no specific protection status in NSW (the only bee species listed under the *EPBC Act* is *Neopasiphae simplicior*, which is only found in Western Australia). The proposed wind farm layout has been subject to many iterations to avoid impact to woodland, large trees and hollow bearing trees. While some trees will be cleared to construct the wind farm, the EA explains measures taken to avoid and buffer hollow-bearing trees and woodland. There is no known impact on bee populations from the operation of a wind farm on or within the vicinity of known bee colonies.

Chapter 11: Cultural Heritage Assessment

Submission Statement (26970-3)
"It is recommended that for future site surveys or training for personnel on procedures relating to cultural heritage, local representatives of either Anawain or Glen Innes LALC's are involved."
Response: Requests were made during the preparation of the EA for Aboriginal consultants to assist with the field survey and assessment work on the Cultural Heritage impacts of the Project. This included a request to the Anaiwan and Glen Innes Local Aboriginal Land Councils (LALC's). At the time, no individuals made themselves known to our consultant to assist with the field work therefore it was appropriate to use Aboriginal representatives from the next-closest region. The Proponent is prepared to ensure that local representatives of the aforesaid LALC's are aware of any work involving the Project in the future, but cannot be held responsible should the LALC's fail to come forward to assist with the Project. This forms the basis of the new Statement of Commitment 109.

Chapter 12: Traffic and Transport Assessment

Submission Statement (25540-2)
"Another problem to be overcome is the use of very badly maintained and very narrow roads by the heavy transport that will be required for the erection etc of the turbines. How will the extra traffic impact on our community?"

Response: The Proponent will undertake dilapidation survey (Statement of Commitment 033) of all public roads to be used during the construction and operation stages of the project. Where public roads are deemed to be too narrow, steep or obstructed, then the Proponent will consult with the local councils about the works necessary to allow for the construction of the wind farm. Certain areas, such as creek crossings, may require improvements such as bridges or culverts to make them passable (Statement of Commitments 069 and 070), improving the all-weather access of the site to the benefit of residents in the area. All roads used by the Project will be maintained and upgraded (Statement of Commitment 035) where necessary to bring them to a standard condition which allows the safe passage of vehicles.

Chapter 12 Traffic and Transport highlights the number of vehicle movements which are likely to occur during the construction phase of the development, as well as during the operational life of the wind farm. Increased vehicle movements are impossible to avoid, but appropriate mitigation measures will be put in place to ensure that disturbance is kept to a minimum. Construction is predicted to take 12 to 18 months, after which the volume of traffic using the local roads will reduce significantly. Please refer to Statement of Commitments 031, 034 and 072 for more information.

Submission Statement (26455-5)

"The infrastructure of the main roads leading to the proposed site of the wind farm we feel would be inadequate to deal with the amount of heavy equipment and traffic coming through as it is hardly coping with everyday local traffic."

Response: Please see response to Submission Statement 25540-2 above.

Submission Statement (26856-1)

"Once the Proponent has established the exact haulage routes they would be required to obtain the necessary permits from the relevant road authority as they have identified in their assessment."

Response: The Proponent is committed (Statement of Commitment 030) to discussing the impact on the local public road network with both Glen Innes Severn and Inverell Shire Councils to ensure that the impact of the construction and operation of the wind farm is kept to a minimum. The Proponent will work with both Councils to ensure that roads are upgraded and maintained in a safe and appropriate condition throughout the construction phase and into the operational phase of the wind farm. All necessary permits will be obtained by the construction contractor to enable them to carry out the upgrades to the road network affected by the development.

Submission Statement (26856-2)

"During construction a regular inspection and maintenance program would also need to be conducted. A weekly inspection report would need to be submitted to Council with an agreement to produce specific maintenance where required. This would be a suitable option to resolve this issue."

Response: The Proponent has committed (Statement of Commitment 033) to the ongoing maintenance of the road network during the construction phase of the Project. The Proponent is prepared to commit to quarterly inspections of public roads during the construction period, together with a process of reporting by construction workers of any areas of deterioration within each

quarterly window. Maintenance will be carried out on areas identified as not meeting Council and/or road safety standards. This forms the basis of the new Statement of Commitment 113.

Chapter 13: Aviation Assessment

Submission Statement (35959-1)
Identify any aerodrome within 30 km of the boundaries of the proposed wind farm and consult with the aerodrome operator to determine any impact on Obstacle Limitation Surfaces at such aerodromes. Penetration of these surfaces is likely to pose a hazard to normal aviation operations at the aerodrome. No regulated aerodromes have been identified within the 30 km boundaries of the proposed wind farm.
Response: As outlined in the Civil Aviation Safety Authority (CASA) submission, no regulated aerodromes have been identified within 30 km of the boundaries of the wind farm, therefore no further action is required.
Submission Statement (35959-2)
Consult with Airservices Australia (AsA) to have them assess any potential impact on en-route lowest safe altitude, instrument approach procedures at aerodromes, navigational aids, communications facilities or surveillance facilities.
Response: Consultation was carried out with Airservies Australia as outlined in **Chapter 13** Aviation Assessment of **Volume 1**. AsA has informed the Proponent that the Project will have no adverse impacts on their operations.
Submission Statement (35959-3)
Contact the Aerial Agriculture Association of Australia (AAAA) to advise him of the proposal and gain comment on the potential hazards to aerial application and related operations in the area.
Response: Consultation was carried out with the AAAA as outlined in **Chapter 13** Aviation Assessment of **Volume 1**. AAAA's opposition to wind farms is well known but all issues outlined in the AAAA's response to the Proponent's enquiries are addressed in the aforementioned chapter.
Submission Statement (35959-4)
Aircraft are permitted to fly as low as 500 ft (152 m), and certain operations are permitted to fly below this height. Wind turbines with a maximum blade tip heights of approximately 150 m above ground could be a hazard to aircraft traversing the area. It is recommended that the proponent take this into consideration when deciding whether or not the wind farm should be obstacle lit or otherwise marked.
Response: The Proponent has committed to reviewing the need for obstacle lighting once final turbine selection is known, specifically height to nacelle and blade tip, as outlined in Statement of Commitments 037 to 041.

Submission Statement (35959-5)
If the proponent should chose to provide obstacle lighting to indicate the presence of this Wind Farm at night or in poor visibility, to ensure consistency and avoid any confusion to pilots, the obstacle lighting installation should conform with CASA Manual Of Standards (MOS) Part 139, paragraph 9.4.3.4A.
Response: The Proponent has modified Statement of Commitment 041 to specify that obstacle lighting if required will be in accordance with the CASA Manual Of Standards (MOS) Part 139, paragraph 9.4.3.4A.

Chapter 14: Communications Assessment

No responses received.

Chapter 15: Electromagnetic Fields

No responses received.

Chapter 16: Fire and BushfireAssessment

Submission Statement (26858-21)
"Bush fires are a concern as the proposed Sapphire Wind Farm development would be situated not far from densely forested areas including 5kms from Kings Plain National Park."
Response: The EA contains a detailed assessment of bushfire risk and mitigation. Please refer to **Chapter 16** Fire and Bushfire of **Volume 1** and **Appendices 19** and **20** of **Volume 3**.

Chapter 17: Water Assessment

Submission Statement (26974-1)
"The Proponent must obtain relevant licenses to the satisfaction of the NSW Office of Water under the *Water Act 1912* or *Water Management Act 2000* (as applicable) for all activities which intercept or extract groundwater prior to commencement of these activities."
Response: The Proponent, as contained in Statement of Commitment 077, will ensure that all required licences are obtained prior to commencement of works which involve the interception or extraction of groundwater during the construction and operation of the Project.
Submission Statement (26974-2)
"The Proponent must obtain relevant licenses/permits to the satisfaction of the NSW Office of Water under the *Water Act 1912* or *Water Management Act 2000* (as applicable) for the extraction and use of surface water prior to commencement of these activities."
Response: The Proponent, as contained in Statement of Commitment 077, will ensure that all required licences and/or permits are obtained prior to commencement of works which involve the

extraction or use of surface water during the construction and operation of the Project.
Submission Statement (26974-3)
"The Soil and Water Management Plan will be provided to the NSW Office of Water for review prior to project commencement."
Response: The Proponent will provide the NSW Office of Water with a draft copy of the Soil and Water Management Plan for review, prior to completion, as outlined in amended Statement of Commitment 072.

Chapter 18: General Environmental Assessment

Submission Statement (26970-2)
"The most recent soils survey was the "Reconnaissance Soil Landscape Mapping for the Border Rivers Gwydir Catchments"....We recommend that the Proponent obtain this information as it is much more comprehensive in its content to the 1977 reference. In particular, the soil landscape information provides detailed information on limitations of the soil and suitability for certain land use."
Response: An updated map showing the more recent soil survey analysis is shown in **Figure 6**. The Proponent will ensure that detailed soil data and the potential for soil erosion is taken into consideration during the preparation of the Construction Management Plan, as shown in the amended Statement of Commitment 033.

Chapter 19: Socio-Economic Assessment

Submission Statement (25474-1)
"The NSW Ministry of Health relies on the guidance provided by the NHMRC Public Statement on Wind Turbines and Health, July 2010, which states "there is currently no published scientific evidence to positively link wind turbines with adverse health effects". Therefore, providing the wind turbines are installed with reference to appropriate planning guidelines and controls we do not believe there are health issues to be addressed from this development."
Response: The Proponent has designed and assessed the Sapphire Wind Farm in accordance with all relevant planning regulations in place at the time of submission, as outlined in **Chapter 5** Planning Context.
Submission Statement (25537-2)
"The bigger the eyesore the more environmental damage they cause the more they will be compensated."
Response: The Proponent is directly compensating the involved landowners for the use of their land in the development of the Sapphire Wind Farm. Similarly, the Proponent is committed (Statement of

Commitment 104) to providing a Community Enhancement Fund to benefit the wider community for the impact the Sapphire Wind Farm will have beyond the involved landowner properties.

Submission Statement (25540-3)

"Our farm is our major asset and if the value of the land is to be downgraded by the adjacent wind farm, I would make a suggestion that the company reimburse landholders so affected."

Response: Section 19.1 of **Chapter 19** Socio-Economic Assessment of the EA covers the potential impact of wind turbines on land value, including recent independent reports exploring the matter. The most recent report by the NSW Valuer General *(Preliminary Assessment of the Impact of Wind Farms on Surrounding Land Values in Australia, August 2009*) investigated eight wind farms, two in NSW and six in Victoria.

"The main finding was that the wind farms do not appear to have negatively affected property values in most cases. 40 of the 45 sales investigated did not show any reductions in value. Five properties were found to have lower than expected sale prices (based on a statistical analysis). While these small number of price reductions correlate with the construction of a wind farm further work is needed to confirm the extent to which these were due to the wind farm or if other factors may have been involved."

This section also states that many factors can influence the perceived and actual property value. In most rural areas the main determinant for property and land values is the agricultural productivity of the land, both to sustain animals and to grow crops. Such productivity is not linked to the development of a wind farm in the area, but is dependent on the innate quality of the land and the farming practices used in operating an agricultural business upon it.

The Sapphire Wind Farm has assessed the potential visual and noise impact on the surrounding area and deemed them to be acceptable within current guidelines. There is no reason to presume that the wind farm will affect the market value of any nearby properties.

Submission Statement (26455-4)

"There are tourists that visit this particular area to go sapphire fossicking not to see and hear wind turbines, so this will also most certainly impact on local tourism within the Inverell area.

Response: Tourism is covered in detail in **Chapter 19** Socio-Economic Assessment. The Proponent is not aware of any fossicking sites within the immediate vicinity of the wind farm which would be adversely affected by the project. The construction and operation of the Sapphire Wind Farm will have no direct or indirect impacts on fossicking activities within the local area. Similarly, there are no predicted impacts on general tourism from the wind farm, given the main land use activity in the area is agricultural in nature.

Evidence suggests that the presence of a wind farm can increase tourism potential due to the interest such developments create. A number of existing Australian wind farm developments cater for tourist visitation, creating visitor centres, display material and dedicated lookout points. With no direct impact on any tourism activities within the Glen Innes Severn and Inverell Shire Council areas, the added feature of a wind farm will only further enhance interest to people visiting or passing through the region.

Submission Statement (26455-7)
"We also believe the resale of the property will be affected by the wind farm..."
Response: Please see response to Submission Statement 25540-3 above.
Submission Statement (26858-15)
"As beef farmers, fat lamb and lucerne hay growers our concerns are not knowing what effect the wind turbines (113 of them) will have on our pastures, cattle, sheep and crops.
Response: There are no known impacts from wind turbines on farm animals and agricultural productivity, based on the operation of wind farms installed globally for the past twenty years. No mention is made about the theoretical impacts on animals or crops in the EA, as this is not a requirement of the DGRs, and all associated guidelines and research papers are focused on human impacts. All components of the wind farm are designed to meet Australian and/or International Standards, with no risk to humans or otherwise.
Submission Statement (26858-20)
"We do not believe that it is fair or just for our land to be devalued, because Wind Prospect CWP Pty Ltd build a wind farm on the adjoining properties..."
Response: Please see response to Submission Statement 25540-3 above.
Submission Statement (26858-22)
"We had future plans to develop a site on our property which contains ruins believed to be a Cobb & Co changing station and wine shanty...If the Sapphire Cluster development goes ahead then those plans will have to eliminated as there is no way we could run a tourist business in or around that site."
Response: Please refer to the response to Submission Statement (26858-12) regarding the impact on the old house site.
Submission Statement (26856-3)
"In addition to the Community Fund, Council's Development Control Plan – Wind Power Generation 2009 requires the developer to make contributions in accordance with Council's Section 94 Contributions Plan."
Response: Please see response to Submission Statement 27297-1 regarding the provision of contributions with respect to Section 94 Contribution Plans.
Submission Statement (26611-1)
"I find it ludicrous that I have a Low impact exploration licence and if the Wind farm gets the go ahead they could dig upwards of 30,000 ton on this lease area alone and deny me access and the right to assay and of the rocks and dirt and this being in a potential mineral area this along needs amending."

Response: There is no mandatory requirement for the Proponent to provide access to the material which is excavated during the construction of the Sapphire Wind Farm. In principle, such a provision would slow the construction process down considerably and have a negative timing and financial impact on the Project. Material excavated on-site will need to be recycled as road gravel base, earthworks or in-fill and the quantities generated could not be tested in a timeframe which would not impede the construction of the wind farm.

An Exploration Licence requires an Access Agreement between the landowner and the Licence holder only, for which the Proponent has no input. Prior to construction, Sapphire Wind Farm has no objection to any exploratory activity being carried out on landowners property (this forms the basis of the new Statement of Commitment 111) but has made recommendations to landowners to consider potential impacts on turbine locations and infrastructure (as outlined in the letter attached with the submission). During construction, there is a clear Occupational Health and Safety risk should any exploratory activity be attempted whilst construction activities are underway. However, the Proponent does not suggest that exploration cease entirely but is suspended until construction has been completed.

During the operation of the wind farm, exploration can continue so long as it has no adverse impact on the wind farm infrastructure. This forms the basis of the new Statement of Commitment 112. Such infrastructure would be considered a 'significant improvement' under the Mining Act 1992 and the Proponent would require consultation before any activity was carried out in the vicinity of its property. The Proponent would also require that the wind farm infrastructure is not adversely affected by the exploration activities and the company undertaking such exploration have the necessary insurances in case of damage or accident.

Submission Statement (27324-1)

"The EA indicates that the proposal has the potential to negatively impact on mining and mineral exploration. However, details of the potential impacts of the installation of turbines and cabling on mining and exploration activities are not included in the EA."

Response: The Proponent is aware that there are a number of exploration licences and mining leases either active or historic in the local area, including on land associated with the wind farm. All companies with active licences/leases known at the time of preparing the Environmental Assessment were contacted for comment about the Sapphire Wind Farm, with limited success. As licences and leases are granted on a regular basis, contact has been attempted with known licence holders at the time of preparing the Environmental Assessment. The following table update outlines the communication issued and responses received:

Table 6.7: Exploration and Mining Licences overlapping the Project site

Company	Title(s)	Status	Response
Valbob Mining PL	ELA 4151	Application 4 Jan 2011	Response Received
	Correspondence		
	10/2/11	WPCWP letter	
	25/7/11	Email exchange	
	25/1/12	Email exchange	
	7/2/12	Email exchange	

Pan Gem Resources (Aust) PL	ALA 19	Application 22 Jul 1999	Response Received
	Correspondence		
	18/2/09	WPCWP letter	
	22/5/09	WPCWP letter	
	21/8/09	Reply from Pan Gem Resources	
	21/5/10	WPCWP letter	
Australian Gemstone Resources PL	ML 1492 EL 6982	Expires 16 Aug 2022 Expires 11 Dec 2011	Response Received
	Correspondence		
	22/5/09	WPCWP letter	
	31/12/10	WPCWP letter	
	11/2/11	WPCWP letter	
Eastern Feeder Holdings PL	ML 1374	Expires 13 Jul 2015	No Response
	Correspondence		
	18/2/09	WPCWP letter	
	22/5/09	WPCWP letter	
	21/5/10	WPCWP letter	
	31/12/10	WPCWP letter	
	11/2/11	WPCWP letter	
	29/3/11	WPCWP letter	
Inishowen Resources PL	EL 7374	Expired 20 Jul 2011	Response Received
	Correspondence		
	21/5/10	WPCWP letter	
	26/7/10	Call from Inishowen Resources	
	31/12/10	WPCWP letter	
	11/2/11	WPCWP letter	
Jesasu PL	AL 2 AL 14	Expired 14 Mar 2011 (Renewal Sought) Expires 9 Aug 2012	No Response
	Correspondence		
	18/2/09	WPCWP letter	
	22/5/09	WPCWP letter	
Parnosa PL	EL 7669	Expires 16 Dec 2012	No Response
	Correspondence		
	21/5/10	WPCWP letter	
	31/12/10	WPCWP letter	
	11/2/11	WPCWP letter	
Volcan Australia Corporation PL	EL 7301 EL 7302	Expired 23 Feb 2011 (Renewal Sought) Expired 23 Feb 2011 (Renewal Sought)	Response Received
	Correspondence		
	18/2/09	WPCWP letter	
	22/5/09	WPCWP letter	
	21/8/09	Reply from Volcan	
	21/5/10	WPCWP letter	
	31/12/10	WPCWP letter	
	11/2/11	WPCWP letter	

The most frequent type of mining is related to Group 6, which relates to gemstones including sapphires, which is most likely to occur on the lowland plains close to creeks and other drainage features. This places the mining away from the wind turbines which are located on the upper slopes and ridgelines, away from the lowland areas, so conflict is minimised.

Clearly, the construction of a wind farm and all associated infrastructure has the potential to sterilize the land for mining and mining-related activities. The construction of wind turbines, power lines and access tracks are fundamental components of a wind farm and cannot be easily removed without adversely affecting the operation or financial return of a project. Once the wind farm is constructed, the Project will class as a 'significant improvement' under the Mining Act 1992. This could require any current and future licence/lease holders to consult with the wind farm owner prior to undertaking any works which could impact on it.

However, the Proponent is aware that future mining activity may be necessary in and around the vicinity of the wind farm. So long as the wind farm owner is compensated for any direct or indirect impacts, such as the need to relocate or remove access tracks, power lines and wind turbines, including suitable remuneration for loss of future earnings, then there is no reason why mining should cease to occur.

Submission Statement (27324-2)

"I am advised that Valbob Mining Pty Limited (holder of Exploration Licence 7796) has raised concerns with the Department about the impact the turbines will have upon their ability to effectively explore the licence area. There are similar concerns with potential sterilisation of resources with regard to the proposed bio banking sites."

Response: Please see responses to Submission Statements 27324-1 and 26611-1 above regarding the impact of the wind farm's construction and operation on mining activity in the area.

It is the Proponent's opinion that any mining activity which has an impact on ecological communities will be faced with the same issue in relation to the provision of offset areas. The need to preserve suitable areas of ecological habitat in perpetuity, to offset against the construction of the wind farm, is a requirement of any development under the current planning regulations. Selection of offset areas follows the proximity principle, with areas closest to the point of impact having greater weight than those further away, to ensure as much like-for-like habitat is preserved as possible.

The Proponent has identified three properties which can provide this offset requirement, shown in **Figure 10.4A**. These areas have been selected due to their significant ecological communities and threatened species potential as listed under the *EPBC Act 1999*. As with the wind farm infrastructure, if subsequent identification of mineral resources is found within these offset areas, then any mining application would be required to assess the environmental impact on these properties. Given their suitability as offset areas, the significance on any impacts on these ecological communities would be high.

Submission Statement (27324-3)

"In accordance with the Director General's Requirements, the importance of the area for its mineral resources is not acknowledged."

Response: The Proponent acknowledges the importance of the area for mineral resources and has attempted to contact all companies with exploration licences or mining leases on which it has a potential impact at the time of preparing the Environmental Assessment. The current and historical importance of the area for mineral resources is outlined in **Chapter 11** Cultural Heritage.

Submission Statement (27324-4)

"The Resources & Energy Division considers it most probable that the turbines and cabling would be impediments upon drilling and geophysical surveys, both airborne and ground based. They would also be obstacles to any future mining. The Resources & Energy Division therefore insists that any turbines and associated cabling that are proposed to be emplaced over any identified resource or potential resource area be relocated to sites outside of those areas in order to avoid potential sterilisation of resources."

Response: Please see responses to Submission Statements 27324-1, 26611-1 and 27324-2 above regarding the impact of the wind farm's construction and operation on mining activity in the area.

Sapphire Wind Farm has avoided the placement of infrastructure in known mineral areas where mining is actively taking place. It is clearly impossible to relocate the wind farm infrastructure outside of *potential* mineral resource areas given the number of exploration and mining licences in the project area. The avoidance of active mining leases was fundamental in the design of the wind farm and should therefore not require any modifications to be made. Approximately 98 % of the Study Area in which the Sapphire Wind Farm is located is under some form of exploration licence. It is also inappropriate to prevent development on the premise there *may be* mineral resources located within the wind farm area.

The Proponent does not believe the turbines and cabling would be an impediment to ground and aerial-based survey work. Other than specific locations, surveying can take place in and around the wind farm area with only minor avoidance required of installed infrastructure. The wind farm operator has made a new commitment (Statement of Commitment 110) to ensure that such survey work can occur within the vicinity of the wind farm when the occasion requires it.

Submission Statement (27324-5)

"With regards to the bio banking areas, there are similar concerns with potential sterilisation of resources...The Division strongly suggests that alternative biobanking sites are investigated which are not located within existing mineral titles, or areas with significant mineral values."

Response: Please see response to Submission Statement 27324-2 above.

Submission Statement (27324-6)

"In conclusion, we consider that the potential impact of the proposed wind farm, in its current form, on mineral exploration and potential future mining within this highly prospective area is of great concern.

Response: The Proponent has attempted to avoid any land which is under an active Mineral Lease during the design of the wind farm, where practical. Two Mineral Leases have been identified over which the Project may have a direct impact, they being Private Mining Agreement (PMA) 214 and

Mining Lease (ML) 1374.

With respect to PMA 214, this lease is under ownership of the landowner on whose land wind turbines will be placed, and the Proponent has discussed the situation with the landowner. The Proponent has been verbally advised by the landowner (pers comms) that they are prepared to modify PMA 214 to accommodate the construction of the wind farm as necessary.

As shown in **Table 6.7** in response to Submission Statement 27324-1 above, six attempts over three years have been made to establish contact with Eastern Feeder Holdings PL, with no success. The landowner on whose property the Proponent is intending on placing infrastructure is prepared to accept the infrastructure in that location. Mining activity does not occur on or in the immediate vicinity of the proposed infrastructure. The Proponent will make further attempts to contact Eastern Feeder Holdings PL to arrive at a mutually agreeable solution to the overlap of the wind farm and the Mineral Lease. The Proponent would welcome the assistance of the NSW Department of Trade & Investment, Resources & Energy Division in providing current contact details or even mediating such discussions with Eastern Feeder Holdings PL. Alternatively, the Proponent can relocate or remove the infrastructure if it proves necessary to do so prior to the start of construction, depending on the requirements of the DoPI.

It is unreasonable to expect any development to avoid areas of *potential* mineral resource given the uncertainty whether such resource actually exists there. Development cannot be refused on the basis of 'what might be', only 'what is'.

Current mineral activity in the area primarily focuses on Group 6 minerals (Diamond, Corundum, Ruby and Sapphire) which are not found in the upland areas where the wind farm is proposed to be constructed. This is evident from past and present exploration and mining licences/leases. A recent application for an exploration licence by Valbob Mining, occurring during the final stages of preparing the EA, is targeting Group 1 minerals (Elemental minerals (metallics)) in the Wellingrove Cluster. The Proponent has consulted on several occasions with Valbob Mining and has made it clear that, until such time as the wind farm is constructed, the Proponent has no right to prevent Valbob Mining from carrying out exploration activities. Once operational, exploration can continue with due consideration to the wind farm and rights under the Mining Act 1992 as stated in Wind Prospect CWP's letter attached with the submission.

As mentioned previously, the Proponent is not adverse to mineral exploration activity taking place in and around the wind farm site, so long as there is no direct or indirect impact on the operation of the wind farm itself. It is not inappropriate for the Proponent to make recommendations to landowners to consider the wind farm infrastructure when negotiating Access Agreements; however the inclusion of the wind farm in such agreements is solely at the landowner's discretion. The Proponent has only made these recommendations in light of Valbob Mining's discussions and has had no input into any other mineral exploration activities, nor is it aware of whether the affected landowners have placed any requirements on Valbob Mining.

Should a significant mineral resource be discovered, then the Proponent is prepared to discuss the requirements for mineral extraction and how this might affect the wind farms operation. Consultation and approval would be required as per Part 5, Division 2, Section 62 of the Mining Act 1992 as the wind farm and its equipment would be considered a 'significant improvement'. It would not be unreasonable for the wind farm operator to require compensation for the relocation or removal of equipment, or loss of earnings, if mining is to take place in the same area as all or part of

the wind farm.

Chapter 20: Statement of Commitments

Refer to **Section 5** for amended and additional Statement of Commitments.

Submission Statement (26856-4)
"Council requests that appropriate conditions be included in any approval requiring that further details including design plans, noise impacts and environmental management and mitigation measures be provided to and approved by the relevant consent authority."
Response: The Proponent has outlined in the EA, in the relevant chapters of the report, what plans are required prior, during and following construction of Sapphire Wind Farm. This includes a detailed assessment of the impacts, proposed mitigation measures and Statement of Commitments to ensure such requirements are carried out to the satisfaction of the DoPI. Where necessary, this will include consultation and input from both Glen Innes Severn and Inverell Shire Councils.

Chapter 21: Conclusion

No responses received.

4. FLORA AND FAUNA RESPONSE

Development footprint and turbine layout

Wind Prospect CWP (WPCWP) has applied the hierarchical principles of avoid, mitigate and as a last resort offset to the Environmental Assessment (EA) in accordance with the Director-General of the DoPI's Assessment requirements for the Project that state "*impacts are to be minimised as far as reasonable and feasible*". The full ecological report can be found in **Appendix 11** of the EA.

Avoidance

Section 5.2 of **Appendix 11** the report discusses Avoidance Measures. This outlines several measures adopted to avoid or reduce the impact of the wind farm. Several iterations of the wind turbine layout and associated infrastructure have been drafted to create a wind farm that has a minimal impact on the environment, but one that is economically feasible.

Examples of Avoidance Measures

Prior to detailed ecological surveys, tracks were positioned based on ground conditions and limited avoidance measures, such as circumventing stands of trees and obvious vegetation communities. Access tracks have then been shifted to avoid threatened plants identified during survey work and provide 30 m buffers between roads and threatened plants. An example of this is shown below for *Dichanthium setosum* (**Figure 4.1**).

Figure 4.1 *Dichanthium setosum* Avoidance

Impacts to *Thesium australe* have been minimised (**Figure 4.2**) and mitigated through placement of infrastructure to allow for a 30 m buffer between threatened plants and construction areas (eg. *Thesium australe*).

Figure 4.2 *Thesium austral* Avoidance

To further reduce potential impacts, WPCWP has aligned roads along existing farm tracks, wherever possible, and altered routes to avoid treed areas (**Figure 4.3**). This is shown in the example below. A more direct road alignment resulted in 0.20 ha of woodland clearance. The current route, following the realignment, now passes through derived native grassland and, therefore, has reduced the impact to woodland areas by 0.19 ha.

Although this approach could not avoid all impacts on Threatened Ecological Communities (TECs), it has minimised impacts to the more intact areas of vegetation and prevented tree removal. This approach has been applied across the entire wind farm layout, in an attempt to minimise the impact created by the wind farm. WPCWP has therefore produced turbine layouts that limit the amount of impact which could only otherwise be avoided by not constructing the wind farm.

Figure 4.3 Treed Area Avoidance

Bird and Bat Collision Risk

Section 5.5 of the report (**Appendix 11**) discusses the Direct Impacts associated with operation of the wind farm, which includes bird and bat strike, and a risk matrix is presented in **Appendix F** and **G** for bats and birds, respectively.

However, OEH would like the report to consider the impact of the wind farm on migrating honeyeaters (such as Yellow-faced Honeyeater and White-naped Honeyeater) known to frequent Box-Gum Woodland when White Box is in heavy flower in winter although such migration may not occur every year. Manna Gum (*Eucalyptus viminalis*) is an autumn flowering species that is likely to be used less frequently by migrating honeyeaters but its occasional use cannot be ruled out (see matrix in **Table 4.1** at the end of this section).

Honeyeaters fly at or just above canopy height whilst foraging and move from ridge to ridge at a height between 5 m and 50 m above the canopy. Therefore, there is a risk that these species may be struck by wind turbines in areas where White Box, and also Manna Gum, are present, particularly when there is an abundant flowering event.

There is also the potential for increased bird and bat strike during adverse weather conditions either due to poor visibility (birds) or changes to flight paths to avoid adverse weather conditions. This may result in species crossing through the wind farm along routes that they would not normally travel.

Whilst the likelihood of the species being struck cannot be accurately predicted, a commitment to monitoring strike across Sapphire Wind Farm has been made. This will include the preparation of a

bird and bat monitoring program prior to operation of the wind farm that, in consultation with OEH and the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (SEWPaC), will identify the frequency of monitoring and reporting, the thresholds at which impacts are considered unacceptable and the adaptive management approaches which are acceptable.

Given the construction timeframes for the Project and that mitigation and management measures for bird and bat strike are dynamic and change as more is learnt about the impacts of wind farms, it is proposed that the frequency of reporting strike data is determined during the preparation of the monitoring program in consultation with OEH and SEWPaC (see new Statement of Commitment 108). In addition, the adaptive management measures that would be implemented should strike thresholds be reached, will be negotiated with OEH and SEWPaC at such time that significant strike is detected to allow for a more tailored and species specific approach to mitigation. This will facilitate the development of a strategy that best targets the issue, and can be developed in response to data collected from other wind farms also if available.

Cumulative Impact

Section 5.12 of the report (**Appendix 11**) discusses Cumulative Impact. Cumulative Impact considers the potential for three wind farms in the area, being Sapphire, Glen Innes and White Rock. See **Volume 3:1, Appendix 7, Figure 27** for a map showing the locations of all three wind farms in relation to each other.

OEH requires potential cumulative impact be considered for migratory honeyeaters and Eastern Bentwing-bat.

Migratory honeyeaters are likely to frequent the area when winter flowering eucalypts (primarily White Box, *Eucalyptus albens*) are in heavy flower. This may not occur every year. Manna Gum (*Eucalyptus viminalis*) is an autumn flowering species that is likely to be used less frequently by migrating honeyeaters but its occasional use cannot be ruled out.

Honeyeaters fly at or near canopy height whilst foraging and move from ridge to ridge at a height between 5 m and 50 m above the canopy. Therefore, there is a risk that the Regent Honeyeater may be struck by wind turbines in areas where Manna Gum and particularly White Box are present, particularly when there is an abundant flowering event.

As discussed above, large numbers of migratory honeyeaters are likely to frequent the area when winter flowering eucalypts (primarily White Box) are in heavy flower. As these species often fly at or near canopy height during foraging and between 5 m and 50 m above the canopy when moving between areas and ridges, there is a risk that birds may collide with wind turbines. The cumulative impact of Sapphire, Glen Innes and White Rock on migratory honeyeaters is difficult to determine. However, the Environmental Assessment for White Rock does not mention White Box in the vegetation community descriptions. However, *Eucalyptus laevopinea* and *E. stellulata*, both of which are winter flowering, occur in the study area which may attract migratory honeyeaters. In addition, there is the potential for honeyeaters to be stuck across the three wind farms when moving between foraging areas, even if they are only within the migratory pathway and not providing foraging resources.

Eastern Bentwing-bat is a cave roosting species, with only a few known maternity sites in eastern Australia. The species will forage widely, and there are several records around the proposed wind farm. There is a cumulative risk to this species from the other proposed wind farms, but there are gaps in our understanding of this species, the height at which they fly and the impact of other wind farms on this and other bat species. Given the number of records of this species at Sapphire there is the potential that a roosting site is present in proximity to the project site. This species can travel up to 65 km in one night and, therefore, may cross more than one wind farm in a foraging event.

Whilst the likelihood of the species being struck cannot be accurately predicted, a commitment to monitoring strike across Sapphire Wind Farm has been made. This will include the preparation of a bird and bat monitoring program prior to operation of the wind farm that, in consultation with OEH and SEWPaC, will identify the frequency of monitoring and reporting, the thresholds at which impacts are considered unacceptable and the adaptive management approaches which are acceptable (see new Statement of Commitment 108).

Given the construction timeframes for the Project and that mitigation and management measures for bird and bat strike are dynamic and change as more is learnt about the impacts of wind farms, it is proposed that the frequency of reporting strike data is determined during the preparation of the monitoring program in consultation with OEH and SEWPaC. In addition, the adaptive management measures that would be implemented should strike thresholds be reached will be negotiated with OEH and SEWPaC at such time that significant strike is detected to allow for a more tailored and species specific approach to mitigation. This will facilitate the development of a strategy that best targets the issue, and can be developed in response to data collected from other wind farms also if available.

Table 4.1 – Honeyeater risk matrix

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS	RECORDS ON SITE	FLIGHT CHARACTERISTICS	MIGRATORY	DISTRIBUTION ACROSS SITE	RISK OF COLLISION WITH TURBINES	RISK OF COLLISION WITH OVERHEAD POWERLINES
Honeyeaters								
Anthochaera phrygia	Regent Honeyeater	E	No	Canopy and 5 m – 50 m above canopy	Yes	Woodlands and paddock trees	Moderate - High	Low
Lichenostomus frenatus	Yellow-faced Honeyeater		Yes	Canopy and 5 m – 50 m above canopy	Yes	Woodlands and paddock trees	Moderate - High	Low
Melithreptus lanatus	White-naped Honeyeater		No	Canopy and 5 m – 50 m above canopy	Yes	Woodlands and paddock trees	Moderate - High	Low

5. REVISED STATEMENT OF COMMITMENTS

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
Landscape and Visual								
001	Impact to receptors	Minimise view of infrastructure	Use of a matt and/or off-white finish on the structures to reduce visual contrast between wind turbine generator (WTG) structures and the viewing background (this is subject to final turbine selection).	Proponent	✓	✓		✓
002	Impact to receptors	Minimise view of infrastructure	Tracks have been designed to follow contour lines, with minimal extent of cut-and-fill in track construction, revegetation of disturbed areas and use of local material to minimise colour contrast where feasible.	Proponent in consultation with road engineers	✓	✓		✓
003	Impact to receptors	Minimise view of infrastructure	Location of the collector and switching substation and other ancillary infrastructure sited sympathetically with the nature of the locality and away from major roads and residences where possible to mitigate visual impact.	Proponent	✓	✓		✓
004	Impact to receptors	Minimise view of infrastructure	The majority of electrical connections within the Project site (i.e. cables between the WTG's) have been designed to be located underground where possible, in order to further reduce potential visual impacts.	Proponent	✓	✓		✓
005	Impact to receptors	Minimise view of infrastructure	Undertake landscape planting where screening is deemed appropriate and in accordance with the outcomes of the assessment process.	Proponent in consultation with affected receptor		✓	✓	✓
006	Impact to receptors	Minimise view of construction	Re-instate disturbed soil areas immediately after completion of construction and decommissioning which would include re-contouring and re-seeding with appropriate plant species and local	Proponent		✓		✓

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
			materials where feasible.					
007	Impact to receptors	Minimise view of construction	Enforce safeguards to control and minimise dust emissions during construction and decommissioning.	Proponent		✓		✓
008	Impact to receptors	Minimise view of construction	Minimise activities that may require night time lighting and, if necessary, use low lux (intensity) lighting designed to be mounted with the light projecting inwards to the Project site to minimise glare.	Proponent		✓		✓
009	Impact to receptors	Minimise view of construction	Limit the amount of advertising, signs or logos mounted on wind turbine structures, except those required for safety purposes.	Proponent				
010	Impact to receptors	Minimise view of construction	Appropriate selection, where feasible, of materials and colours, together with consideration of reflective properties for ancillary structures.	Proponent				
011	Impact to receptors	Minimise view of construction	Limit the height of stockpiles to minimise visibility from outside the Project.	Proponent				
Noise								
012	Impact on receptors	Compliance	After final turbine selection and Project refinement, additional noise modelling will be carried out to ensure that the predicted noise levels are within required criteria based on the chosen WTG.	Proponent in consultation with noise consultant and landowners	✓			
013	Operational noise exceedance	Compliance	If WTG noise impacts are non-compliant with stated criteria used for the assessment due to temperature inversion, atmospheric stability or other reasons, then an 'adaptive management' approach can be implemented to mitigate or remove the impact. This process could include:	Proponent			✓	

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
			• Investigating the nature of the reported impact; • Indentifying exactly what conditions or times lead to undue impacts; • Consideration of operating WTG's in a reduced 'noise optimised' mode during offending wind directions and at night-time (sector management); • Turing off WTG's that are identified as causing the undue impact; and • Providing acoustic upgrades (glazing, façade, masking noise etc) to affected dwellings.					
014	Construction noise exceedance	Minimisation	Ensure work activities occur within recommended working hours, according to the SA EPA, where practicable (i.e. 7.00 am to 6.00 pm, weekdays and 8.00 am to 1.00 pm on Saturdays). Any proposed work outside of these hours will entail close consultation with the affected community.	Proponent in consultation with EPA		✓		✓
015	Construction noise exceedance	Minimisation	Prior notification to the affected public and restricted use of exhaust/engine brakes in built up areas for night-time deliveries.	Proponent		✓		✓
016	Construction noise exceedance	Minimisation	Continued adequate maintenance of construction vehicles.	Proponent		✓		✓
017	Construction noise exceedance	Minimisation	Noise emissions from construction activity will be localised and temporary.	Proponent		✓		✓
018	Substation noise exceedance	Compliance	If the preferred substation location is non-compliant with the NSW Industrial Noise Policy, mitigation measures would be applied as appropriate, including;	Proponent				

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
			• The use of transformer(s) with a lower sound power level output; • Landscaping, including raised embankments and vegetation, around the substation; and • Providing acoustic upgrades (glazing, façade, masking noise etc) to affected dwellings.					
Flora and Fauna								
019	Spread of weeds	Minimise spread	Development of a **Weed Management Plan**, which provides: • From soil disturbance and vegetation clearance, piling of soil which may contain exotic species at least 50 m from any water source, or areas of native vegetation; • Where a specific weed risk has been identified, all machinery, equipment and vehicles are to be washed down before entering and leaving the Project site; • Topsoil that is limited in weeds harvested to salvage the native soil seed bank and then used to reintroduce the seed bank into disturbed areas, or soil areas depleted by past land use such as intensive grazing; • All on-site staff and contractors educated on noxious weeds present at the Project site and ways to prevent spread; • Revegetation with locally native endemic species characteristic of the cleared vegetation type; • Control of perennial weed grasses within the disturbance zone for 3 to 5 years after construction; • Management of stock access during periods of vegetation and soil disturbance in coordination with landowners; and • Imported soil and rubble to be certified as fee of weeds and weed seeds.	Proponent in consultation with ecologist and associated landowners		✓	✓	✓

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
020	Loss of biodiversity value	Minimise impact	Development of a **Conservation Management Plan**, which provides: • All vehicles are to remain within the extent of the earth works designed specifically for the Project to minimise vegetation disturbance; • Care to be taken when working in close proximity to trees to prevent damage to roots; • A pre-clearance protocol to be designed to identify how hollow-bearing fauna will be surveyed for and managed during clearing; • An ecologist to be present on-site during clearing to capture and re-release fauna (where appropriate) • All logs and large rocks removed from within the proposed development area are to be redistributed following the completion of works in temporary clearance areas or adjacent areas to supplement habitat; • On completion, the cable route to be fenced (with landowner agreement) to allow controlled revegetation with locally endemic species (eg. *Austrostipa spp.*); • Where possible, trenches to be dug at least 15 m away from the base of trees and outside drip lines; • Minimisation of dust during construction to be undertaken via the use of water carts. Disturbance areas to be staged, and sufficient, available local water supplies are to be ensured for the construction period; • A 30 m buffer between all threatened plants and access roads and construction areas is to be maintained; • All areas to be fenced off to prevent breaches of construction boundaries; • Suitable fencing to be erected along trenches to prevent fauna	Proponent in consultation with ecologist and DECCW	✓	✓	✓	✓

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
			falling in; • Daily checking of trenches by the Environmental Compliance Manager to ensure any captured fauna will be released according to the **Construction Environmental Management Plan** (**CEMP)** or **Threatened Species Management Plan** (**TSMP**) *(Note: this will not be carried out during the operation phase)*; • Pre-clearance surveys undertaken to determine if roosts, nests or dens present in any trees proposed for clearing; • Bird and bat strike monitoring will be undertaken in accordance with the monitoring guidelines provided by the Australian Wind Energy Association (Brett Lane & Associates 2005). If results show that longer term monitoring is required then a monitoring programme will be developed in consultation with DECCW and other departments/agencies as required. Such a programme could include adaptive management whereby significant impacts are dealt with by using an adaptive approach; • Should WTG's require lighting, select lighting that minimises the likelihood of attracting insects and hence foraging bats, subject to CASA requirements; and • 'Corridors' or wide separation distances between groups of WTG's to be maintained.					
021	Loss of biodiversity value	Minimise impact	An appropriate offset package will be secured to compensate for the loss of habitat due to the construction of Sapphire Wind Farm. Final calculation of the offset area will be carried out during the pre-construction phase once final turbine selection and project-size is known.	Proponent in consultation with ecologist, OEH, SEWPAC and associated landowners	✓			

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
022	Loss of biodiversity value	Minimise impact	Upon final turbine selection and layout design, the offset requirements will be recalculated to ensure that the existing offset package is adequate for the level of impact.	Proponent in consultation with ecologist, DECCW, DEWHA and associated landowners	✓			
Cultural Heritage								
023	Loss of cultural heritage items	Minimise impact	Development of a Cultural Heritage Management Protocol, which provides procedures to be followed for impact avoidance and accidental discovery.	Proponent in consultation with an archaeologist, relevant Aboriginal communities and DECCW	✓	✓		✓
024	Loss of cultural heritage items	Minimise impact	Personnel involved in the construction and management phases of the Project trained in procedures to implement recommendations relating to cultural heritage, where necessary, to decrease impact.	Proponent in consultation with archaeologist	✓	✓	✓	✓
025	Loss of Aboriginal heritage items	Minimise impact	Impacts should not take place further north than the point 347037e 6712005n GDA in order to avoid inadvertently impacting a potential Indigenous stone arrangement site. This point is currently not proposed to be impacted upon by the Project.	Proponent	✓	✓	✓	✓
026	Loss of Aboriginal heritage items	Minimise impact	A strategy of avoidance of impacts to be adopted in regard to the recorded trees with scars identified by the Aboriginal field assistants.	Proponent in consultation with	✓	✓	✓	✓

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
				archaeologist				
027	Loss of Aboriginal heritage items	Minimise impact	Additional archaeological assessments are to be carried out if any new impacts are to occur outside the study area. If a significant Indigenous object is identified, prior to impact, mitigation strategies will be implemented.	Proponent in consultation with archaeologist				
028	Loss of Aboriginal heritage items	Minimise impact	While the Indigenous stone objects recorded are very low density distributions and have low archaeological significance, nevertheless, limiting the extent of impacts to these locales, if at all feasible, should be consideration.	Proponent in consultation with archaeologist				
029	Loss of Aboriginal heritage items	Minimise impact	Ground disturbance impacts associated with the Project be kept to a minimum and to defined areas, to ensure minimum impact to Aboriginal objects (stone artefacts), which can be expected to extend in a relatively continuous, albeit very low to low density distribution, across the broader landscape encompassed by the Project.	Proponent in consultation with archaeologist		✓		✓
Traffic and Transport								
030	Safety and asset protection	Minimise risk	Contract a licensed haulage contractor with experience in transporting heavy and over-size loads, to be responsible for obtaining all required approvals and permits from the RTA and Councils and for complying with any conditions specified in the aforementioned approvals.	Proponent in consultation with RTA and councils	✓			
031	Safety and asset protection	Minimise risk	Development of a **Traffic Management Plan**, to include, but not be limited to: • Scheduling of deliveries, timing of transport, limiting the number of trips per day; • Undertaking community consultation before and during all	Proponent in consultation with licensed haulage contractor and	✓	✓		✓

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
			haulage activities and providing a dedicated telephone contacts list to enable any issues to be rapidly identified and addressed; • Managing the haulage process, including the erection of warning signs and/or advisory speed signs posting in advance of isolated curves, crests, narrow bridges and changes of road conditions; • Placing of speed limits on all roads that would be used primarily by construction traffic to reduce the likelihood of any accidents and reduce maintenance costs; • Designing and implementing temporary modifications to intersections and roadside furniture as appropriate; • Producing a Transport Code of Conduct which would be made available to all contractors and staff detailing traffic routes, behavioural requirements and speed limits; • Establishing procedures to monitor traffic impacts on public and internal access tracks during construction, including noise, dust nuisance and travel times, and to implement modified work methods to reduce such impacts where possible; • Reinstating pre-existing conditions after temporary modifications to the roads and pavements along the route, where applicable, in consultation with relevant authorities; and • Where reconstruction or provision of a temporary crossing is required over a creek or drainage structure, the design of this structure will be discussed with the relevant authority.	road authorities				
032	Safety and asset protection	Minimise risk	Implement all aspects of the **Traffic Management Plan** in co-ordination with the Councils, RTA and property managers.	Proponent in consultation with licensed haulage		✓		✓

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
				contractor and road authorities				
033	Safety and asset protection	Minimise risk	Prepare road dilapidation reports covering pavement and drainage structures, in consultation with the Councils, for all of the routes before and after construction. Any damage resulting from construction traffic, except that resulting from normal wear and tear, would be repaired at the Proponent's cost. Alternatively, the Proponent may negotiate other forms of compensation for road damage with the relevant roads authorities as appropriate.	Proponent in consultation with council and road authorities	✓	✓		✓
034	Safety and asset protection	Minimise risk	Consideration for establishing a transport pool for employees from nearby towns to minimise traffic volumes.	Proponent	✓			
035	Safety and asset protection	Minimise risk	Establish a procedure to ensure the ongoing maintenance of the Project site internal access roads during the operation phase. This maintenance would include sedimentation and erosion control structures, where necessary.	Proponent			✓	
036	Safety and asset protection	Minimise risk	Prepare and implement a revised **Traffic Management Plan** reflecting change in traffic volumes, during time of decommissioning.	Proponent in consultation with council and road authorities				✓
Aviation Assessment								
037	Creation of hazard	Minimise risk	The Proponent will provide the RAAF AIS, CASA, AsA, AAAA, NSW Emergency Services, NSW Police ASB and NSW RFS with the final turbine locations and dimensions prior to construction. After construction is complete, the Proponent will provide RAAF AIS, CASA, AsA, AAAA, NSW Emergency Services, NSW Police ASB and NSW RFS with the "as constructed" details.	Proponent	✓	✓	✓	✓

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
038	Creation of hazard	Minimise risk	The Proponent will provide CASA with notification of any cranes (temporary obstacles) that exceed 110 m above ground level.	Proponent	✓	✓		✓
039	Creation of hazard	Minimise risk	Appropriate information regarding the WTG layout and dimensions will be supplied to the Rural Fire Service, if required, to assist in their planning and execution of fire response.	Proponent	✓	✓		✓
040	Creation of hazard	Minimise risk	On receipt of Development Approval for the Project, and with particular regard to the Aeronautical Impact Assessment and Obstacle Lighting Review, the Proponent will consult with CASA and DIT on the issue of obstacle lighting.	Proponent in consultation with CASA	✓			
041	Impact to nearby properties	Minimise impact	If lighting is required, the Proponent will commit to ensuring obstacle lighting installation conforms with the CASA Manual Of Standards (MOS) Part 139, paragraph 9.4.3.4A. Shielding restricts the downward component of light to 5 % of nominal intensity emitted below 5 ° below horizontal and zero light emission below 10 ° below horizontal.	Proponent in consultation with CASA	✓			
Communication								
042	Deterioration of signal strength	Minimise deterioration	Amend planned WTG positions if necessary and feasible within the Approval Conditions, to create corridors to ensure minimal interference on links.	Proponent	✓			
043	Deterioration of signal strength	Minimise deterioration	Use of primarily non-metallic WTG blades, to minimise disruption.	Proponent	✓	✓		✓
044	Deterioration of signal strength	Minimise deterioration	Where practical, use equipment complying with the Electromagnetic Emission Standard AS/NZS 4251.2:1999.	Proponent	✓	✓		✓
045	Deterioration of	Minimise	A system for recording any complaints on interference, to allow for	Proponent			✓	✓

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
	signal strength	deterioration	further investigations with the affected party, to reach an amicable solution.					
046	Deterioration of signal strength	Minimise deterioration	General mitigation methods for radio-communication include: • Modifications to or relocation of existing antennae; • Installation of a directional antennae; and • Installation of an amplifier to boost the signal.	Proponent			✓	✓
047	Deterioration of signal strength	Minimise deterioration	If television interference is experienced and reported by an existing receiver in the vicinity of the Project, the source and nature of the interference would be investigated by the Proponent. Should the cause of interference be attributed to the Project, then the Proponent will put suitable mitigation measures in place after consultation and agreement with the effected landowner or television broadcaster. These could include: • Re-orientation of existing aerials to an alternative transmitter; • Provision of a land line between the affected receiver and an antenna located in a suitable reception area; • Provision of satellite or digital TV where available; and • Installation of a new repeater station n a location where interference can be avoided (this is more complex for digital but also less likely to be required for digital television).	Proponent			✓	✓
048	Deterioration of signal strength	Minimise deterioration	Mitigate for any potential impacts on the NSW Ambulance link (ACMA Link ID's 6863-6864) prior to construction.	Proponent	✓			
Electromagnet Fields								
049	Exposure to EMF's	Minimise exposure	Bury electrical cables where feasible to shield electrical fields.	Proponent		✓		✓

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
050	Exposure to EMF's	Minimise exposure	Place wires together to cause a cancellation between the fields of electrical phases for magnetic fields.	Proponent		✓		✓
051	Exposure to EMF's	Minimise exposure	Place appropriate security around emitting structures (e.g. collector and switching substation).	Proponent	✓			
052	Exposure to EMF's	Minimise exposure	Placing overhead powerlines in isolated locations where possible.	Proponent	✓			
053	Exposure to EMF's	Minimise exposure	Ensure the public, including tourists, that need to go near emitting structures are accompanied by a trained and qualified staff member.	Proponent			✓	✓
Fire and Bushfire								
054	Increase risk of fire ignition or spread	Minimise risk	Adherence to all regulations under the NSW Rural Fires Act 1997 and the Draft Northern Tablelands Bushfire Risk Management Plans.	Proponent in consultation with relevant authorities	✓	✓	✓	✓
055	Increase risk of fire ignition or spread	Minimise risk	The Rural Fire Service (RFS) and NSW Fire Brigade will be consulted in regard to the adequacy of bushfire prevention measures to be implemented on-site during construction, operation and decommissioning. These measures would potentially cover hot-work procedures, asset protection zones (APZ's), safety, communication, site access and response protocols in the event of a fire originating in the Project infrastructure, or in the event of an external wildfire threatening the Project or nearby properties.	Proponent in consultation with RFS and NSW Fire Brigade	✓	✓	✓	✓
056	Increase risk of fire ignition or spread	Minimise risk	Provide RFS with the locations of individual WTG locations, ancillary infrastructure, construction work schedule, location of additional water supplies for construction, potential landing pads	Proponent	✓	✓	✓	✓

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
			for fire fighting aircrafts and helicopters and access gates for fire fighting services.					
057	Increase risk of fire ignition or spread	Minimise risk	Installation of access tracks at appropriate width and vertical clearances with access suitable for all weather conditions.	Proponent	✓	✓		✓
058	Increase risk of fire ignition or spread	Minimise risk	Education of construction crews and maintenance staff on the topic of bushfire risk management and risks that could be present at the Project.	Proponent		✓	✓	✓
059	Increase risk of fire ignition or spread	Minimise risk	Provision of basic fire fighting equipment at each active site, including fire extinguishers, knapsacks and other equipment suitable for initial response actions with a minimum of one trained person on-site.	Proponent		✓	✓	✓
060	Increase risk of fire ignition or spread	Minimise risk	Maintain provision for mobile telephone and UHF radio communications.	Proponent in consultation with RFS and NSW Fire Brigade		✓	✓	✓
061	Increase risk of fire ignition or spread	Minimise risk	The collector substation will be surrounded by a gravel and concrete area, free of vegetation, to provide an APZ.	Proponent	✓	✓		✓
062	Increase risk of fire ignition or spread	Minimise risk	The collector substation facility will be bunded with a capacity exceeding the volume of the transformer oil. The facility will 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).	Proponent	✓	✓	✓	✓

	Impact	Objective	Mitigation Task	By	Stages			
					PC	C	OM	RD
063	Increase risk of fire ignition or spread	Minimise risk	Placement and maintenance of APZ will occur around WTG's, transmission line easements and ancillary structures to minimise the spread of fire. Workplace health and safety protocols will be developed to minimise the risk of fire for workers in the control room and amenities.	Proponent	✓	✓	✓	✓
064	Increase risk of fire ignition or spread	Minimise risk	WTG's will be shut down if monitored components reach critical temperatures or if directed to by the RFS in the case of a nearby wildfire being declared (an all-hours contact number would be available to the RFS during the bushfire period).	Proponent in consultation with the RFS			✓	
065	Increase risk of fire ignition or spread	Minimise risk	Flammable materials and ignition sources brought onto the Project site will be handled and stored as per manufacturer's instructions.	Proponent		✓	✓	✓
066	Increase risk of fire ignition or spread	Minimise risk	Lightening protection will be installed correctly to minimise risk of malfunction.	Proponent		✓		✓
067	Increase risk of fire ignition or spread	Minimise risk	Total fire ban days will be considered in regard to hours within which construction takes place, minimising the risk of fire and bushfire ignition.	Proponent				
Water								
068	Loss of integrity to riparian corridor	Minimise loss	Any access tracks (with the exception of crossings) and all other works and disturbances should not be located in any riparian corridors.	Proponent in consultation with DWE	✓	✓		✓
069	Loss of integrity to riparian corridor	Minimise loss	DWE guidelines for river crossing designs, based on the Strahler Stream Order Categorisation to minimise environmental impact, will be followed in the design and upgrade of existing roads and	Proponent in consultation with DWE	✓	✓		✓

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
			river crossings.					
070	Impact on watercourses	Minimise impact	All crossings will undergo detailed assessment and design post-approval, in line with the NOW *Guidelines for Controlled Activities* and NSW *DPI Why Do Fish Need to Cross the Road? Fish passage Requirements for Waterways.*	Proponent in consultation with DWE	✓	✓		
071	Impact on watercourses	Minimise impact	All required watercourse crossings will be designed to protect and enhance water flow, water quality, stream ecology and existing riparian vegetation.	Proponent in consultation with DWE	✓	✓		
072	Loss of water quality and change to hydraulic regime	Minimise loss and impact on adjacent watercourses	Development of a **Soil and Water Management Plan** (**SWMP**), to minimise soil disturbance, prevent erosion from surface runoff and to prevent disturbance of water resources in the area. Including: • All drainage from the Project is in accordance with the *Protection of the Environment Operations (POEO) Act 1997*; • Avoid removal or disruption to naturally occurring drainage stabilisers; • Installation of water slowing and diversion devices around construction areas, including devices to manage surface runoff from hardstand areas and surfaced access tracks; • Design appropriate sedimentation basins to catch and treat all water from the Project site and consider utilising existing drainage paths for discharge points in respect of maintaining the natural hydrological regime and sediment movement patters, channel and bank stability, water quality and the identification of riparian buffers; • All outlet structures are to be designed in accordance with the NOW guidelines to minimise construction and operation impacts on watercourse and riparian corridors. Considerations include, but are not limited to:	Proponent in consultation with NOW and reference to Landcom 2004	✓	✓	✓	✓

Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
		○ Any stormwater outlets should aim to be 'natural', yet provide a stable transition from a constructed drainage system to a natural flow regime outside any riparian buffers; ○ All ancillary drainage infrastructure, e.g. sediment and litter traps, should be located outside the riparian corridor. Runoff should be of an appropriate water quality and quantity before discharge into a riparian corridor or watercourse is allowed; ○ Discharge from an outlet should not cause bed or bank instability; ○ All stockpiles are to be located away from drainage lines, natural watercourses, road surfaces and trees, and are to be appropriately protected to contain sediment and runoff, e.g. sediment fencing; and ○ All water runoff that contains high silt content should be filtered and flocculated before it drains from the Project site. • Changes to the quantity and quality of the receiving waters are to be monitored at the locations as listed in **Appendix 21** at suitable intervals (daily during construction, monthly during operation); • Regular inspection, maintenance and cleaning of water quality and sedimentation control devices; • If erosion is detected as a result of inadequate maintenance of drainage control devices, the relevant Environmental Manager shall be alerted and remedial action is to occur immediately, to ensure no re-occurrence of the event; • Water management strategy to minimise water quality					

Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
		impacts and to maximise capture and reuse of water on-site; • Incorporate permit/approval requirements for work within creek and riparian zones and application of the following guidelines: ○ *Managing Urban Stormwater: Soils and Construction* , 4th Edition (Landcom 2004); ○ *Managing Urban Stormwater: Soils and Construction*, Volume 2C Unsealed Roads, DECC; ○ *Guidelines for Controlled Activities,* NOW; ○ *Guidelines for Planning, construction and Maintenance of Tracks* (NSW LWC 1994); and ○ *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings*, NSW DPI (Fairfull & Witheridge 2003). • The full suite of erosion controls and sediment controls are to be determined during the preparation of the SWMP; • During operation the Operational Environmental Management Plan (OEMP) should monitor the following: ○ A regular inspection program for all facilities, tracks and watercourse crossings and rehabilitation sites; ○ Vehicles management e.g. restrict traffic to defined roads, including any wet weather crossing requirements; ○ Materials management e.g. control of maintenance activities and spill kits; ○ Wastewater management; and ○ Appropriate containment of refuse, rubbish etc. • During decommissioning provide a management plan that incorporates mitigation measures that protect surface and groundwater sources; and					

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
			• Due regard of CMA CAP plan in preparation of CEMP and OEMP.					
073	Loss of water quality and change to hydraulic regime	Minimise loss and impact on adjacent watercourses	In particular the **SWMP** provides specific measures for access tracks: • All roads have a sufficient cross-fall gradient to allow all runoff to be collected and treated; • All watercourse crossings to be designed in accordance with the NOW guidelines and ensure that they do not adversely impact on the hydraulic regime of the watercourse; • All watercourse crossing are designed and constructed in accordance with DPI guidelines to minimise any impact on the aquatic environment; • The design and construction footprint and the extent of disturbances proposed within the riparian zone should be minimised; • Maintain existing or natural hydraulic, hydrologic, geomorphic and ecological functions of the watercourse; and • Stabilise and rehabilitate all disturbed areas in order to restore the integrity of the riparian corridor.	Proponent in reference to Landcom 2004	✓	✓	✓	✓
074	Loss of water quality and change to hydraulic regime	Minimise loss and impact on adjacent watercourses	In particular the **SWMP** provides specific measures for hydrology: • The establishment and operation of the concrete batching plant(s) facilities must be in accordance with the Environment Protection Authority's Guidelines for the Concrete Batching Industry and the Environment Protection Licence issued by DECCW; • Concrete and cement-carrying vehicles should be washed out in appropriate wash-down facilities off-site; • Management of hazardous material, waste and sewage; • Wastewater produced from temporary on-site toilets during	Proponent in reference to Landcom 2004	✓	✓	✓	✓

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD

			construction will be stored and trucked off-site;
			• All hazardous materials are to be properly classified and stored away from flood prone areas and drainage lines. Appropriate spill kits and fire protection are to be provided on-site during construction;
			• All hazardous materials are to be stored and transported appropriately in accordance with relevant DECCW and Workcover guidelines and regulations, to avoid release into the environment; and
			• Any on-site refuelling must occur in an area greater than 100 m from the nearest drainage line and ensure correct practices are implemented, including:
			  ○ Refuelling is to be carried out in a specified bunded area, according to regulatory requirements; and
			  ○ Use of drip trays and spill mats.					

075	Loss of water quality and change to hydraulic regime	Minimise loss and impact on adjacent watercourses	Mitigate for any impacts on groundwater as a result of the construction or operation of the wind farm, including impact on flow rates and no contamination. Ensure that there are no lasting impacts on groundwater following decommissioning.	Proponent in consultation with Landcom 2004		✓	✓	✓
076	Loss of water quality and change to hydraulic regime	Minimise impact on groundwater	Carry out a groundwater investigation prior to any blasting on-site (if required) to ensure that there is no adverse impact on groundwater for users or dependent ecosystems. If the investigation highlights areas of concern, then appropriate mitigation or alternative methods will be used.	Proponent in consultation with NOW	✓	✓		
077	Supply of water for construction	Obtain water for construction	Calculate all necessary water demands once final layout and turbine selection have been determined. Identify appropriate water sources for the required volume of water, including the locality of proposed works, extraction points, times, volumes and	Proponent in consultation with NOW	✓	✓		

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
			rates. Obtain the necessary water licensing permits required at the time of extraction.					
078	Supply of water for construction	Obtain water for construction	Should the on-site provision of water be insufficient, water will be sourced from commercial suppliers as required.	Proponent	✓	✓		
Air Quality								
079	Deterioration of air quality	Minimise impact	During excavation topsoil will be stockpiled. After excavation topsoil will be replaced for seeding and excess subsoil will be disposed of in an appropriate manner. If any excavation occurs on steep slopes the topsoil may need to be stabilised.	Proponent		✓		✓
080	Deterioration of air quality	Minimise impact	Any stockpiled material will be covered with plastic, seeded or otherwise bound to reduce dust. Dust levels at stockpile sites would be visually monitored. Dust suppression (e.g. water sprays) would be implemented if required.	Proponent		✓		✓
081	Deterioration of air quality	Minimise impact	During dry and windy conditions a water cart or alternative (non-chemical) dust suppression would be available and applied to work areas.	Proponent		✓		✓
082	Deterioration of air quality	Minimise impact	If blasting is required, Australian New Zealand Environment and Conservation Council guidelines for control of blasting impacts will be followed.	Proponent in consultation with ANZECC		✓		✓
Soil and Landforms								
083	Disturbance to existing land formations	Minimise disturbance	The **SWMP** provides specific measures for soil: • Procedure for personnel to manage suspected contaminated soils disturbed during earthworks; • All vehicles to remain on formed road or tracks designed	Proponent	✓	✓		✓

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
			specifically for the Project construction or operation; • All disturbed soil surfaces should be stabilised as soon as practicable after works have ceased in the area; • All stockpiles should be covered to prevent the loss of material during high wind and rain events. Where practicable stockpiles should be placed in areas sheltered from the wind; • Planning for erosion and sediment control concurrently with engineering design, prior to any works commencing; • Progressive rehabilitation of disturbed land as soon as practicable; • Jute matting or similar to be used to stabilise the soil and prevent weed invasion; • Implementation of management measures to prevent sediment and runoff entering watercourses; • Regular monitoring of erosion and sedimentation control devices including cleaning and repairing, particularly after periods of heavy rain; • Consideration of latest soil maps provided by CMA; • A buffer of 30 m to be left between and proposed construction area and access tracks and threatened plant populations; and • Where possible, construction to be undertaken outside of summer in areas in close proximity to threatened plants to minimise impact.					
084	Soil compaction	Minimise impact	The **SWMP** will have specific measures for stock management: • Management of stock access during periods of vegetation and soil disturbances; • Removal of stock access from construction areas for entire construction periods to allow for regeneration – subject to landowner participation; and	Proponent in consultation with associated landowners		✓		✓

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
			• Before remediation works, grazing to be removed and the grass sward allowed time to recover and minimise areas of bare soil.					
Waste								
085	Waste generation	Minimise waste and maximise recycling	Provision of skip bins and recycling bins on-site to handle packaging materials and domestic waste.	Proponent		✓	✓	✓
086	Waste generation	Minimise waste and maximise recycling	Mulch vegetation and use on-site where feasible, otherwise burn on-site with permission from council, provide firewood to landowners or take to Glen Innes Village or other local landfill.	Proponent		✓		✓
087	Waste generation	Appropriate disposal of waste	On-site toilets will either be drained by a septic tank or be an enclosed unit.	Proponent		✓	✓	✓
088	Waste generation	Appropriate disposal of waste	All chemicals and oils will be treated as contaminated waste at the Glen Innes Village or other local landfill.	Proponent		✓	✓	✓
089	Waste generation	Appropriate disposal of waste	Any disposal of unsuitable excavated material will require development consent from Glen Innes or Inverell Shire Council, unless it is virgin excavated natural material, then it can be disposed of at the Glen Innes Village or other local landfill.	Proponent		✓		✓
Crown Roads and Trigonometrical Stations								
090	Damage to Trigonometrical Stations	Avoid damage	Commitment to avoid disturbing and damaging the Trigonometrical Station's and adjacent witness marks.	Proponent		✓		✓

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
091	Council roads	Liaison with council	Development approvals for a number of Crown Roads that are both held and not held under Enclosure Permits will be lodged with the DoL to close discrete sections of Project affected Crown Roads, and transfer them to adjoining landowners.	Proponent in consultation with Council	✓	✓		✓
Construction								
092	Environmental	Minimise impact	Micro-site on-site infrastructure within a 100 m radius of the proposed Project infrastructure with respect to: • Minimising impacts to ecologically sensitive habitats and species, as listed in **Chapter 10** Flora and Fauna; • Avoid impacting on hollow-bearing trees where possible; and • Avoid impacting on identified Aboriginal scarred trees.	Proponent in consultation with relevant consultant	✓	✓		✓
093	Environmental	Minimise impact	Access roads have been designed along current tracks and roads present within the study area where possible to avoid additional vegetation clearance for access.	Proponent	✓			
094	Environmental	Minimise impact	The reticulation has been placed underground and within the road footprint where possible to allow for temporary rather than permanent disturbance.	Proponent	✓			
095	Environmental	Minimise impact	Electrical cables occurring across significant gullies and waterways will be strung overhead.	Proponent	✓			
096	Environmental	Minimise impact	The boundaries of the construction site to be clearly marked to prevent construction works breaching the boundaries.	Proponent		✓		✓
097	Environmental	Minimise impact	Development of a **Construction Environmental Management Plan** (**CEMP**), which provides: • A **SWMP** in accordance with Landcom (2004) *Managing Urban*	Proponent	✓	✓		✓

Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
		Stormwater: Soils and Construction, 4th Edition; • A **Construction Dust Management Plan** (**CDMP**) as listed in **Appendix 22**; • Manage site security and uncontrolled access via a lockable chain link fence around the temporary site facilities to minimise acts of vandalism and arson; • Obtain necessary licenses and permits from NOW, DPI and NSW DECCW; • Manage disturbance to 'no go' areas by flagging, fencing and including details on hard copy and electronic construction plans; • Designate environmental management responsibility to key personnel; • Transport of oil (80,000 L for collector substation transformer and 1,000 L per WTG transformers) will be via purpose built vehicles/ tankers in accordance with the Australian Dangerous Goods Code and will be fitted with emergency spill equipment. Oil will be transferred to transformers by qualified personnel, who have training in emergency spill response. Spill control equipment will be available at the point of use; • Incorporate licensing requirements for the concrete batching plants into the **CEMP**, including speed limits, portable spill kits, and management of concrete slurry; • Use of fire mitigation and management strategies discussed in **Chapter 16** Fire and Bushfire; • Use local water supplies, where possible, in written agreement with local landowner; and • Community consultation strategy for the duration of the construction period, to keep community informed of progress/delays and to maintain a method for receiving and					

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
			addressing community feedback.					
098	Environmental	Minimise impact	Development of an **Operational Environmental Management Plan** (**OEMP**), which can be combined with the **CEMP** and additions added for operation of the Project.	Proponent			✓	
099	Decommission-ing	Manage process	A Decommissioning Plan will be prepared at the end of the wind farm's life detailing the process of decommissioning, the components to be removed and those to be left in situ.	Proponent				✓
100	None	Minimise risk	Provide a finalised turbine layout and infrastructure map, including turbine co-ordinates, to all stakeholders following completion of the construction of the wind farm.	Proponent			✓	
Mineral Exploration								
101	Future land use for mineral exploration	Minimise impact	Liaise with relevant mining companies and provide updates of any modifications to the Project design that arise during the construction of the Project.	Proponent		✓		
102	Future land use for mineral exploration	Minimise impact	At the time of decommissioning, communicate with associated landowners and mineral title holders that may wish to retain roads.	Proponent				✓
Tourism								
103	Future tourism	Manage increase	Consideration of a parking or stopping bay if required.	Proponent in consultation with councils and landowners			✓	

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
Community Wellbeing								
104	Affect on local area	Maximise positive effect of proposal	Contributions of $2,500 per wind turbine into a Community Fund as each stage of the Project commences commercial operation will be established in close cooperation with the Glen Innes Severn and Inverell Shire Councils to provide funding for local community interest groups and activities.	Proponent in consultations with councils and community	✓		✓	✓
Economic								
105	Affect on local area	Maximise positive effect of proposal	Local contractors will be used where it is feasible, which will allow the Proponent to utilise the full potential of local resources.	Proponent in consultation with local industry representatives	✓	✓		✓

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
Amended Statements of Commitments								
020	Loss of biodiversity value	Minimise impact	Development of a **Conservation Management Plan**, which provides: • All vehicles are to remain within the extent of the earth works designed specifically for the Project to minimise vegetation disturbance; • Care to be taken when working in close proximity to trees to prevent damage to roots; • A pre-clearance protocol to be designed to identify how hollow-bearing fauna will be surveyed for and managed during clearing; • An ecologist to be present on-site during clearing to capture and re-release fauna (where appropriate) • All logs and large rocks removed from within the proposed development area are to be redistributed following the completion of works in temporary clearance areas or adjacent areas to supplement habitat under supervision by an ecologist; • Rocks will be moved to similar rocky areas, whereas logs may be distributed more broadly; • On completion, the cable route to be fenced (with landowner agreement) to allow controlled revegetation with locally endemic species (eg. *Austrostipa spp.*); • Where possible, trenches to be dug at least 15 m away from the base of trees and outside drip lines; • Minimisation of dust during construction to be undertaken via the use of water carts. Disturbance areas to be staged, and sufficient, available local water supplies are to be ensured for the construction period; • A 30 m buffer between all threatened plants and access roads	Proponent in consultation with ecologist and DECCW	✓	✓	✓	✓

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
			and construction areas is to be maintained; • All areas to be fenced off to prevent breaches of construction boundaries; • Suitable fencing to be erected along trenches to prevent fauna falling in; • Daily checking of trenches by the Environmental Compliance Manager to ensure any captured fauna will be released according to the **Construction Environmental Management Plan** (**CEMP)** or **Threatened Species Management Plan** (**TSMP**) *(Note: this will not be carried out during the operation phase)*; • Pre-clearance surveys undertaken to determine if roosts, nests or dens present in any trees proposed for clearing; • Should WTG's require lighting, select lighting that minimises the likelihood of attracting insects and hence foraging bats, subject to CASA requirements; and • 'Corridors' or wide separation distances between groups of WTG's to be maintained.					
021	Loss of biodiversity value	Minimise impact	An appropriate offset package will be secured to compensate for the loss of habitat due to the construction of Sapphire Wind Farm. Final calculation of the offset area will be carried out during the pre-construction phase once final turbine selection and project-size is known.	Proponent in consultation with ecologist, OEH, SEWPAC and associated landowners	✓			
041	Impact to nearby properties	Minimise impact	If lighting is required, the Proponent will commit to ensuring obstacle lighting installation conforms with the CASA Manual Of Standards (MOS) Part 139, paragraph 9.4.3.4A. Shielding restricts the downward component of light to 5 % of nominal intensity emitted below 5 ° below horizontal and zero light	Proponent in consultation with CASA	✓			

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
			emission below 10 ° below horizontal.					

072	Loss of water quality and change to hydraulic regime	Minimise loss and impact on adjacent watercourses	Development of a **Soil and Water Management Plan** (**SWMP**), to minimise soil disturbance, prevent erosion from surface runoff and to prevent disturbance of water resources in the area. Including:
			• All drainage from the Project is in accordance with the *Protection of the Environment Operations (POEO) Act 1997*;
			• Avoid removal or disruption to naturally occurring drainage stabilisers;
			• Installation of water slowing and diversion devices around construction areas, including devices to manage surface runoff from hardstand areas and surfaced access tracks;
			• Design appropriate sedimentation basins to catch and treat all water from the Project site and consider utilising existing drainage paths for discharge points in respect of maintaining the natural hydrological regime and sediment movement patters, channel and bank stability, water quality and the identification of riparian buffers;
			• All outlet structures are to be designed in accordance with the NOW guidelines to minimise construction and operation impacts on watercourse and riparian corridors. Considerations include, but are not limited to:
			  ○ Any stormwater outlets should aim to be 'natural', yet provide a stable transition from a constructed drainage system to a natural flow regime outside any riparian buffers;
			  ○ All ancillary drainage infrastructure, e.g. sediment and litter traps, should be located outside the riparian corridor. Runoff should be of an appropriate water quality and quantity before discharge into a riparian corridor or watercourse is
				Proponent in consultation with NOW and reference to Landcom 2004	✓	✓	✓	✓

Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
		allowed; ○ Discharge from an outlet should not cause bed or bank instability; ○ All stockpiles are to be located away from drainage lines, natural watercourses, road surfaces and trees, and are to be appropriately protected to contain sediment and runoff, e.g. sediment fencing; and ○ All water runoff that contains high silt content should be filtered and flocculated before it drains from the Project site. • Changes to the quantity and quality of the receiving waters are to be monitored at the locations as listed in **Appendix 21** at suitable intervals (daily during construction, monthly during operation); • Regular inspection, maintenance and cleaning of water quality and sedimentation control devices; • If erosion is detected as a result of inadequate maintenance of drainage control devices, the relevant Environmental Manager shall be alerted and remedial action is to occur immediately, to ensure no re-occurrence of the event; • Water management strategy to minimise water quality impacts and to maximise capture and reuse of water on-site; • Incorporate permit/approval requirements for work within creek and riparian zones and application of the following guidelines: ○ *Managing Urban Stormwater: Soils and Construction* , 4th Edition (Landcom 2004); ○ *Managing Urban Stormwater: Soils and Construction*, Volume 2C Unsealed Roads, DECC; ○ *Guidelines for Controlled Activities,* NOW;					

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
			○ *Guidelines for Planning, construction and Maintenance of Tracks* (NSW LWC 1994); and ○ *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings*, NSW DPI (Fairfull & Witheridge 2003). • The full suite of erosion controls and sediment controls are to be determined during the preparation of the SWMP; • During operation the Operational Environmental Management Plan (OEMP) should monitor the following: ○ A regular inspection program for all facilities, tracks and watercourse crossings and rehabilitation sites; ○ Vehicles management e.g. restrict traffic to defined roads, including any wet weather crossing requirements; ○ Materials management e.g. control of maintenance activities and spill kits; ○ Wastewater management; and ○ Appropriate containment of refuse, rubbish etc. • During decommissioning provide a management plan that incorporates mitigation measures that protect surface and groundwater sources; and • Due regard of CMA CAP plan in preparation of CEMP and OEMP.					
083	Disturbance to existing land formations	Minimise disturbance	The **SWMP** provides specific measures for soil: • Procedure for personnel to manage suspected contaminated soils disturbed during earthworks; • All vehicles to remain on formed road or tracks designed specifically for the Project construction or operation; • All disturbed soil surfaces should be stabilised as soon as	Proponent	✓	✓		✓

Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
		practicable after works have ceased in the area; • All stockpiles should be covered to prevent the loss of material during high wind and rain events. Where practicable stockpiles should be placed in areas sheltered from the wind; • Planning for erosion and sediment control concurrently with engineering design, prior to any works commencing; • Progressive rehabilitation of disturbed land as soon as practicable; • Jute matting or similar to be used to stabilise the soil and prevent weed invasion; • Implementation of management measures to prevent sediment and runoff entering watercourses; • Regular monitoring of erosion and sedimentation control devices including cleaning and repairing, particularly after periods of heavy rain; • Consideration of latest soil maps provided by CMA; • A buffer of 30 m to be left between and proposed construction area and access tracks and threatened plant populations; and • Where possible, construction to be undertaken outside of summer in areas in close proximity to threatened plants to minimise impact.					

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
New Statements of Commitment								
106	Loss of biodiversity value	Minimise impact	Should individuals of BTTG be detected during pre-clearance surveys, SEWPAC and OEH will be advised and an appropriate strategy implemented. Wherever possible this habitat will be avoided through micro-siting or re-routing of wind turbines, access tracks or other infrastructure. Where this is not possible, the following relocation methods could be used. Measures to be implemented as part of a relocation strategy could include: • BTTG will be moved to adjacent areas of suitable habitat as close as possible to the site of origin (i.e. outside construction boundaries); • Relocation sites will support habitat similar to that of where the individual was caught or, if this is not possible, within an area identified as potential habitat in the construction management plan / relocation strategy; • The long term management of the relocation site will be considered; and • A selection of relocated individuals will be monitored, possibly using radio-tracking.	Proponent in consultation with SEWPaC		✓	✓	
107	Loss of biodiversity value	Minimise impact	Buffers around threatened flora will be delineated using fencing so that they will be avoided and encroachment into these areas prevented. Prior to construction, areas known to support threatened flora will be visited and the boundary of each population or individual (as appropriate) marked with flagging tape or, if erection of exclusion fencing is not proposed for some time, a more permanent method of marking individuals (eg. number stakes) will be implemented.	Proponent in consultation with SEWPaC		✓	✓	

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
			Individuals will remain flagged and fenced until construction works in that area are completed.					
108	Loss of biodiversity value	Minimise impact	The preparation of a bird and bat monitoring program prior to operation of the wind farm will be prepared that identifies: • the frequency of monitoring and reporting; • the thresholds at which impacts are considered unacceptable; and • the adaptive management approaches which are acceptable. The frequency of reporting strike data will be determined during the preparation of the monitoring programme. The adaptive management measures that could be implemented should strike thresholds be reached will be negotiated with OEH and SEWPAC at such time that significant strike is detected to allow for a more tailored and species-specific approach to mitigation. Bird and bat strike monitoring will be undertaken with consideration to the monitoring guidelines provided by the Australian Wind Energy Association (Brett Lane & Associates 2005).	Proponent in consultation with ecologist, OEH and SEWPaC		✓	✓	✓	
109	Loss of Aboriginal heritages items	Minimise loss and impact	Proponent will engage with the LALC's in which the Project resides in the first instance. If representatives from the LALC are unavailable, the Proponent reserves the right to consult with other Aboriginal Groups in the vicinity of the Project.	Proponent in consultation with CMA and LCLA	✓	✓	✓	✓
110	Safety and asset protection	Minimise risk	The Proponent is prepared to commit to quarterly inspections of public roads during the construction period, together with a process of reporting by construction workers of any areas of deterioration within each quarterly window.	Proponent in consultation with council		✓		

	Impact	Objective	Mitigation Task	By	Stages PC	C	OM	RD
111	Future land use for mineral exploration	Minimise impact	Exploration for minerals can take place on landowner's property with due consideration to the future construction of the Project.	Proponent in consultation with Landowner and Licencee	✓	✓		
112	Future land use for mineral exploration	Minimise impact	Exploration activity can take place during the operational phase of the Project in agreement with landowner and wind farm operator as per Section 62 of Mining Act 1992.	Proponent in consultation with Landowner and Licencee			✓	✓
113	Future land use for mineral exploration	Minimise impact	The Proponent agrees to allow surveying in and around the Project area during the operation phase of the Project.	Proponent in consultation with Landowner and Surveyor			✓	✓

APPENDIX A – Figures