



Flyers Creek Wind Farm Response to Submissions

May 31st, 2013

Response to Submissions to Flyers Creek Wind Farm Environmental Assessment - MP08_0252

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No.	Subject	Issue Raised	Infigen Response
1	Project Justification	1a – Wind Farms are an inefficient and expensive way to generate electricity	<p>First, the economics or efficiency of an electricity generation plant is not a relevant matter in the planning assessment. That being said, it is widely recognised by the Australian Electricity Market Operator (AEMO) and electricity analysts and consultants in Australia, that wind energy is currently the most cost effective means to generate new renewable energy in Australia. It is also been widely reported that wind energy in South Australia is actually reducing the wholesale cost of electricity; one example is the Australian Energy Market Operator's (AEMO) reporting that the wholesale price of electricity in SA when it's "windy" is half of the "typical" or average wholesale price.¹</p> <p>FCWTAG's statement that "the high construction costs for wind turbines (\$2.4 million per kilowatt-hour)" is not very accurate. Infigen's newest wind farm, the Woodlawn wind farm, was built for \$115 Million and will generate 163,000,000 kW-hr for each of the 20 years of its operation (Source: Infigen website). Therefore, the correct construction/generation figure would be only 3.5 cents per kilowatt-hour of generation (orders of magnitude less than the \$2.4Million per kilowatt-hour figure).</p>
		1b – Wind Farms are intermittent generators and therefore not baseload electricity plants	<p>Whether an electricity generation plant is "baseload" or not is not a relevant matter in the planning assessment. Gas fired "peaking" electricity plants are not refused planning approval despite not being "baseload" as they typically run less than 10% of the year. Electricity markets operate most effectively when they have different types of generation available (coal, gas, hydro, wind, etc.) as each generation technology has its advantages and disadvantages.</p>

No.	Subject	Issue Raised	Infigen Response
1	Project Justification (cont.)	1c – Wind farms do not reduce greenhouse gas emissions	<p>The FCWTAG statement that, “wind turbine generation....does not create a net savings in CO2 emissions” is in error. Wind farms make a very significant contribution to greenhouse gas emissions as these large amounts of electrical power cannot be stored in a practical manner. Therefore, when wind energy increases in the National Electricity Market (NEM), some other form of generation must be turned down to keep the system stable.</p> <p>As just one example documenting this, the Australian Energy Market Operator (AEMO) has published a graph documenting that greenhouse gas emissions from electricity generation plants in South Australia have declined by 27% over the past six years (see Appendix A). It is also worth noting that in Q3 CY12, there has been no electricity generated by burning coal---partly due to wind energy replacing the need for these plants. Clearly, this is resulting in significant greenhouse gas emission savings.</p> <p>In addition, both the NSW and Victorian Governments have commissioned expert, independent forecasts of greenhouse gas emission reductions due to wind farms which also confirmed significant greenhouse gas emissions reductions.ⁱⁱ</p> <p>Statements that coal fired generating plants must run at full capacity whether their generated electricity is being utilised or not are simply 100% in error.</p>
		1d – Actual wind energy generation does not make a substantial contribution to the electricity network	<p>Although not really a valid planning concern, it is worth noting that In FY12, over 25% of the electricity in South Australia was generated by wind energy. There have been periods of time this year, when over 75% of SA’s electricity needs were being supplied by wind energy. This is clearly a significant amount of electricity.</p> <p>In fact, more electricity was generated in SA by wind farms then by burning coal last financial year as can be seen in the second graph from AEMO in Appendix A.</p>
		1e – Wind energy’s variability can cause grid instability and power outages	<p>The statement that the variation of wind generation in Australia is “completely unacceptable for the grid operator” is not a concern for the NSW planning authorities. That being said, it is worth noting that wind generation in the National Electricity Market (NEM) is currently forecast by AEMO’s Australian Wind Energy Forecasting System with 98% accuracy one hour ahead of time (AEMO data). Wind generation has exceeded 75% of demand in SA without any power outages, lights flickering or any other problems with the network (Source: AEMO). AEMO runs the electricity market---scheduling and paying generators and maintaining network stability.</p>

No.	Subject	Issue Raised	Infigen Response
1	Project Justification (cont.)	1f – Wind Farms require new back-up generation to be built	The statement that “each new 100MW of wind farms will require 100MW of new fossil-fuelled generation solely for back-up” is in error. The necessary “back-up” generation and other ancillary systems necessary to keep the grid stable are already in place in the NEM today---to back up the much larger coal fired generators when they unexpectedly, and instantaneously, trip off line. Wind capacity in South Australia has grown to over 1200 Megawatts (MW) with only 200MW of non-wind generation capacity being built, and this was built to keep up with rising peak electricity demand and to provide remote network support (Source: AEMO data). Therefore, no new “back-up” generation has been needed in SA---despite having over 25% wind penetration.
		1g – Blayney Shire suggests that many construction phase positions could be sourced locally	The Industry Capability Network (ICN) is an organisation that links up proponents and local contractors to ensure that project managers are aware of the skills, experience, and contact details of local contractors to maximise the hiring of local, qualified contractors and service providers. FCWF has consulted with the Industry Capability Network’s representative for the past several years and the ICN organised a meeting in March, 2011 where FCWF project manager met local contractors. Infigen Energy worked closely with the ICN to increase local contractor’s participation in the construction of its Capital and Woodlawn wind farms and will do so with the Flyers Creek project as well.
		1h – Enforced taxpayer subsidies prop up the wind turbine industry	Although not a planning concern, there are no taxpayer subsidies paid to the wind energy industry. The only incentive provided to the wind energy industry is the Commonwealth Renewable Energy Target legislation. According to IPART’s FY13 price determination, the cost to the average NSW household for the Large-scale Renewable Energy Target scheme is \$38/year per household. This is the total “subsidy” paid to the wind energy industry in Australia.
		1i ---The project results in an overseas company taking all the profits overseas	The proponent for the project, and owner and operator of six wind farms in Australia, is Infigen Energy. Infigen Energy is a company headquartered in Sydney, NSW, and its stock is traded on the Australian Stock Exchange.

No.	Subject	Issue Raised	Infigen Response
1	Project Justification (cont.)	1j --- The wind farm may interfere with mineral exploration and extraction.	<p>The proponent has had ongoing discussions with the holders of both of the exploration licenses as well as the NSW Department of Industry. One of the exploration license holders has expressed some concern about extraction of minerals underneath the wind farm should a viable resource later be discovered. The proponent will continue discussions with this company, in this regard.</p> <p>The other exploration license holder has no objection to the proposed wind farm project.</p>
		1k --- Wind turbines use a lot of electricity to turn the rotor when the wind is not blowing	Wind turbines have no ability to rotate the 24-25 tonne rotor when the wind is not blowing. Therefore, no electricity is wasted turning the rotor, as this is not even possible. The only means for a wind turbine rotor to rotate is using the energy of the wind.
		1l --- Incoming power is not recorded by wind farms	While the proponent would not mind if electricity companies provided wind farms with an unlimited supply of free electricity to run the computers and other systems when the wind turbines are not operating, this is unfortunately not the case. Electricity utilised by the wind farm is metered, and paid for, just like all other electricity users.
2	Community Consultation	2a – Inadequate community consultation prior to Information Days November, 2010	The extent of Infigen's community consultation prior to the information days is explained in some detail in Section 6.3 of the Environment Assessment. Infigen Energy sought out meetings with neighbours closest to the proposed project and reminded landowners in the project to advise Infigen if they heard of any neighbours who had concerns. This is how Infigen came to meet with three of the "original" FCWTAG members, Patina Schneider, Marie Burton and Maureen Campbell in July, 2010. This was well in advance of the community information days.

No.	Subject	Issue Raised	Infigen Response
2	Community Consultation (cont.)	2b – There has been no consultation with Errowanbang Primary School	Infigen Energy met with one of the two teachers at Errowanbang primary school to introduce the proposed wind farm project and to answer any questions the teacher(s) might have. A brief introduction of the proposed wind farm project and its status was provided. The teacher did not express any concerns with the proposed wind project and certainly did not substantiate any of the concerns claimed by FCWTAG such as potential health issues, detrimental impacts on the children's learning, or any potential for a decline in school numbers. Information on the wind farm project was left with the teacher and an offer was made to provide more information, if desired, or answer any questions that might arise in the future. The project manager's contact details were also left with the teacher.
		2c – Inadequate notification of the Community Information Days	As stated in Section 6.3.2, the Community Information days were extensively promoted by a variety of means including local newspaper articles, radio segments, local newspaper advertisements, and a direct mail out to residents within 3-4 km of the proposed wind turbines using an address list supplied by the Blayney Shire Council.
		2d – Dismissive and indifferent attitudes by Infigen and Aurecon at the Community Information Days	Infigen Energy does not agree with the statement that Aurecon or Infigen personnel displayed an indifferent or dismissive attitude at the Information Days. Such a proposition is also not supported by the survey feedback forms filled out at the event. The FCWTAG statement that attendees "were given no information or answers of any consequence" is not correct. The entire two days consisted primarily of answering questions in a polite and respectful manner and providing information about the project including over ten separate handouts about wind energy and the Flyers Creek project.
		2e – Members of the Community are still not aware of the project	Infigen has sought to keep the neighbours and broader community updated on the project by proactively engaging with local media. There have been over 120 media articles or stories on the proposed Flyers Creek wind project in the local newspapers, radio stations, TV stations, and in on-line media. Therefore, the proponent considers it very unlikely that nearby neighbours are unaware of the proposed project.

No.	Subject	Issue Raised	Infigen Response
2	Community Consultation (cont.)	2f – Infigen refused to have public meetings about the project	<p>Table 4.7 of the FCWTAG submission lists four meetings which it is claimed were not “real” public meetings about the Flyers Creek project. This is despite the fact that all four meetings were:</p> <ul style="list-style-type: none"> • Public meetings • Well advertised • Presented information about the Flyers Creek project • Answered questions about the Flyers Creek project • Were attended by one or more members of the FCWTAG (3 out of the 4 meetings) <p>It is not clear what criteria FCWTAG, and others, are utilising to disqualify these as community meetings about the Flyers Creek project.</p>

No.	Subject	Issue Raised	Infigen Response
2	Community Consultation (cont.)	2g – Infigen has refused to supply information to FCWTAG	<p>It is stated in Section 4.9 of the FCWTAG submission that, “On many occasions our group has requested technical information and answers to our concerns only to be supplied with vague statements or have our questions dismissed as nonsense. Infigen have never been able to supply us with any independent data, research, or technical information.”</p> <p>1) Infigen has answered every phone call and email received concerning the Flyers Creek wind project in a timely fashion. This includes supplying specific and detailed answers to questions posed including independent and authoritative information from organisations like the NHMRC, AEMO, NSW Valuer General, and NSW Land & Environment Court.</p> <p>2) Amongst other information, Infigen has supplied the following info to FCWTAG and its members:</p> <ul style="list-style-type: none"> • Potential impact on neighbouring property price studies • Shadow flicker maps and modelling results • Background noise graphs • Maps of the project • Land & Environment Court decision transcripts <p>3) Infigen Energy sent an email to Patina Schneider asking to attend a future FCTWTAG meeting on July 28th, 2011. No response was received leading Infigen to the conclusion that FCWTAG was not interested in Infigen Energy attending their meetings to provide additional information or to answer questions.</p>
		2h – FCWF did not comply with the Director General’s supplementary DGRs issued 16 August 2012	<p>Mr Gerathy’s statement in this regard is contradicted by the letter he received from the Director General of DoPI dated December 15th, 2011 (Annexure 5 of his submission) which states,</p> <p><i>“The Department was satisfied that the proponent had addressed these requirements in the EA through a mail-out of the project overview to neighbours of the project, local media and facilitation of community information days. The EA also details how community concerns have been addressed.”</i></p>

No.	Subject	Issue Raised	Infigen Response
2	Community Consultation (cont.)	2i – There were no invitations to receive feedback	Neighbours to the project were sent two letters in Q4 2010 and Q1 2011. Both letters invited questions and comments on the FCWF proposal and provided contact details for the project manager. In addition, there was a survey provided at the Community Information days. Last, the closer neighbours to the project were approached and asked if they would like to meet with the Project Manager to answer questions and obtain feedback about the project.
		2j – Blayney Shire has suggested an annual community contribution of \$220,000 + CPI.	FCWF will meet and discuss the local community benefit proposal with Blayney Shire and an appropriate process and amount of community contributions will be mutually agreed prior to a development decision being made. One option that will also be discussed is whether the FCWF Community Consultative Committee should be involved in decisions with regards to which groups receive Community Grants and Facilities funding.
		2k --- Blayney Shire has recommended twelve Development Conditions should the project be approved.	FCWF agrees to conditions 1-3, 5-6, and 8-10. Condition 4 is discussed in item 9k; condition 7 is discussed in item 9j, condition 11 is discussed in item 3u and condition 12 is discussed in item 2j.

No.	Subject	Issue Raised	Infigen Response
2	Community Consultation (cont.)	2l --- The proposed project will have little or no direct benefit to the community	<p>As is the case with all other development projects, there are no direct payments to neighbours for real, or perceived, amenity impacts. However, there are many indirect economic benefits to the district and the community as a whole.</p> <p>First, the project will directly result in significant increased business and employment opportunities particularly during the construction phase of the project. A study by RePower and the Industry Capability Network documented over \$10 Million spent in the local community in conjunction with the construction of the Capital Wind Farm as documented in the Yass Tribuneⁱⁱⁱ. There will also be large flow on effects to other aspects of the economy such as the hospitality industry. Landowners will receive payments for having turbines on their land and some of those funds will be spent in the local community on new equipment or facilities at their farm. The Flyer Creek wind farm is also likely to attract some additional tourism, as the older Carcoar wind farm has done.</p> <p>Infigen Energy kicked off a new and innovative initiative enabling the community to buy one of the wind turbines in the project. A community co-operative has been formed by local community members, and it has been named the Central NSW Renewable Energy Co-operative (CENREC). CENREC will raise money to buy one of the turbines in the project; the revenue from that turbine will then flow to the Co-op who will then distribute the profits to Co-op members as dividends. In this way, the community has the opportunity to directly benefit from the operation of the wind farm.</p>
		2m --- Landowners have “gag” clauses and cannot speak to neighbours	<p>There are no “gag” or confidentiality clauses that inhibit landowners from speaking to neighbours about the proposed wind farm. There are also no clauses in the lease agreement that inhibit landowners from speaking about any health impacts of the project, even if they were to come to believe there were any.</p>

No.	Subject	Issue Raised	Infigen Response
2	Community Consultation (cont.)	2n --- Wind farm proposals are divisive	<p>In communities, a significant development proposal of any kind will likely have some people supporting the idea and some people opposing it. Therefore, any proposal for change can be “divisive”, as it is common for some people to fear change.</p> <p>However, it should also be recognised that a certain amount of divisiveness exists in any community. For example, some people in the Flyers Creek district make the majority of the income off the land by farming and have lived in the district for generations. Others have moved to the district relatively recently and live on hobby farms or “lifestyle” blocks and do not make their living from farming. These two groups of people have different objectives and expectations. Farming results in certain amenity impacts that may not be well received by lifestyle block owners who desire residential zone amenity protection. This results in one “divide” in the community that existed well before the wind farm was proposed.</p> <p>The spreading of false information, or a scare campaign of misinformation, can increase the perceived divide in the community making reasoned, sensible discussions of the real issues problematic. This can lead to a perception that a wind farm is a divisive proposal.</p> <p>In other communities, this has not occurred. Infigen’s Lake Bonney wind farm is the largest wind farm in the southern hemisphere with an electrical capacity of 278 Megawatts. The project was built in three stages, the last of which, did not receive one written objection during the planning process. Neither Infigen Energy, nor the Shire Council, have received one complaint from a neighbour for noise, health, or any other issue. The Shire Council CEO made a submission documenting the lack of complaints as shown in Appendix B.</p>
		2o---Maps at the Info Day had errors	<p>The consultant who generated the maps missed a few residences on the maps created for the Information Day. The errors pointed out at the Information Day were corrected in the EIA. A few other residences, not very near to the project, have also been added to the map in the Preferred Project Report.</p>

No.	Subject	Issue Raised	Infigen Response
3	Acoustic Issues	3a – Utilisation of an indicative or representative turbine is inappropriate	<p>It is very common practice to utilise an “indicative” wind turbine model in EAs as the tendering process for wind turbines does not normally occur until after planning approval. Wind turbine companies are understandably reluctant to commit the substantial time, resources and expense responding to a tender for turbines for a project that has not gained planning approval. The great majority of proposed wind energy projects in Australia have received a planning decision with an indicative wind turbine. This is confirmed by a letter from the Director General to John Gerathy dated December 15th, 2011 (Annexure 5) which agrees that a final turbine model selection is not required, or usual, until after a planning decision. The GE 2.5MW turbine selected as the indicative wind turbine for the EA is representative of a ‘worst case’ noise impact.</p> <p>It is worth noting that the acoustic levels of a wind turbine are not a function of the wind turbine’s electrical generation capacity or its overall size. The predominant noise produced by a wind turbine is an aerodynamically generated sound produced by the wind turbine blades. Therefore, the design of the turbine blades, not the electrical capacity of the generator or the size of the wind turbine, primarily determines a wind turbine’s acoustic performance.</p> <p>As documented in several places in the EA, including the Statement of Commitments, should a different wind turbine be selected for the project, a new acoustic report will be submitted to the Director General utilising that turbine’s noise characteristics and this report shall demonstrate full compliance to the SA EPA noise guidelines 2003.</p>
		3b – Background noise monitoring should have occurred in winter	<p>There is no requirement in the DGRs, or the SA EPA noise guidelines, for wind farms to undertake background noise monitoring at several times during the year in an attempt to obtain measurements during different seasons. The idea that noise monitoring should occur at times of minimum background noise presupposes that one can accurately forecast when such events will occur weeks ahead of time to enable scheduling of the monitoring to occur.</p>

No.	Subject	Issue Raised	Infigen Response
3	Acoustic Issues (cont.)	3c – The Quinn court case in SA should be settled prior to approval of the Flyers Creek EA	<p>While frequently cited by anti-wind farm activists as a “landmark Supreme Court decision” calling into question the validity of the SA wind farm noise guidelines, this is a tremendous exaggeration. The Supreme court’s decision was simply a procedural ruling to refer a single technical issue to the lower ERD court. The court makes it clear that they are not setting any sort of precedent, in fact,</p> <p><i>“The Court emphasises that the appeal has been allowed without consideration of the merits, understanding that the second respondent [the wind farm proponent] vigorously contests each of the grounds of appeal and contends that each of those grounds is without substance and would, on full consideration, fail.”</i></p> <p>With regards to the SA EPA wind farm noise guidelines, these are not even mentioned in the 1 ½ page ruling. Therefore, it is inaccurate to claim this court decision invalidates them---they are not even mentioned.</p> <p>The Director-General of DoPI has a similar view as expressed in his letter to Mr Gerathy appearing as Annexure 6 of his submission. In this letter, the DG writes,</p> <p><i>“The Department understands the South Australian Environment, Resources and Development (ERD) Court has reaffirmed the appropriateness of the SA guidelines for the assessment of wind farm noise. It also understands that in the case of the Hallett 3 wind farm (Quinn), issues due to tonality (at Hallett 2 wind farm), relate to potential mechanical issues with turbines, not adequacy of the guidelines.”</i></p> <p>As reported the media, the proponent in the Quinn case has withdrawn their planning application to enable consideration of a newer more modern wind turbine, and resultant layout changes for the proposed wind project.</p>

No.	Subject	Issue Raised	Infigen Response
3	Acoustic Issues (cont.)	3d – Colin Hanson’s criticism of the EPA SA Guidelines should be considered	<p>While different acoustic engineers, particularly those acting on behalf of opponents of wind energy, may have varying opinions with regards to the applicable noise standards, the proponent is obligated to comply with the noise standard specified in the DGRs.</p> <p>It should be noted that the SA EPA noise guidelines 2003 were revised in 2009 to raise the ‘baseline’ wind farm noise limit from 35 dBA to 40 dBA---a significant increase in the allowable noise limit. The Flyers Creek project will still comply with the stricter 35 dBA limit contained in the 2003 SA EPA noise guidelines.</p>
		3e – A tonality penalty should be applied as the indicative turbine currently demonstrates a low level of tonality	As stated several times in the EA, including the Statement of Commitments, wind turbines that exhibit tonality as defined by the SA EPA wind turbine guidelines will not be selected for the Flyers Creek wind turbine project. The manufacturer of the indicative wind turbine for the proposal has indicated that they fully expect to remedy the tonality issue. If they are successful, then the GE turbine will be candidate for the Flyers Creek project. If they are not, the turbine will be ineligible.
		3f – Substation noise is tonal; a 5dBA penalty should apply which might take it over the limit	<p>It is possible that the substation noise will be tonal in nature at the closest neighbouring residences. If this is the case, then a 5dB(A) “penalty” would apply. However, noise predictions for residence 87, the closest residence at 400 metres, demonstrate compliance with the NSW industrial noise standards even with the 5 dB(A) tonal penalty applied.</p> <p>The proponent will ensure the substation acoustic levels will comply with the NSW industrial noise standards at all non-associated dwellings. This will, of course, be verified by acoustic compliance testing.</p>
		3g – “Aurecon has no proposed noise compliance assessment protocol”	The compliance testing procedure is specified in Section 4 of the SA EPA wind farm noise guidelines 2003. There is no need for this procedure to be repeated in the EA.

No.	Subject	Issue Raised	Infigen Response
3	Acoustic Issues (cont.)	3h – The acoustic report by Stephen Cooper shows the Capital Wind Farm is exceeding its noise limits	<p>1) Infigen Energy takes any claims that its wind farms are exceeding its noise limits very seriously and therefore commissioned one of the most experienced wind farm acoustic engineering firms in Australia, Sonus, to review Mr Cooper's report. This report appears as Appendix C and outlines many concerns with Mr Cooper's report. To our knowledge, this is the first wind farm at which Mr Cooper has attempted to take noise measurements; in contrast, Sonus has undertaken noise monitoring and/or compliance testing at over 25 wind farms in Australia.</p> <p>Sonus concludes in their review of Mr Cooper's report, that:</p> <p><i>"Without either a specific methodology to identify the wind turbine noise from the other noise in the environment or a test procedure in accordance with the SA Guidelines, conclusions regarding the Capital wind farm exceeding its noise limits are invalid."</i></p> <p>2) Mr Cooper also made a submission to the draft NSW wind farm guidelines. In this submission, he writes on page 38 of the submission that,</p> <p><i>"To be able to ascertain compliance it is necessary to have the wind speed at the hub height at the time of the measurements..."</i></p> <p>Mr Cooper acknowledges that he did/does not have access to this hub height wind data for the Capital Wind Farm. Therefore, Mr Cooper's statement in his first report that the Capital Wind Farm was exceeding its acoustic consent limits is directly contradicted in his own second report, where he admits he did not have the necessary data to make such a conclusion.</p>

No.	Subject	Issue Raised	Infigen Response
3	Acoustic Issues (cont.)	3h (cont.) – The acoustic report by Stephen Cooper shows the Capital Wind Farm is exceeding its noise limits	<p>A prominent acoustic engineer, Rd. Dr Kym Burgemeister, has come to similar conclusions to Sonus with regards to Mr Cooper’s noise assessment of the Capital Wind Farm as documented in his letter to the editor in Acoustics Australia’s December 2012 edition (attached as Appendix Q). Some excerpts from Dr Burgemeister’s letter are as follows:</p> <p><i>“Mr Cooper has also published a peer review of the acoustic assessment undertaken for the Flyers Creek Wind Farm [15] which demonstrates several fundamental misunderstandings and inaccuracies which are also worthwhile examining.”</i></p> <p><i>“The necessary case of the [Capital] wind farm not operating in windy conditions is not shown, and would be likely to show low frequency noise due to increased environmental noise generation. It is accepted that this type of measurement is difficult, or impossible to do without the participation of the wind farm operator – nevertheless, such a significant omission makes the subsequent analysis meaningless. For example, it seems irrational to suggest that...the wind farm is solely responsible for the background noise, while ignoring the fact that high ambient wind conditions, which is a necessary condition for the wind turbine to operate, also generates significant noise.”</i></p>

No.	Subject	Issue Raised	Infigen Response
3	Acoustic Issues (cont.)	3i – The acoustic report by Stephen Cooper raises a number of concerns with the Flyers Creek noise analysis	<p>The Sonus report responds to the primary issues raised in Mr Cooper’s report with regards to the Flyers Creek noise report; a summary follows:</p> <p><u>“Review Findings</u></p> <p>In order for the conclusions of the Acoustic Group report to be valid, the following minimum elements would need to be included in that report:</p> <ol style="list-style-type: none"> 1. A direct comparison between the background noise measurement data and analysis presented in the Vipac background noise report and the applicable NSW assessment criteria provided by the <i>Environmental Noise Guidelines: Wind Farms, South Australian Environment Protection Authority, 2003</i> (the SA Guidelines); 2. A direct comparison between the environmental noise assessment presented in the Vipac report and the applicable NSW assessment criteria provided by the SA Guidelines; 3. A demonstrated understanding of the rationale that underpins the SA Guidelines and the stringency of the approach provided by the Guidelines; 4. A measurement methodology that separates the wind farm noise from other noise in the environment by conducting a wide range of repeatable noise level measurements with and without the wind farm operating under similar meteorological conditions; 5. An infrasound measurement methodology that reduces the influence of wind on the microphone; and 6. A comparison of the results of the infrasound measurements against established thresholds for perception and/or against measurements of other typical natural and engineered noise sources experienced in rural environments. <p>The Acoustics Group report does not provide these minimum elements. In addition, the report suggests additional requirements beyond those contained within the SA wind Noise Guidelines utilized by the NSW Government without justification.”</p>

No.	Subject	Issue Raised	Infigen Response
3	Acoustic Issues (cont.)	3i (cont.) – The acoustic report by Stephen Cooper raises a number of concerns with the Flyers Creek noise analysis	<p>Further details of Sonus’ review of Stephen Cooper’s report can be found in Appendix C.</p> <p>In addition, ViPAC Engineering has written a Technical Memorandum responding to the various points raised in Mr Cooper’s report. This is included as Appendix D.</p>
		3j – The acoustic report by Stephen Cooper demonstrates unacceptable levels of infrasound at the Capital Wind Farm	<p>The Sonus report addresses the serious flaws in measuring infrasound undertaken by Mr Cooper in Section 5 of their report. They conclude,</p> <p><i>“Without accounting for the influence of wind on the microphone using a specific methodology, or without clearly establishing that suitable equipment was employed, the external results relating to infrasound cannot be considered to be valid.”</i></p> <p>Notwithstanding the flaws in Mr Cooper’s test methodology and equipment, Sonus concludes that the infrasound noise levels recorded at the Capital Wind Farm are well below “the infrasound perception threshold limit used by State and International jurisdictions, and therefore the infrasound would not be detectable or be able to be perceived by humans.”</p>

No.	Subject	Issue Raised	Infigen Response
3	Acoustic Issues (cont.)	3k – The acoustic report by L Huson found two background noise monitors could not measure below 20dBA.	<p>ViPAC notes in Section 2.2.1 of their Technical Memorandum that the SA EPA noise guidelines specify the use of Type 1 environmental noise loggers which were the ones ViPAC utilised. While these loggers typically have a minimum noise measurement level of 18-20 dBA, the lower limit for noise measurements is not specified to be 20dBA.</p> <p>ViPAC also points out that the lack of data points below 20dBA is not material as the noise requirement at such low wind speeds would still be a fixed 35dBA (rather than background noise + 5dBA). They state,</p> <p><i>“We do not agree that sound pressure monitoring instruments which measure lower than 20dB(A) is required, as a background level lower than this will still attract a criterion of 35 dB(A).”</i></p> <p>Nevertheless, on the basis of Sonus’ recommendation in their peer review report, we are undertaking additional background noise monitoring at residence 89.</p> <p>The continuous noise level graph for residence 78, inadvertently omitted from Appendix C of ViPAC’s background noise report (Appendix G1 of the EA), is included here as Appendix J. As stated in Appendix G1, the noise monitor at residence 78 was changed on December 4th. As can be seen in this graph, the noise measuring “floor” of the second monitor was 20 dB(A).</p>
		3l – Incorrect inputs were utilised in the CONCAWE noise model	<p>As ViPAC states in their report, the inputs utilised for the CONCAWE (and ISO9613) models were based on their experience based on wind farm compliance testing they have done. In other words, the ground factors ViPAC utilised were the ones that have most successfully matched the actual results found during compliance testing.</p> <p>A fully reflective ground factor (of zero) was utilised for the ISO9613 model, while a partially reflective ground factor was used for CONCAWE. It is a rather moot point anyway as the ISO9613 modelling was used to predict the turbine noise for the noise report in any case. The CONCAWE results were simply presented as a reference (and were generally a bit lower, and therefore, less conservative.</p>
		3m – Other wind turbines may not have noise reduction modes	<p>L Huson states that, “We question if any other alternatives have similar noise emission operating modes.” This statement reflects a poor, or out-of-date, understanding of wind turbine technology. Every wind turbine being considered for the Flyers Creek project has this capability; in fact, this is basically a standard feature of modern wind turbines.</p>

No.	Subject	Issue Raised	Infigen Response
3	Acoustic Issues (cont.)	3n – Corrections for wind speed at the microphones were inaccurate	The SA EPA wind farm noise guidelines specifies that background noise measurements will correlate wind speed at turbine hub height to the natural wind noise at the residence. The fact that the wind speed will very likely be lower at the residence is; therefore, already taken into account (by the reduced wind noise measured at the residences). There is no requirement to correlate background noise measured to wind speed at the house, as it is superfluous.
		3o- Wind direction was not measured	Steven Cooper's report states that it is not demonstrated that the analysis considered wind direction and therefore the regression data is "invalid". As ViPAC discusses in Section 2.2.4 of their Technical Memorandum, there is no requirement in the SA EPA Guidelines to breakdown monitoring results by wind direction. One reason for this is that the modelling assumes that every residence is downwind from every turbine which is obviously a conservative assumption as it would require the wind to blow from different directions at the same time.
		3p – ViPAC's statement about infrasound is biased and unsubstantiated	<p>Mr Huson alleges that ViPAC's statement that infrasound levels from wind turbines are below the threshold of perception is "biased" and not supported by peer reviewed research. Section 3.3 of ViPAC's technical memorandum lists a number of references to substantiate their statement. In addition, two peer reviewed studies are cited later in response 4c below.</p> <p>The South Australian EPA recently published a report^{iv} documenting the results of infrasound testing inside and outside of homes, in the city and in rural areas, near and far away from wind farms. The report found the lowest levels of infrasound recorded to be inside a home only 1.5km from a wind turbine. The report concluded,</p> <p><i>"This study concludes that the level of infrasound at houses near the wind turbines assessed is no greater than that experienced in other urban and rural environments, and that the contribution of wind turbines to the measured infrasound levels is insignificant in comparison with the background level of infrasound in the environment."</i></p>
		3q – Background noise measurements were not separated by day and night	There is no requirement in the FCWF DGRs or the Wind Farm SA EPA noise guidelines to separate day and night background noise measurements. While the draft NSW wind farm guidelines do contain this provision, they were released after the FCWF EA was on public display. The proponent is unaware of any wind farm noise regulations more strict than the SA EPA 2003 guidelines----in the world. Therefore, the noise amenity of neighbours is being more than adequately protected.

No.	Subject	Issue Raised	Infigen Response
3	Acoustic Issues (cont.)	3r – Noise from the wind does not increase with wind speed	Mr Gerathy's submission claims that the EA's statement that, <i>"as wind speed increases the background sound levels tend to increase."</i> is "unjustified" and "incorrect". This statement is intuitively obvious as it will be rare that increasing wind speed does not tend to increase the resulting sound of the wind. The background noise curves demonstrate this statement is correct.
		3s – Turbines 3-12 should be deleted due to unacceptable noise impact on residence #12	Mr Gerathy's statement is not supported by the evidence in the noise analysis where the turbine noise at his residence is predicted to be at least 5.5 dB(A) below the required noise limit at every wind speed. As the decibel scale is logarithmic, this means the sound power level predicted at Mr Gerathy's house, 2.3km from the nearest turbine, is over three times lower than the requirement.
		3t – The EPA should be the regulatory authority for acoustic issues	The proponent has no objection to Blayney Shire's submission that the EPA should be the regulatory authority with regards to noise compliance issues. As foreshadowed in the draft NSW wind farm guidelines, the process of the EPA taking over this role from local Shires is already in progress.
		3u – Blayney Shire has proposed a schedule of construction hours	The proponent is generally in agreement with the Shire's proposed construction hours recommendations.
		3v – The Flyers Creek wind farm will be noisy	While the wind turbine noise limits are not set to preclude hearing the turbines, they are set at levels to preclude annoyance and sleep disturbance. The proponent is not aware of any jurisdiction in the world with more stringent noise requirements for wind farms than NSW. Therefore, neighbours of the Flyers Creek wind farm have the strongest wind turbine noise amenity protection in the world.

No.	Subject	Issue Raised	Infigen Response
3	Acoustic Issues (cont.)	3w---An unnamed wind farm is operating at over 55 dBA in South Australia	A wind farm operating with turbine noise levels of 55 dBA at a neighbouring residence would be generating noise about 100 times louder than the allowable noise limit in South Australia. It is very unlikely that such a situation would have gone unnoticed by the regulatory authorities. It is possible that the natural noise of the wind (and the wind turbines), at very high wind speeds, could be as high as 55dBA. But, it would be inaccurate to describe this situation as the wind turbines generating noise at 55dBA.
		3x—Potential noise and vibration impacts on the school have not been considered	<p>The maximum predicted noise level from the wind turbines just outside the school (receptor 57) is 36.5 dB(A) as shown in Table 12.6 of the EA. It is accepted that outside noise levels are reduced by 10-15 dB(A) inside a building even with open windows. According to Australian Standard AS 2107:2000, the satisfactory background noise inside a classroom is 35 dB(A) and the maximum recommended sound level is 45 dB(A). Therefore, it is clear that the acoustic levels from the wind turbines inside the class room [less than 26.5 dB(A)] are well below the satisfactory background noise level of 35 dB(A) and far below the maximum level of 45 dB(A).</p> <p>Modern wind turbines produce negligible amounts of ground vibration. Acoustic Engineering firm Sonus has measured ground vibration only 15 metres from the base of a wind turbine and found the vibration level to be much less than that recommended by Australian Standard AS2670.2 for “critical areas” such as surgical operating theatres. The vibration levels one kilometre away would not be perceptible by human beings.</p>
		3y---Provide more detail on the 8 residences affected by construction noise	As stated in Section 7.2 of Appendix G2, potentially eight residences might have periods where construction noise criteria are exceeded by 1-2 dB(A). ViPAC have performed some further modelling and have found that up to five residences might experience noise 2 dB(A) above the criteria at times when a road compactor was in use nearby. These residences are 23, 25, 48, 77 and 78. Road compactors, which are of course used for many road and infrastructure projects, are noisy pieces of equipment with limited opportunities for mitigation. However, as part of the Construction Management Plan, measures will be investigated including utilising quieter compactors and/or operating the compactor at reduced vibration levels (which would extend the compacting time required). It is expected that none of the five residences mentioned above would experience noise from the road compactor above the criteria for more than one week.

No.	Subject	Issue Raised	Infigen Response
3	Acoustic Issues (cont.)	3z – What would be the acoustic impact of not operating any turbines in noise reduction mode?	<p>If the four turbines proposed to be operated in noise reduction mode for two integer wind speeds (as shown in Table 6-1 in Appendix G2) were instead operated at full power, two residences, 23 and 78, would be expected to exceed the noise criteria by .5 dB(A) at one, and two, integer wind speeds respectively. In addition, residence 77 would be expected to experience noise equal to the noise criteria at two integer wind speeds.</p> <p>Noise contour maps for the wind farm project at these two integer wind speeds with noise reduction mode in operation are shown in Appendix K.</p>
		3aa – Low frequency noise impacts were not considered	<p>The Director General's Requirements for the Flyers Creek wind farm do not contain any requirement to estimate, or comply with a particular limit for, low frequency noise (commonly defined as noise with a frequency between 20-200 Hz).</p> <p>The draft NSW wind farm guidelines contain a proposed low frequency noise measurement methodology and a criteria of 65 dB(C) and 60 dB(C) for day and night time respectively. Although not a requirement, ViPAC has undertaken a low frequency noise estimate for the noise receptors of the Flyers Creek wind farm for hub height wind speeds of 6, 8, 10 and 12 m/s. The highest predicted low frequency noise level at a non-associated dwelling is 54.5 dB(C) at residence 89. Two landowner dwellings (residences 3 and 79) have a maximum low frequency noise prediction of 55.0 dB(C). Therefore, the low frequency noise produced by the Flyers Creek wind farm is well below the day (and night) time criteria proposed in the draft NSW wind farm guidelines.</p>

No.	Subject	Issue Raised	Infigen Response
4	Potential Impact on Health	4a - NHMRC did not state there are no health impacts from wind turbines	<p>The last line of the NHMRC's Wind Turbines and Health July 2010 document could not have been clearer. It states,</p> <p style="padding-left: 40px;"><i>"The review of the available evidence, including journal articles, surveys, literature reviews and government reports, supports the statement that: There are no direct pathological effects from wind farms and that any potential impact on humans can be minimised by following existing guidelines."</i></p> <p>It is worth noting that any potential health impacts can be minimised by following existing planning guidelines---as of July 2010. Therefore, it cannot be inferred that the NHMRC has endorsed, in any way, the need for more strict planning guidelines around wind farms such as 2km buffers or "gateways" which were not present in Australia at this time.</p> <p>The proponent has also met with the NHMRC, the last time being almost 18 months after the "Rapid Review" was released and asked them if they had seen one credible, peer reviewed scientific study documenting health impacts from wind turbines. They replied in the negative. Of course, the NHMRC is in the process of reviewing the available literature again and is expected to release a new report later this year. The proponent is very confident their conclusion, as stated above, will be unchanged.</p>

No.	Subject	Issue Raised	Infigen Response
4	Potential Impact on Health (cont.)	4b - A Canadian court judgement has found there are adverse health impacts from wind turbines	<p>The court decision dated 18th July 2011 cited by the FCWTAG^v was, in fact, decided in favour of the proponent and confirmed the decision of the responsible authority granting the Ken Breeze Wind Farm planning approval. The Tribunal concluded, on page 193, that:</p> <p><i>“The main ingredient of their case...is that sound emissions (including audible sound, low frequency sound and infrasound) cause serious harm at certain levels and that the Project will emit sound at high enough levels that non-participating receptors will experience serious harm. However, the Appellants’ position has not been proven according to the evidence the Tribunal has heard.”</i></p> <p>It is not clear why the FCWTAG and Waubra Foundation consider a court case approving a wind farm and concluding that no evidence proving wind turbines cause health problems was heard substantiates their claims. One would logically presume such a legal precedent undermines their claims.</p> <p>It is also worth noting that Ontario has legislated setbacks for wind turbines from neighbouring residences--- of only 550 metres. Therefore, the Ontario court approved turbines over twice as close to neighbours as proposed in the Flyers Creek project.</p>

No.	Subject	Issue Raised	Infigen Response
4	Potential Impact on Health (cont.)	4c – Infrasound levels from wind turbines will cause health issues	<p>1) Infrasound is created by many natural causes (wind, ocean, etc.), man-made systems (cars, refrigerators, wind turbines, etc.) and is, in fact, created by the beating of a human heart. There is no need to “fear” infrasound, as it is harmless at low to medium sound power levels. Every credible study measuring infrasound levels from wind turbines has shown them to be orders of magnitude below the internationally recognised level of perception, 85 dB(G), let alone the levels at which detrimental health impacts could occur</p> <p>2) As an example, Sonus Pty Ltd undertook a study measuring infrasound levels from two wind farms in Australia and comparing the levels measured to naturally occurring sources, such as ocean waves, and man-made sources such as that existing in the Adelaide CBD (see Appendix E). This study was formally peer reviewed and published in the scientific journal, <i>Acoustics Australia</i>. The study found that, even at a relatively close distance to the turbines of 360 metres, the measured sound power levels were only 61 dB(G) which represent a sound power level of 250 times less than the 85 dB(G) perception/’hearing’ threshold----and less than naturally occurring infrasound at the beach.</p> <p>3) There are other formally peer-reviewed studies published in scientific journals around the world measuring infrasound levels from wind turbines including a study in <i>Noise Control Engineering Journal</i> published by the Institute of Noise Control Engineering of the USA (March/April 2011). The paper “Low frequency noise and infrasound from wind turbines” measured infrasound from two different model wind turbines outside, and inside, residences. Infrasound power levels measured from four wind turbines within 610 metres (the closed being 305 metres) were found to be 100 times lower than the 85 dB(G) criteria----and, of course, not one turbine is being proposed within 605 metres of a residence, let alone four wind turbines.</p> <p>4) Both the peer reviewed studies above have shown that measured infrasound levels from wind turbines are well over 100 times lower than that which can be perceived by human beings---even 300-400 metres from a wind turbine. Using the relationship, documented in the Sonus study, that infrasound levels decreases by approximately 6 dB(G) for each doubling of the distance, the measured infrasound level from the Clements Gap turbines about 730 metres from the turbines would be about 55dB(G), or 30 dB(G) below the perception threshold of 85 dB(G). At this distance, the infrasound power level would be 1000 times less than the perception threshold. Simplistically, this means that in order for a resident to perceive or hear infrasound, there would have to be 1000 turbines 750 metres away from their homes.</p> <p>The proponent is not aware of any peer reviewed study published in a scientific/medical journal anywhere in the world that has measured infrasound from wind turbines anywhere in the vicinity of the recognised perception/’hearing” threshold of 85 dB(G).</p>

No.	Subject	Issue Raised	Infigen Response
4	Potential Impact on Health (cont.)	4c – Infrasound levels from wind turbines will cause health issues (cont.)	<p>5) A letter from WorkSafe Victoria dated 10 February 2010 in conjunction with a wind farm planning panel hearing in Victoria (see complete letter in Appendix F) stated:</p> <p><i>“The [Victorian Department of Health] has determined that the weight of evidence indicates that the weight of evidence indicates that there are no direct health effects from noise (audible or inaudible) at the levels generated by modern wind turbines. Numerous international reviews on low frequency and infrasound noise, and case studies of actual wind farm noise emissions have demonstrated that:</i></p> <ul style="list-style-type: none"> • <i>There is insignificant infrasound generated from modern wind turbines; and</i> • <i>Levels of low frequency sound emitted from modern wind turbines are not at a level that would lead to direct health effects”</i> <p>6) The Victorian Department of Health have recently released a report examining the claim that low frequency sound or infrasound from wind turbines could have detrimental health impacts^{vi}. Some of their conclusions from the report are as follows:</p> <ul style="list-style-type: none"> • “Infrasound from wind farms has been found to be well below the hearing threshold of 85 dBG, and therefore inaudible, even as close as 185m from the turbines.” • “The evidence indicates that sound can only affect health at sound levels that are loud enough to be easily audible. This means that if you cannot hear a sound, there is no known way that it can affect health. This is true regardless of the frequency of the sound.” • “Infrasound is produced by the body at higher levels than many external sources, including wind farms. Humans have therefore been exposed to infrasound throughout our evolution.” • “In conclusion, there is overwhelming evidence that infrasound from wind farms is at levels which are too low to be audible, and no higher than background levels in the environment.” [Vic. Health boldprint]

No.	Subject	Issue Raised	Infigen Response
4	Potential Impact on Health (cont.)	4c – Infrasound levels from wind turbines will cause health issues (cont.)	The proponent is not aware of any Government, regulatory authority, or credible scientific/medical organisation in the world that considers infrasound from modern wind turbines to be produced at levels anywhere near sufficient to cause detrimental health effects.
		4d – There are anecdotal reports of people believing that wind turbines are making them ill	<p>Appendix 7 of the FCWTAG submission, along with other submissions, refers to anecdotal reports of people who apparently believe that wind turbines are making them ill. The vast majority of these symptoms are present in the broader community including areas not near a wind farm. While these people may well have the health symptoms reported, there is still no evidence of a causal relationship between their symptoms and wind turbines. In other words, there is no acoustic, electrical or other physical force or energy from the turbines affecting their health.</p> <p>As these reports are not from wind farms Infigen operates, or are anonymous, we have no direct knowledge of these people’s medical histories or other details, and therefore are not in a position to offer a definitive response.</p> <p>However, one potential explanation is offered by Simon Chapman, Professor of Health at UNSW, who has indicated that some of these cases could be as a result of the “nocebo” effect which has proven that some people who believe that something is making them ill can actually make themselves ill. They suffer a real illness even though there is no direct physical cause. This is the colliery to the well proven placebo effect where belief a sugar pill can cure an ailment will result in some percentage of the population experiencing a positive health effect.</p> <p>The most common theory in these letters is that infrasound from the wind farm is affecting them. As previously stated, the infrasound levels, measured and documented in peer-reviewed studies, have been measured to be hundreds of times lower than can be perceived, let alone impact on someone’s health.</p>

No.	Subject	Issue Raised	Infigen Response
4	Potential Impact on Health (cont.)	4e – Wind turbine noise can be higher in a valley	<p>The FCWTAG submission states on page 64, “With a light wind blowing at turbine height, sound levels at homes 800 to 3.2 kilometres away in the valley have measured at 5-15 dB(A) higher than models would otherwise suggest.”²⁶ The footnote refers to a paper written by the well respected acoustician Dr Leventhall entitled “<i>Infrasound from Wind Turbines – Fact, Fiction or Deception</i>” 2006</p> <p>However, the referenced paper makes absolutely no mention of wind turbine noise in a valley being higher than expected. In fact, the paper serves to counter many of the FCWTAG’s claims. For example, the paper states.</p> <p><i>“It has been shown above that there is insignificant infrasound from wind turbines...the overriding noise from wind turbines is the fluctuating audible swish, mistakenly referred to as “infrasound” or “low frequency noise”. Objectors uninformed and mistaken use of these terms...which have acquired a number of anxiety producing connotations, has led to unnecessary fears.”</i></p> <p>It is not clear why the FCWTAG has cited this reference to support their arguments.</p>
		4f – Wind Turbines violate UN Conventions	The propositions put forth in Appendix 1 of the FCWTAG submission that building a wind farm violates articles of the UN Convention on Persons with Disabilities including “Right to Life” and “Freedom from Torture” are clearly without merit.
		4g – The FCWF EA should have been provided in Braille.	It is the proponent’s understanding that the DoPI is considering how to address the issue of making EAs accessible for those who are visually impaired.

No.	Subject	Issue Raised	Infigen Response
4	Potential Impact on Health (cont.)	4h – “Landmark” 2009 peer reviewed study by Dr Nina Pierpont documents wind turbine syndrome	<p>First, the CSIRO stated very clearly in their testimony before the Fielding Senate Inquiry into wind farms that they searched two worldwide databases of peer reviewed scientific papers and they could not find one paper by Nina Pierpont or one about “wind turbine syndrome”. Nina Pierpont’s work is certainly not peer reviewed in the sense that serious medical and scientific professionals utilise the term.</p> <p>Second, NSW Health, in documents obtained through FOI^{vii}, and reported in the Sydney Morning Herald in January 2012, stated Nina Pierpont’s</p> <p><i>“findings are not scientifically valid, with major methodological flaws.”</i></p> <p>The proponent defers to the judgement of the CSIRO and the NSW Department of Health as to the value of Nina Pierpont’s “research”.</p>

No.	Subject	Issue Raised	Infigen Response
4	Potential Impact on Health (cont.)	4i – A recent wind turbine syndrome report by Mr Rand and Ambrose documented “wind turbine syndrome”	<p>In this study, the first of many cited by the Waubra Foundation, Mr Rand and Ambrose supposedly documented “wind turbine syndrome”---- serious health problems in neighbouring residents to a US wind farm resulting in neighbours abandoning their homes.</p> <p>The NSW Department of Health, in a document obtained via FOI, found many “fatal flaws” in this study including:</p> <ul style="list-style-type: none"> • Sample Bias • Membership Bias • Observer Bias • Diagnostic suspicion Bias • Response Bias • Insufficient statistical power and analysis <p>As pointed out in the review, even one of these would have invalidated this study.</p> <p>The review concludes by stating,</p> <p>“This study is sufficiently flawed...that it would not be publishable in any recognised peer-reviewed national or international journal. The results presented in this study are not only justified by the information provided, the scientific findings are so poorly collected, analysed and presented that they cannot even be considered as hypothesis generating. At worst this study report can be considered misinformation.”</p> <p>The review by NSW Health appears as Appendix G.</p>

No.	Subject	Issue Raised	Infigen Response
4	Potential Impact on Health (cont.)	4j – The Waubra Foundation makes many other claims of health impacts due to wind turbines	<p>The CEO of the Waubra Foundation, Sarah Laurie, has met with the NSW Department of Health on several occasions. She has presented her “evidence” and “studies” supposedly proving that wind turbine make people ill.</p> <p>In documents obtained via FOI, it is perfectly clear that the NSW Health does not share her view and finds her evidence, studies, and arguments to be seriously lacking in credibility and validity. Several quotes from the documents obtained via FOI concerning the Sarah Laurie’s presentations to the NSW Department of Health are:</p> <ul style="list-style-type: none"> • “Lowest category of scientific evidence” • “Inaccurate and unsubstantiated” • “Making assertions of causal links to wind turbines without proper studies is unjustified” <p>The CEO of the Waubra Foundation is also on the public record stating that serious detrimental health impacts due to wind turbines have been “documented” over ten kilometres from wind turbines.</p> <p>In their submission to the draft NSW wind farm guidelines^{viii}, the NSW Department of Health completely disagrees, stating,</p> <p><i>“NSW Health advises that there is currently no health evidence to support a generic 2 km separation distance from a proposed wind turbine. Mandatory enhanced assessment of potential impacts for neighbours within a 2km radius of proposed wind turbines needs to be justified on non-Health grounds.”</i> (NSW Health emphasis)</p> <p>This statement would presumably apply to homes with, or without, children and equally to schools.</p> <p>The proponent defers to the judgement of NSW Health, and every other regulatory or government organisation in the world, that there are no detrimental health impacts caused by living near wind turbines...particularly at the distances necessitated by NSW’s extremely strict wind turbine noise regulations.</p>

No.	Subject	Issue Raised	Infigen Response
4	Potential Impact on Health (cont.)	4k --- Increased industrialisation could have adverse impacts on someone already ill due to exposure to organophosphates	The proposed wind farm project will not increase the level of organophosphates already in use by the farms in the vicinity of this residence which is located in the rural (i.e. farming) zone.
		4l --- Electromagnetic radiation from turbines is a health risk	<p>The submission by Dr H. Bahramali states that electromagnetic radiation from wind turbines can cause leukaemia and is “not dissimilar to James Hardy’s Industries and production of Asbestos.” Dr Bahramali cites a journal article to substantiate this claim.^{ix}</p> <p>It is not clear whether Dr Bahramali did not read the article cited, or failed to understand it, but the article has nothing to do with potential health impacts of wind turbines. The article cited discusses potential “problems with electromagnetic compatibility, creating unwanted interaction between electrical devices.” The article does not mention one potential health impacts; the article simply discusses the desirability for standards to avoid electrical interference between wind turbines and other electronic or communication devices.</p> <p>Wind turbines, as well as all sources of electricity generation, have strict limits on the electromagnetic fields (EMF) they can produce. As the electrical generator is located about 80 metres above the ground, the EMF levels are even further reduced for landowners and neighbours. As one example, a Canadian wind energy company measured the magnetic field at the base of a wind turbine to be only .4mG, quickly dropping off to less than .04mG, only 8 metres from the turbine.^x This compares with Health Guidelines for the General Public of 1000mG (NHMRC 1989) and 3000mG (Australian Radiation Protection and Nuclear Safety Agency 2009).</p>
		4m --- The NSW Government has determined that a 2km setback is required to protect the community’s health, safety and welfare.	The NSW Health Department made it perfectly clear in their submission to the draft NSW wind farm guidelines that this is not their view. As stated in 4j above, their submission states that there is no health evidence to support a 2km separation between residences and turbines and that any enhanced assessment of potential impacts of turbines within 2km of a residence must be justified on non-health grounds.

No.	Subject	Issue Raised	Infigen Response
4	Potential Impact on Health (cont.)	4n --- Landowner lease agreements require them to surrender their rights to complain and compensation for adverse health impacts	<p>This assertion is not valid.</p> <p>All landowners, who are effectively business partners in the wind farm project, may freely discuss perceived health issues with their doctors, government agencies and in public. Like any other commercial contract, our landholder contracts do contain confidentiality clauses that are concerned with the commercial terms of our contracts. These clauses are designed to protect the interests of both parties.</p>
5	Visual Amenity	5a –Shadow Flicker report utilises an indicative wind turbine	<p>A different turbine model will have a minor change to predicted shadow flicker duration periods as the key factors --- blade length, chord length (i.e. blade width) and turbine height, are quite similar for the different turbine models under consideration. As the indicative turbine resulted in shadow flicker duration period ten times below the draft NSW wind farm guideline criteria of 30 hours of shadow flicker per year for all neighbouring residences, other turbines will also necessarily be comfortably below this standard.</p> <p>To confirm this, PB Power has run a shadow flicker assessment for the RePower 3.2MW WTG with a 57 metre long blade and 150 metre total tip height. The maximum annual shadow flicker predicted under the realistic and worst case shadow flicker scenarios for neighbouring residences was 3 hours and 27 minutes and 17 hours 21 minutes, respectively, at residence 23, both of which are still below the 30 hour criteria. As stated in the EA, the 'worst case' scenario is effectively impossible as it requires the sun to always be shining and the wind to always be blowing amongst other improbable conditions. Only one additional residence was predicted to experience shadow flicker under the realistic case scenario with the larger turbine (for a total of 18 seconds per year).</p>
		5b – Four residences will experience high levels of shadow flicker	<p>The FCWTAG submission states, "Four residences experience realistic shadow flicker hours per year at the top end of the scale, with 4 being greater than 8 (two of these being greater than 9)."</p> <p>First, it is important to note that all four of these residences are landowners involved in the wind farm project. Even so, these four residences are still predicted to experience less than 1/3 of the allowable level of shadow flicker per year.</p>

No.	Subject	Issue Raised	Infigen Response
5	Visual Amenity (cont.)	5c – Shadow Flicker can cause seizures in people with epilepsy	<p>In Section 6.4.13 of the FCWTAG submission, it is stated that shadow flicker frequency must be kept to a maximum of 3 per second. Modern wind turbines rotate at speeds around 20 rpm, or one revolution every 3 seconds. This results in a shadow flicker frequency of about 1 per second---far below FCWTAG's suggested maximum of 3 per second.</p> <p>The proponent agrees that the shadow flicker frequency of modern wind turbines is well below that could potentially affect people with epilepsy. The suggestion that two or three wind turbines could line up and all cause shadow flicker for the same residence is impossible as clearly shown in the shadow flicker map due to the distance between turbines.</p>
		5d – Seizure risk from shadow flicker is still a risk at 10 kilometres	<p>This statement in Section 6.4.12 of the FCWTAG submission is made without any reference or substantiation and goes on to propose a separation distance of 10kms for people with a seizure risk. Setting aside the point made in 5c, that FCWTAG agrees the shadow frequency for modern wind turbines is insufficient to be a problem, it is incorrect to suggest shadow flicker can be perceived at distances up to ten kilometres. The turbine blade width at such a distance is almost invisible, let alone sufficient to block out a perceptible amount of the sun.</p>
		5e – The visual impact of the project is underestimated by use of a wide angle lens for the photomontages	<p>As stated in Section 9.8 of the EA, the focal length of the human eye is about 50mm. Therefore, a wide angle lens would be one with a focal length less than 50mm. As stated in Section 9.8, the focal lengths used for the photomontages were between 50 and 65mm. Therefore, the statement that a wide angle lens was utilised for the photomontages is incorrect.</p>
		5f – The Blayney wind farm is not that well accepted by the community	<p>In the proponent's experience, the Blayney wind farm has almost universal support. In addition, if the Blayney wind farm was not well accepted by the community, it would seem unlikely that the Shire would feature the wind farm on its logo.</p>
		5g – The visibility indices take into account proposed plantings	<p>This concern from Section 6.5 of the FCWTAG submission is not valid. The visibility indices only took into account existing vegetation screening.</p>

No.	Subject	Issue Raised	Infigen Response
5	Visual Amenity (cont.)	5h – The photo of Carcoar is irrelevant and deceptive	Section 6.5.7 of the FCWTAG submission states that the photo of Carcoar in the EA (presumably Plate 9.9) is “irrelevant and deceptive”. The photo of Carcoar in Plate 9.9 is not a photomontage; it is simply a photo of the village to inform those who are not familiar with the village. A photomontage of the proposed wind farm from an elevated location in Carcoar, towards the wind farm, appears as Plate C.5 in Appendix C1. The Visual impact is judged to be “Low” in Section 9.10.1 of the EA primarily due to the distance from the turbines. A photomontage from the Mount Macquarie Road, heading south from Carcoar as suggested by FCWTAG, would be even further from the proposed wind farm, and would therefore, would have even a lesser visual impact. In addition, it would not represent the view from the village of Carcoar.
		5i – The Blayney wind farm is not included in any photomontages	The absence of the Blayney wind farm in the Photomontages was not intentional. Viewpoint 2 and 8a include the Blayney wind farm in their viewfield, but the wind farm was not visible. Images 1 and 2 from Section 6 of the FCWTAG submission demonstrate that should both the proposed wind farm, and the Blayney wind farm appear in the same photo, the cumulative impact of the much smaller Blayney turbines would have a negligible cumulative impact due to their smaller size and distance.
		5j – There is no view of northern residences	It is assumed that this comment from 6.5.7 of the FCWTAG submission refers to no photomontages being included for residences on Carbine Road. It should be noted that two residents on Carbine Road were asked if they would like photomontages created from their homes. Both residents declined.
		5k – There are no photos which accurately locate the substation	Figure 1.5 in the EA, an aerial photo, identifies the proposed location of the substation. This Figure can be ‘zoomed in’ to see the proposed area.
		5l – The distance from the substation to the neighbouring residence is 300 metres.	Aurecon has verified, utilising GPS coordinates, that the proposed substation is 400 metres from residence 87. In addition, as discussed in item 5m, there is an intervening hill eliminating any visual amenity impact (and reducing the acoustic impact). The distance of 400 metres corrects inconsistencies in the original EA (Section 12.7.2 and Appendix G2 Section 7.1)

No.	Subject	Issue Raised	Infigen Response
5	Visual Amenity (cont.)	5m – Residence 87 is visually impacted by the substation	<p>As can be seen in Figure 1.4, a topographical map, there is an intervening hill between the residence 87 and the proposed location of the substation. Therefore, even if the large pine trees on both sides of the road between residence 87 and the substation were to be removed, there would still be no view of the substation from the residence. Aurecon has confirmed utilising digital topography information that residence 87 will have no direct line of sight to the substation. Therefore, the visual amenity impact will be nil.</p> <p>An image of a typical 132kV substation is shown on page 3-8 of the Environmental Assessment. It is clear the substation is not 25 metres tall. The proposed location of the substation is just up from Slattery's Creek; it is not accurate to state it is "on top of a hill".</p>
		5n – Photomontages from Residence 12 are misleading	<p>Attachment 6 is a photograph of the Carcoar wind farm. Mr Gerathy states there is a difference in "the profile" of these turbines compared with those proposed for FCWF. It is not clear what Mr Gerathy means by this as the Carcoar turbines look very similar to those shown in the wind turbine photomontages in the EA.</p> <p>Attachment 7 has superimposed "Flyers Creek" turbines in the foreground of another photo of the Carcoar wind farm. The Flyers Creek turbines appear larger which one would expect as they are taller and are positioned in the foreground, closer to the photographer. If the point of this photo representation is to show the difference in height and visual impact of the two turbines, placing the Flyers Creek turbines in the foreground makes the comparison invalid.</p> <p>Attachment 8 is Mr Gerathy's photomontage which misrepresents the visual impact by only including a horizontal view angle of about 50 degrees compared to the typical horizontal view angle for the human eye of 124 degrees as discussed in the EA. A 50 degree view angle serves to "zoom in" on the subject of the photo, thereby significantly overestimating the visual impact of the turbines. Gecko Photographics states in Attachment 10 that the EA uses an "extreme wide angle image", when in fact the EA is using the same horizontal angle image as the human eye.</p> <p>Attachment 9 is an altered version of the Photomontage appearing as Plate C.12 in Appendix C1 of the EA with some Carcoar wind turbines added in. It is clear that the image has been compressed horizontally, for some reason, and is one example of how this photo representation is inaccurate.</p>

No.	Subject	Issue Raised	Infigen Response
5	Visual Amenity (cont.)	5o – Gecko Photographics states their photo representations are more accurate.	<p>As stated in the EA, the photomontages were generated by a very sophisticated computer program package which accurately scales and places the wind turbines in the photograph. While one can attempt to replicate the scaling process as Gecko has done, it is very unlikely this could be done as accurately as the dedicated wind farm software package. As just one example, the turbines in the background (i.e. in the middle) of the photo in Attachment 8 are all too large. Did Gecko scale the distance of each of these turbines to residence 12 directly and apply the correct scaling factor? It appears they did not. Such calculations are handled automatically, and accurately, in the photomontage computer software package.</p> <p>The proprietor of Gecko Photographics states he has been a commercial photographer for 45 years and therefore his opinion is based on extensive experience. With no disrespect intended to Gecko Photographics, they do not appear to have much experience in sophisticated, accurate photomontage preparation as their website lists their services as:</p> <ul style="list-style-type: none"> • Logo design • Business stationery • Information and marketing brochures • Presentation folders and advertising cards • Product catalogues • Magazines and books • Advertisements

No.	Subject	Issue Raised	Infigen Response
5	Visual Amenity (cont.)	5p – There are inconsistencies in potential turbine specification and generation capacities.	<p>The EA states, in many places, that the maximum turbine height will be 150 metres to the top of the blade. The visual assessment assumed a 100 metre tower and 50 metre long rotor blades. If the turbine selected for the project ended up having a 95 metre tower and 55 metre long blades, it is clear that the visual impact of the turbines would not be materially changed---or even noticeable.</p> <p>As there is no relationship between the capacity of the electrical generator inside the wind turbine and amenity impacts, there was no maximum generation capacity specified in the EA. Instead, a typical range of turbine generator capacities of 2-3MW was stated. It is possible that a wind turbine with an electrical generating capacity of up to 3.5MW will be selected; however, the maximum height of the turbine will remain 150 metres to the blade tip.</p>
		5q—The wind turbines are ugly and represent a blight on the landscape	<p>The proponent accepts that some people find wind turbines to be unattractive and represent an unwelcome change to the landscape. On the other hand, other people find wind turbines to be attractive, calming, and certainly more visually appealing than a coal fired power station. The existing Carcoar wind farm is very well accepted by the community and even features on the Shire logo.</p> <p>It is not practical to erect wind turbines in places where they cannot be seen; such locations are very unlikely to be windy. In NSW, every wind farm that has been built, and virtually every wind farm that is being proposed, is on top of a ridgeline as elevated hills and ridges are the only locations where the wind resource is high enough to make wind projects viable in NSW.</p> <p>The proponent has volunteered to provide native vegetative screening to nearby neighbours, upon request, to mitigate the visual amenity impact of the project.</p>
		5r – There will be 6 turbines looking down at us within 1.3km	There are no neighbours with six turbines proposed within 1.3km of their house.

No.	Subject	Issue Raised	Infigen Response
5	Visual Amenity (cont.)	5s---There should be a 2 km buffer between houses and turbines	<p>Most jurisdictions do not specify a setback distance for wind turbines. Instead, they utilise a merit based assessment approach. Setbacks specified by other jurisdictions, which do have defined setbacks, are typically between 400 and 600 metres. The largest overseas setback the proponent is aware of is a one kilometre setback in Northern Ireland.</p> <p>The proponent is not aware of any rationale or justification for a two kilometre buffer from wind turbines. It is a completely arbitrary distance. As just one example, a 2km setback policy would hypothetically allow ten turbines circling a neighbour's home at a distance of 2.1 km while prohibiting one turbine being built 1.9 km from a residence. Clearly, this is not a sensible planning outcome.</p>
		5t --- Figures C1-6 are "cut off"; Did not envision seeing 17 turbine blade tips	<p>Figures C1-6 demonstrates the zone of visual influence for all residences within 5km of a wind turbine. At distances beyond 5km, while the wind turbine may well be visible, the visual impact of the turbines would be considered very minor. However, Figure C7 shows the zone of visual influence out to 10km even though the visual impact of turbines at this distance would be considered negligible to non-existent.</p> <p>As stated in the EA, the zone of visual influence maps and number of turbines visible from each residence are idealised "worst case" figures. The number of turbines visible from a residence will be reduced by intervening vegetation. In addition, a blade tip at a distance of over 3km will very likely not be noticed, further reducing the number of turbines having a material visual amenity impact.</p>
		5u --- The visual impact from my residence is unacceptable	The residents, in these instances, were contacted to obtain permission to take photographs from their home to more precisely and accurately assess the potential visual impact. The resident declined their permission, so a photomontage of the visual impact of the project from this residence was not possible.
		5v --- The shadow flicker impact on Errowanbang Primary School is unacceptable	As documented on page 6 of Appendix C2, the school is not predicted to experience any shadow flicker from the wind turbines. This is also true for the 'worst case' modelling of the RePower 3.2M 114 turbine modelled by PB Power as discussed in 5a.
		5w --- Shadow flicker is a concern for my house	The resident(s) in these cases are not predicted to experience any shadow flicker from the wind turbines as shown on pages 5-8 of Appendix C-2.

No.	Subject	Issue Raised	Infigen Response
5	Visual Amenity (cont.)	5x --- Shadow flicker is a concern for my home	As documented on in pages 5-8 of Appendix C2, shadow flicker is predicted to be less than 10% of the 30 hours permitted in the draft NSW wind farm guidelines per year. No neighbouring residences are predicted to experience more than 3 hours of shadow flicker per year in the realistic case for the indicative wind turbine.
		5y --- Proposing “a development with turbine size unknown defies sanity”	<p>It is stated several times in the EA that the maximum turbine height to the blade tip will be 150 metres, so the maximum size of the turbines is known. The visual assessment in the EA assumed a wind turbine 150 metres tall, so it represents a “worst case” assessment. If a shorter wind turbine is selected for the project, then the visual impact will be somewhat less than that documented in the EA. The rationale for why indicative wind turbines are utilised in the EA is further discussed in 3a.</p> <p>This submission also states that the wind turbines will be “at least 150 metres above the ground...”. This statement is in error as the wind turbines for the project will be at most 150 metres tall.</p> <p>It is also worth noting that the relative electrical generating capacity of a wind turbine cannot be determined visually. While larger wind turbines will tend to have larger electrical generating capacities, this is not always the case. For example, a 2.5MW wind turbine can be taller than a 3MW wind turbine, and therefore a smaller electrical capacity turbine can have a (somewhat) larger visual amenity impact.</p>
		5z --- Table 9.3 does not appear to be consistent with Table C1 in Appendix C1 of the EA.	The proponent agrees that Table 9.3 was not consistent with Table C1 in Appendix C1 of the EA. In addition, some changes have occurred since the EA was submitted with regards to properties being sold (i.e. from a landowner in the wind farm project to someone not involved in the wind farm). A revised version of Table 9.3 incorporating these updates appears as Appendix S.
6	Flora & Fauna	6a – The EA lacks soil, water and construction environment management plans	It is common practice for these plans to be developed, in accordance with the development consent conditions, after a planning decision is made. Any information in these plans that is deemed to be relevant to the planning decision is incorporated into the conditions of consent.

No.	Subject	Issue Raised	Infigen Response
6	Flora & Fauna (cont.)	6b – The EA does not protect tree hollows needed for the threatened Superb Parrot and Turquoise Parrot	<p>The proponent has agreed to the recommendations by the expert ecologist with regards to preserving habitat for the Superb Parrot including turbine, cable and road micro-siting to minimise loss of trees, having an ecologist on site to determine the optimal routing and location of infrastructure where tree removal cannot be avoided, and removal of trees outside of breeding season when practical. These appear in the Statement of Commitments.</p> <p>To provide further information about the utilisation of the site by the Superb Parrot, a targeted survey of the parrot was conducted and is documented in Appendix P. As this was a targeted survey for the Superb Parrot during their breeding season, quite a few were sighted. However, no parrots were sighted on the ridgelines where the turbines are proposed to be located.</p> <p>With regards to the Turquoise Parrot, it is worth noting that not one Turquoise Parrot was sighted in any of the 4 bird surveys conducted, so it is very unlikely that this species utilises the site in any significant numbers. Further review of the map of tree hollows identified by Kevin Mills & Assoc. has resulted in an estimate that the maximum number of trees with hollows that would require removal should be 10.</p>
		6c – There is inadequate consideration for the “protected” wedge tailed eagle.	<p>The wedge tailed eagle is not a threatened species in NSW. While raptors do fly at rotor height, they have demonstrated excellent avoidance behaviour around wind farms. As documented in Appendix D of the EA, only two wedgetail eagles were sighted in three separate bird surveys. The small numbers sighted demonstrate that the project will not have an ecologically significant impact on this common bird species.</p>
		6d – Inadequate consideration of impact on microbats	<p>The FCWTAG submission states that only one vulnerable bat species was surveyed for and that the EIA makes no mention of the potential for barotrauma. Three separate bat surveys were undertaken which included installation of bat call recording devices that survey for <i>all</i> bat species. While a separate, targeted survey for the Eastern Bentwing Bat was also undertaken, it is not correct to state that other bat species were not included in the bat surveys.</p> <p>A half page discussion of the potential for barotrauma was included in Appendix E of the EIA on page 21.</p>

No.	Subject	Issue Raised	Infigen Response
6	Flora & Fauna (cont.)	6e – No assessment of the effect of transmission line through Canobolas State Forest	The transmission line is not proposed to go through, or near, the Canobolas State Forest; therefore, no assessment of impacts on the Forest is required.
		6f – The endangered ecological communities will be adversely affected	As stated on page 24 of Appendix D of the EA, almost no areas within the project met the minimum criteria to be considered White Box – Yellow Box – Blakely’s Red Gum woodland, and the few areas that do qualify are completely unaffected by the proposed project.
		6g – There is no indication of a bird or bat collision monitoring program	Page 19-10 in the Statement of Commitments states a bird and bat impact monitoring program will be undertaken, in consultation with DECCW, after the wind farm is operational.
		6h – The vulnerable Common Bent Wing Bat is “likely” to be present	As not one of these bats was detected during three separate bat surveys, it is clear that they do not utilise the site in large numbers. Therefore, the proposed wind farm is very unlikely to have an ecologically significant impact on this species. To further inform the assessment of utilisation of the site by bats, a third bat survey was conducted in March/April 2011 to coincide with the migration period of the Eastern Bentwing Bat for locations representative of the wind turbine locations. No Eastern Bentwing Bats, or any other species listed in the NSW Threatened Species Conservation Act, were recorded during this survey. The report documenting this survey work appears as Appendix O.
		6i – Aviation lights will attract bats increasing likelihood of blade strikes	As stated in the EA, the proponent considers it very unlikely that the Flyers Creek wind farm will need aviation obstacle lights. CASA has indicated that they will not require wind farms to have aviation lights unless the turbines are over 150 metres tall or penetrate an aerodrome’s OLS---neither of which applies to the Flyers Creek project.

No.	Subject	Issue Raised	Infigen Response
6	Flora & Fauna (cont.)	6j --- Birds might avoid the wind farm site	Pre and post construction monitoring of bird activity around wind farms has shown that a few species do exhibit avoidance behaviour for some number of months after wind farm operation. However, surveys show that these birds do return to the area and even fly safely between the wind turbines after a period of months. This temporary avoidance behaviour is a positive outcome as it likely results in fewer bird mortalities.
		6k --- The impact of the project on native birds will be unacceptable	The potential impact of the proposed project on native bird species is covered in great detail in Chapter 10 and Appendix D of the EA. The conclusion of the expert ecologist is that the wind farm will not have an ecologically significant impact on any native bird species.
		6l --- Too many trees will need to be removed	It is estimated in Section 10.5.7 of the EA that the maximum loss of native trees will be 1.1 hectares from a project area of over 6000 hectares. An offset strategy for this removal of trees is explained in Section 10.5.8 of the EA.
		6m --- The wind farm will decimate the local bee population	There is no evidence of wind farms having an effect on bee populations.
		6n --- Clarification is sought with regard to removal of dead trees	On page 8-5, it is stated in the risk analysis that dead tree habitats within 100 metres of a turbine will be removed to reduce the number of potential bird strikes. To clarify, such tree removals will be minimised during micro-siting in consultation with an ecologist and are included in the 1.1 hectare native vegetation impact estimate.
		6o – The EPA makes several recommendations	The proponent agrees with the recommendations in the EPA's submission with the exception of the recommendation for a five year avifauna monitoring program. The proponent will discuss the appropriate length of avifauna monitoring with the OEH and DoPI.

No.	Subject	Issue Raised	Infigen Response
7	Property Values	7a - Property Values within the wind farm project will decline	<p>Infigen is not aware of any study or report finding that land within a wind farm is devalued by the turbines being located on it. In addition, Infigen has not received any complaints from landowners involved in our six Australian wind farms that their land has been devalued by the presence of the wind turbines. On the contrary, comments from our landowners are that their land is considered more valuable as the land is guaranteed an additional income irrespective of weather conditions or commodity prices. Parcels of land involved in the Blayney wind farm have changed hands several times since the wind farm started operation. Residents we have spoken with are not aware of any complaints from the owners of these parcels with respect to their land values.</p>
		7b – Neighbours should be compensated for living near a wind farm	<p>The Land & Environment Court’s decision in the Gullen Range Wind Farm court case^{xi} provides a succinct and authoritative response. Excerpts from the decision appear below:</p> <p>“ 150 The Guardians [opponents to the wind farm] advance the proposition that a consequence of approval of the wind farm will be that a number of properties which are in the vicinity will suffer from “blight” for which there should be payment of compensation if the project were to be approved...</p> <p>154 Such a proposition faces a number of insurmountable hurdles.</p> <p>155 The first is that the wind farm, as earlier noted, is a permissible use on all of the parcels of land upon which it is proposed....</p> <p>159 If the concepts of blight and compensation, as presented by the Guardians, were to be applied to this private project (a proposition which I reject) then any otherwise compliant private project which had some impact in lowering the amenity of another property...would be exposed to such a claim.</p> <p>160 Creating such a right to compensation (for creating such a right it would be) would not merely strike at the basis of the conventional framework of land use planning but would also be contrary to the relevant objective of the Act, in s 5(a)(ii) for “the promotion and co-ordination of the orderly economic use and development of the land...As a consequence, we decline to consider any issues relating to claims for compensation.”</p>

No.	Subject	Issue Raised	Infigen Response
7	Property Values (cont.)	7c – Neighbouring Property Values near the wind farm will decline	<p>1) The most authoritative study of potential impacts on neighbouring property prices in Australia was commissioned by the NSW Valuer General a few years ago. This study^{xii} concluded:</p> <ul style="list-style-type: none"> a) “The main finding was that the wind farm do not appear to have negatively affected property values in most cases. Forty (40) of the 45 sales investigated did not show any reductions in value.” b) “No reductions in sale price were evident for rural properties or residential properties located in nearby townships with views of the wind farm” c) “The results for rural residential properties...were mixed and inconsistent; there were some possible reductions in sales prices identified in some locations alongside properties whose values appeared not to have been affected. “ <p>2) A much larger, more comprehensive study was conducted in the USA by the Lawrence Berkely National Laboratory for the US DOE which analyzed over 7400 property transactions near 24 wind farms in 9 separate states.^{xiii}</p> <p>The conclusion of this study was that, “based on the data sample and analysis presented here, no evidence is found that home prices surrounding wind facilities are consistently, measurably, and significantly affected by either the view of wind facilities or the distance of the home to those facilities.”</p> <p>The above study is widely seen as the largest and most comprehensive study of neighbouring wind farm property values yet conducted. It is also worth noting that the Berkely Lab is one of the most prestigious research institutes in the USA. The three examples of neighbouring property values cited in the FCWTAG submission are not correctly, or sufficiently, referenced to enable comparison.</p> <p>3) In the aforementioned survey by independent consultant, QDOS, they conducted interviews with two real estate agents in Bungendore, NSW, near the Capital and Woodlawn wind farm. A sample of quotes from the real estate agents that appeared in the report are as follows:</p>

No.	Subject	Issue Raised	Infigen Response
7	Property Values (cont.)	7c - Neighbouring Property Values near the wind farm will decline (cont.)	<ul style="list-style-type: none"> ▪ <i>“The biggest problem for people beforehand was fear of the unknown.”</i> ▪ <i>“The actual effect on sales has been minimal.”</i> ▪ <i>“We sold one in between two wind mills, it didn’t impact the sale at all. It was about eighteen months ago.”</i> ▪ <i>“It had a good effect on the rental market during construction and now.”</i> ▪ <i>“We’re still selling properties with views of the wind farm, there’s no effect on prices.”</i> <p>4) Two of the local real estate agents near the Capital Wind Farm have been quoted in the media regarding their experiences. Real Estate agent Judy Alcock wrote a letter to the editor of the Crookwell Gazette^{xiv} stating,</p> <p><i>“ I do not believe that either the Veolia (waste site) or (Capital) wind farm developments have greatly impacted on buyers decision to purchase in our area”.</i></p>

No.	Subject	Issue Raised	Infigen Response
7	Property Values (cont.)	7c - Neighbouring Property Values near the wind farm will decline (cont.)	<p>An article published online on the NowUC website (online publication of the School of Journalism, University of Canberra) included the following two paragraphs:</p> <p><i>Brady's Country Wide Real Estate has sold many properties in the vicinity of the Capital Wind Farm near Bungendore and owner John Brady believes he has not seen a marked impact on property values.</i></p> <p><i>"Before they were built in this region they definitely had a negative fear factor, a fear of the unknown, but once they were built here, people just took them on their merits," Mr Brady said. "We recently sold a property on Taylors Creek Road that is about a kilometre from two wind turbines and I had no problem selling that. I've spoken to people who have lived in amongst the wind turbines and they don't seem too bothered."</i></p> <p>http://www.nowuc.com.au/2012/03/26/wind-farm-protests-over-the-sounds-of-silence/</p> <p>Therefore, from both formal studies and anecdotal remarks of real estate agents near the largest wind farm in NSW, there appears to be no evidence of wind farms having a material effect on neighbouring property values.</p>

No.	Subject	Issue Raised	Infigen Response
7	Property Values (cont.)	7d – Two properties recently sold in the district were devalued by the proposed wind farm	<p>Attachment 15 of Mr Gerathy, G&V Knox and J Harries’ submission shows a valuation report for a property of \$2.1 Million which it is stated sold for \$1.7 Million. There is no mention in the attachment that the wind farm had a negative impact on the purchase price. It is understood that Mr Gerathy, G&V Knox and J Harries were effectively the purchaser of this property, so if there was, in fact, any negative impact on the value of the property, it would have been to their benefit.</p> <p>Attachment 16 of Mr Gerathy’s submission shows a letter from a real estate agent concerning the sale of one of the properties involved in the Flyers Creek project upon which is proposed to be located one wind turbine. The real estate agent’s letter states the (partially completed) house and land was “marketed at \$610,000” but only sold for \$395,000 and the wind farm was a negative factor. First, the seller of this property has never mentioned to the proponent that he was unsatisfied with the sale price of his property. Second, the other block of land to sell within the project boundaries sold for a “record price” because several wind turbines were proposed to be located on it according to a speech by a local landowner at the Blayney Shire wind farm meeting in November 2011. Last, there is a potential incentive for a real estate agent to find an excuse for a property which apparently sells for a lower price than was expected. A real estate agent might be tempted to try to blame a nearby wind farm proposal rather than the agent’s own “thorough marketing campaign” for a perceived lower sales price.</p>
		7e—A neighbour sold his property “due to the non partisan unfair method of negotiation methods of the turbine company...”	<p>The proponent did not engage in any discussions, let alone negotiations, with regards to the sale of this property.</p> <p>It is worth noting the objection does not raise any concerns with regards to the price received for the sale of their property.</p>

No.	Subject	Issue Raised	Infigen Response
8	Water	8a – Oil spills protecting water supplies is not addressed	On page 19-19 of the Statement of Commitments, it is stated that a Fuel and Oil Management Plan will be developed and several mitigation measures are listed including containment measures such as bunding.
		8b – Leaching of heavy metals from concrete foundations has not been assessed.	Concrete foundations are utilised for the majority of all building foundations in Australia. The proponent is not aware of any attempt to regulate or prohibit the use of concrete in foundations due to the leaching of hazardous chemicals.
		8c – The water supply in case of fire is not mentioned.	Section 8.3.1 of the FCWTAG submission states there is no mention of water supply in the event of a turbine fire, or a bush fire. The water supply in case of a bush fire will obviously be unaffected by whether a wind farm is constructed. The need for an additional water supply in the unlikely event of a turbine fire will be considered as part of the Fire Management Plan to be developed with the RFS as stated on page 19-23 of the Statement of Commitments. A number of fire mitigation measures are also detailed on these pages.
		8d – Office of Water makes several recommendations	The proponent shall prepare and implement a Soil and Water Management plan in consultation with and to the satisfaction of the NSW Office of Water. The proponent will obtain any required water licenses to intercept and/or extract groundwater.
		8e – The LCMA makes several comments	The proponent agrees with the objectives and comments made in the Lachlan Catchment Management Authority's submission.

No.	Subject	Issue Raised	Infigen Response
9	Traffic & Transport	9a – A traffic management plan is not included in the EA	<p>It is usual and customary for detailed construction, environment and traffic management plans to be developed, and finalised, after a planning approval decision is received. As just one example as to why this is a sensible approach, the 3 or 4 tower sections for each turbine may come from Queensland, Tasmania, or Victoria. The traffic management plan cannot be finalised until a tower manufacturer has been selected. As stated, the Traffic Management Plan will be developed in conjunction with Blayney Shire Council and RTA/Roads & Maritime Services.</p> <p>In the previously mentioned letter from the Director General to John Gerathy (Annexure 5), it is stated that,</p> <p><i>“it is common for detailed traffic management measures associated with any of these impacts (i.e. any required road upgrades) to be finalised post approval between the relevant agency and Council.</i></p> <p>Therefore, it is clear that the DoPI is satisfied with the proponent’s approach in this regard.</p> <p>Nevertheless, a preliminary assessment of the potential road upgrades for the major construction traffic routes is included in Appendix L. The proponent has reviewed the potential upgrades identified in Appendix L and confirms they are feasible, practical and economic in the context of the entire wind farm project.</p> <p>A more detailed analysis will be conducted for the Traffic and Transport Management Plan. This assessment will be aided by having both the turbine model and construction contractor confirmed.</p>
		9b – Local Shire Roads may be damaged due to large and/or heavy trucks during construction	<p>Infigen has already undertaken to conduct a detailed local road survey in conjunction with Blayney Shire’s Engineering Services to document the condition of local roads just prior to commencement of construction. Infigen Energy will then upgrade some sections of local roads as necessary to accommodate the large and/or heavy trucks. This is obviously a benefit for local residents and the Shire. After construction activities have finished, Infigen and Blayney Shire will re-inspect the local roads to assure they are in no worse condition than when construction started. Infigen Energy will work with council as part of the Traffic and Transport management plan to implement a plan to maintain the safety and serviceability of roads damaged by construction traffic.</p>

No.	Subject	Issue Raised	Infigen Response
9	Traffic & Transport (cont.)	9c – Utilising Halls Road for RAVs will result in the removal of significant trees and vegetation	As stated in Section 13.3.3 of the EA, it is likely that some pruning of lower branches will be required for RAV access. However, it is not envisioned that a significant number of trees will need to be removed to enable RAV access. The low traffic volumes and low traffic speeds on this road (partly due to the three gates that must be opened and closed) make it an ideal road for RAV access from a traffic safety point of view.
		9d – Consultations between the Council and FCWF have not been significant or detailed	The FCWTAG assertion that discussions with Council officers and Councillors have not been significant is incorrect. The first meeting with Blayney Shire was over four years ago, and there have been regular meetings with Shire offices and councillor(s) every 4-6 months ever since. In total, FCWF have met with Blayney Shire officers and/or councillor(s) over fifteen times.
		9e—A tourist facility is not included in the EA	FCWF will work with Blayney Shire Council, RTA, and the local landowners to identify a suitable and appropriate location where visitors can safely pull off the road and view the wind farm including informational displays.
		9f – Blayney Shire Council and others recommend that RAV routes be limited to Routes 1, 2, 2A and 2B.	Chapter 13 of the EA recommends that Routes 1 and 2 be the primary access routes for RAVs; therefore, FCWF agrees the recommended routes are the most appropriate. Some RAV traffic will be necessary on some sections of the other routes; for example, turbines 21-31 cannot be accessed via the four roads recommended by Blayney Shire Council. FCWF will work closely with Blayney Shire’s Engineering Services Department to develop and fine tune the detailed traffic and transport management plan including the scoping out and implementation of upgrades necessary to accommodate RAVs utilised during the construction process.
		9g – Blayney Shire does not have vehicle loading certifications on all bridges intended to be utilised by RAVs	FCWF will work with Blayney Shire Engineering Services to identify which bridges do not have certification and/or lack other documentation as to their loading capabilities. If the bridge’s load capabilities are in serious doubt, FCWF will undertake an assessment of the bridge(s) load capabilities, as required.

No.	Subject	Issue Raised	Infigen Response
9	Traffic & Transport (cont.)	9h – The RAV transport vehicles may delay school bus and CTLX traffic.	As part of the Transport and Traffic management plan, times when school buses or Central Tablelands Livestock Exchange traffic is likely will be identified, and RAV transport schedules modified to minimise or eliminate transport along the same routes and times.
		9i – Blayney Shire requests that the site office be established at the southern end of the development.	FCWF agrees that locating the site office in the southern section of the development is a sensible approach.
		9j – Blayney Shire suggests that a mobile concrete batching plant would reduce traffic movements.	FCWF will quantify the costs and traffic impacts of both a remote and on-site concrete batching plant. If the traffic impacts are significantly less and the costs of a mobile batching plant are not prohibitive, FCWF will utilise a mobile concrete batching plant and obtain any necessary permits required.
		9k – No details are provided with regards to gravel quarry locations	Details of which quarries will be utilised will be included in the Construction management plan and any necessary licenses or approvals will be obtained.
		9l – Dunstaffanage Lane is shown as a necessary 'track upgrade'	FCWF acknowledges this is an error in the EA. Dunstaffanage Lane should have been shown as a minor road.
		9m – Permission is required to access Crown reserves	The proponent will obtain the prior written consent of the DPI Catchments & Lands Department to access or traverse Crown road reserves and waterways.

No.	Subject	Issue Raised	Infigen Response
9	Traffic & Transport (cont.)	9n – The Roads & Maritime Services (RMS) has specified a number of issues for the Transport Management Plan	The proponent will obtain all necessary permits and licenses for oversize and overmass vehicles. The Proponent will undertake an independent risk analysis and inspection of the transport route(s). Damage to classified roads caused by the construction & transportation of components will be repaired to the satisfaction of RMS. RAVs will not travel in convoys. The proponent will adhere to <i>Traffic Control at Work Sites</i> . The proponent will undertake private financing and construction of any works required on State Roads.
		9o – Increased noise due to construction traffic is an issue	There is limited information available with regards to existing traffic volumes on the primary construction traffic routes from which a baseline traffic noise estimate could be made. Assuming a 3 fold increase in traffic during construction hours, ViPAC has estimated the average increase in traffic noise to be on the order of 5 dB(A). As a point of reference, 1 dB(A) is the smallest increment in noise level perceptible by human beings. The applicable construction traffic noise criteria is defined by <i>Environmental Criteria for Road Traffic Noise</i> which specifies that day-time noise levels from traffic are not to exceed a L_{Aeq1hr} of 55dB(A). Given the nature of traffic movements (20 truck and 20 car vehicle movements per day), and a general pass-by time of 15 seconds, ViPAC has estimated the average L_{Aeq1hr} at 8m from the edge of the road will be approximately 50dB(A). As setbacks for houses in this area are typically greater than 8m from the road, the noise generated by construction traffic should safely be within the day time noise criteria of 55dB(A).
		9p – There will be a significant increase in traffic during the construction period	The proponent contacted Blayney Shire to conduct traffic counts for the primary access roads for which they did not have traffic data. This information was then compared with predicted daily construction traffic utilisation. The analysis of this information appears in the report appearing as Appendix T. The report concludes that the existing traffic volumes are relatively light and that the heavy and light construction vehicles are unlikely to significantly impact on existing road users. While the RAVs will likely cause some traffic delays, they are only predicted to take 1-4 trips/day (depending on the road) and will be scheduled to avoid times of peak road use including school bus times.
10	Cultural Heritage	10a – FCWTAG cites a nearby campsite as proof of indigenous utilisation of the area	The apparent existence of a nearby campsite utilised by an aboriginal named Billy 4kms from the project boundaries is not surprising nor does it have any implications for the project as no disturbance of this campsite would occur. The past utilisation of the area by Aboriginal people is not in dispute as the Cultural Heritage chapter makes perfectly clear.

No.	Subject	Issue Raised	Infigen Response
10	Cultural Heritage (cont.)	10b – Some of the traditional owners requested subsurface investigation	The heritage consultant determined that based on their experience and the reasons outlined in Section 10.2 of Appendix F of the EA, that subsurface investigation for most of the site was not necessary. The exception was the two Potential Archaeological Deposits (PADs) if these areas are to be disturbed. The only traditional owner who responded to the draft report did not object to the heritage consultant's recommendation.
		10c – A wedgetail eagles nest may have heritage significance	The FCWTAG state there is a wedge tailed eagle's nest in the Northern part of the development site that is over one hundred years old and has significance to Aboriginal Culture. No tree with an eagle's nest will be removed as part of the proposed project. The heritage consultant does not recall any of the traditional owners mentioning this eagle nest during their survey.
		10d – Old Errowanbang is near the wind farm and is heritage listed	While Old Errowanbang is listed on the Blayney Heritage Inventory, the proposed wind farm will have no impact on the heritage values of the building as no modifications to the building are being proposed. It is also worth noting that at the time the EA was originally lodged, Old Errowanbang was owned by a landowner involved in the Flyers Creek wind project and his family.
		10e --- A number of older houses and sheds within the project have "historical value"	While a number of residences and sheds in the district have existed for some time, and therefore have some history, this is not the same as being heritage listed which denotes significant historical value. Therefore, the statement that no buildings within the project area are heritage listed is correct.
		10f --- The Errowanbang wool shed is heritage listed	The proposed wind project will not impact on the heritage values of the woolshed. No modifications are proposed to be made to this building as part of the wind project. It is also worth noting that at the time the EA was originally lodged, the Errowanbang woolshed was owned by a landowner involved in the Flyers Creek wind project and his family.
		10g---The heritage values and tourist attraction of Carcoar will be affected by the wind project	The village of Carcoar is set in a steep valley such that there will be very few, if any, areas within the village proper that will be able to see any of the wind turbines. Plate C.5 in Appendix C1 shows how the wind farm would appear from an elevated area of Carcoar. The nearest turbine is 4.5 km and the visual impact was assessed as "Low". At a distance of 5 kilometres from the nearest turbine, the wind farm will not be audible. Therefore, there will be no impact to the heritage values of Carcoar. With regards to tourism, the presence of the Flyers Creek wind farm will more likely increase tourist visits in Carcoar, as the Blayney wind farm has done.

No.	Subject	Issue Raised	Infigen Response
11	Cumulative Impacts	11a---The Cadia Mining Lease is only 1 km from the Flyers Creek project.	While the boundary of Cadia's mining lease is about 1km from the boundary of the Flyers Creek wind farm, there is no visual, acoustic, or other amenity impact from a boundary line on a map. The statement in the EA that the Cadia Mine is about 8 kilometres from the Flyers Creek wind farm project refers to the distance from the Cadia Mine (open pit) to the nearest wind turbine as these are physical aspects of the two projects that potentially could have cumulative amenity impacts. There are other parts of the Cadia mine that are closer than 8 kilometres to a wind turbine, such as the tailing dams, but there are no cumulative visual or acoustic amenity impacts for a wind turbine and a dam.
		11b---The potential cumulative noise impact of Cadia Mine and the FCWF has not been assessed.	<p>A mine and a wind farm have very different noise characteristics and different noise limits and methodologies. For example, Cadia Mine's compliance noise testing is only valid at wind speeds less than 3 m/s at 10 metres. At such low wind speeds, the wind farm will either not be operating at all, or will be operating at relatively low power and noise levels.</p> <p>In addition, both Cadia Mine and the wind farm have the same 'nominal' noise limit of 35 dBA---this being the most stringent night time noise limit for the mine. Even if both the Cadia Mine and the wind farm are operating right at their noise limit of 35 dBA at night, which is unlikely, the cumulative noise level would only be about 38 dBA which is still below the EPA's industrial noise policy guideline of 40 dBA at a residence. Therefore, the cumulative noise impact of the Cadia Mine and the proposed wind farm will be acceptable.</p>
		11c---The cumulative visual impact of Cadia Mine and FCWF has not been assessed properly.	It is not clear that there is any cumulative detrimental visual impact between the two facilities as their visual characteristics are so completely different. At lower elevations, where the great majority of residences are located, there is very limited, if any, visibility of Cadia Mine. At some elevated locations, the rock pile and/or tailing dams may be visible. At these same locations, wind turbines may also be visible in the same view. However, there is no cumulative, detrimental visual impact from the two facilities as they do not share any visual characteristics. It is more likely that the wind turbines will distract one's view thereby reducing the visual impact of the rock pile or tailing dam.

No.	Subject	Issue Raised	Infigen Response
11	Cumulative Impacts (cont.)	11d---The cumulative noise impact of the Blayney wind farm and FCWF have been discounted.	<p>The rationale as to why there is no cumulative acoustic impact for the FCWF and Blayney wind farm is discussed in Section 17.3 of the EA. The primary reason is the distance of 8 kilometres precludes any material acoustic cumulative impact.</p> <p>It is also worth noting that the Blayney Shire Council is on the record stating they have had no noise, health, or any other complaints with regards to the Blayney wind farm over almost one decade of operation.</p>
		11e--- The cumulative visual impact of the Blayney wind farm was not properly assessed	The cumulative visual impact of the Blayney and Flyers Creek wind farms is discussed in detail in Section 17.3 of the EIA. The distance of 8km between the two wind farms results in the cumulative visual impacts, in the few areas where both projects will be visible, to be immaterial.
		11f---Cumulative impacts for other industries was not assessed.	The FCWTAG submission states that the Flyers Creek wind farm contributes to the “industrialisation” of Blayney Shire started by industries such as Blayney Foods and Nestle’s Purina. It is unclear what cumulative impact there is between a wind farm and a pet food factory located over 10km away. It is also not clear whether FCTWAG are advocating that such “industrialisation” should cease and these factories closed down.
12	Safety Aspects	12a---The AAAA opposes wind farms	<p>The Aerial Agricultural Association of Australia (AAAA) has made it clear that they oppose wind farms on farm land on <i>economic</i> grounds---wind turbines do have the potential to limit aerial spraying close to the turbines. Farmers involved in wind energy projects are aware that the potential for aerial spraying of their land will be limited by the erection of wind turbines.</p> <p>With regards to any safety concerns, these are addressed by the Federal Department of Infrastructure’s Guidelines concerning wind turbines and the Civil Aviation Safety Authority (CASA). Neither organisation has expressed any particular safety concerns with regards to agricultural pilots and wind turbines to the proponent’s knowledge.</p>

No.	Subject	Issue Raised	Infigen Response
12	Safety Aspects (cont.)	12b---Local aviation businesses are concerned about the FCWF project.	The FCWTAG submission alleges that three aviation businesses in the Orange area are “concerned” about the proposed Flyers Creek wind farm and had no knowledge of the project before being contacted by FCWTAG. There have been over 25 newspaper articles about the Flyers Creek wind farm in Orange’s Central West Daily newspaper along with many radio and TV stories. It is also worth noting that there are two communication towers that appear as “obstacles” on aviation maps between the Orange airport and the Flyers Creek wind farm which must be avoided. It is also noted that none of these three businesses lodged an objection.
		12c---There appears to be minimal consultation with CASA	The proposed details of the Flyers Creek wind farm project were provided to CASA in a letter in 2010. Informal phone conversations with CASA have also occurred. No official response to the letter was received which is not unusual as the proposed wind farm is not near an Obstacle Limitation Surface, and therefore does not represent a hazard to aviation.
		12d---The visual amenity impact of potential aviation lights would be excessive	As stated in the EA, the proponent considers it very unlikely that the Flyers Creek wind farm will require aviation obstacle lights. CASA has indicated that they will not require wind farms to have aviation lights unless the turbines are over 150 metres tall or penetrate an aerodrome’s OLS---neither of which applies to the Flyers Creek project. In the unlikely event that aviation lights are needed, the proponent will select focussed aviation lights which maximises the intensity of light within about +/- 2 degrees from the horizontal thereby minimising the light intensity seen at ground level---consistent with the provisions of the draft NSW wind farm guidelines.
		12e---The potential impact of Orange airport’s expansion have not been considered in the EA.	The plans for the potential expansion of the Orange airport were put on public display after the EA for the Flyers Creek wind farm was submitted which is why it was not considered in the EA. The first meeting with Orange City Council’s Infrastructure Department, about the Orange airport, was over 4 years ago and further consultation has occurred including discussions about the potential expansion of Orange airport. Advice from Orange City Council has confirmed that should the airport expansion proceed, even to the final proposed stage, the proposed wind farm will not penetrate the airport’s Obstacle Limitation Surface (OLS).

No.	Subject	Issue Raised	Infigen Response
12	Safety Aspects (cont.)	12f--- The NDB-A approach may be affected by the proposed wind farm.	Since the EA was submitted, FCWF has received written advice from Airservices Australia that the slight modifications to the Non-Directional Beacon Approach (NDB-A) are definitely feasible (see Appendix H). Should the wind farm proceed, Infigen Energy will commission Airservices to undertake this work. Therefore, this potential issue can easily be resolved.
		12g--- Wind farms interfere with aerial fire fighting capabilities	The RFS has written to another wind farm proponent clarifying that, “the presence of wind turbines is unlikely to restrict our fire fighting operations” (See Appendix I).
		12h---It is not clear how FCWF will manage the requirements of the RFS	Included in Appendix B of the EA is a letter from the NSW RFS commenting on the Flyers Creek wind farm proposal. The RFS does not object to the proposed wind farm. Their letter includes items and recommendations to be included in the wind farm fire management plan. FCWF will abide by all recommendations in the letter from the RFS.
		12i---The Errowanbang school is at risk from a wind turbine fire	There is no doubt that the risk from bushfires started by lightning, machinery, or other human activities within the project site far exceed the extremely small chance of a fire starting within a Flyers Creek wind turbine. It is worth noting that completion of the project will enable improved fire fighting capabilities should a fire start from one of these other, more likely, factors. As just one example, the access for RFS trucks to the ridgelines, where a lightning strike fire would likely start, will be significantly improved as a result of the project. As previously noted, the RFS is not objecting to the FCWF, so presumably they do not view the increased risk to the primary school to be material.
		12j --- It is unclear in the EA who will pay to remedy TV reception degradation.	It is clearly stated on page 26 of Chapter 19 that FCWF will pay for all necessary remedial measures in the unlikely event that the wind farm detrimentally affects digital TV signals.

No.	Subject	Issue Raised	Infigen Response
12	Safety Aspects (cont.)	12k --- There is no evidence that communication companies were consulted about the wind farm	Aurecon, on behalf of FCWF, sent letters to all of the companies with communication pathways over the wind farm site including Optus/Crown Castle, Telstra and Transgrid. None of these companies have expressed any concern with regards to the turbine layout as their concerns, if any, have been addressed.
		12l --- The health impacts from the EMF of the wind farm substation has not been addressed.	Aurecon has estimated the EMF from the substation and power lines in a report that appears as Appendix R. The magnetic field at the substation fence is estimated to be 30mG --- and only 2mG 50 metres from the fence. This compares with international exposure guidelines of 1000-3000mG for the general public. The electric field at the substation fence is estimated to be .1kV/metre compared to the general public exposure guideline of 5 kV/metre. Aurecon states in their report that both the electrical and magnetic fields from the substation at the nearest residence will be "nil".
		12m --- There have been workplace accidents at wind farms	<p>Infigen has committed itself to managing our business in a way to eliminate, or at least minimise, accidents, injury or illness, damage to property or impacts on the environment. In conjunction with its main contractors, Infigen establishes a comprehensive safety management system for its construction projects. The management plan sets out requirements for risk assessments, design specifications to meet Australian standards and ensuring all construction personnel have the required statutory training and competence. During construction, health and safety is given the highest priority, HSE roles and responsibilities are clearly set, proactive communication is promoted and performance is monitored. Infigen has a strong record of safety management, with the recent Woodlawn Wind Farm construction being completed without any lost time due to injuries.</p> <p>A paper written by the Caithness Windfarm Information Forum appears as Appendix 5 of the FCWTAG submission. It is worth noting that the authors take no responsibility for its accuracy. In addition, the tone of the paper is clearly anti-wind energy.</p>

No.	Subject	Issue Raised	Infigen Response
12	Safety Aspects (cont.)	12n --- The issue of blade throw has not been adequately addressed	Turbine blades do fail on rare occasions. In these rare occasions, the blade often cracks or has some other problem resulting in the turbine shutting down before the blade is “thrown” due to the extensive automatic fault monitoring within the wind turbine. Therefore, occurrences of turbine blades being “thrown” some distance from the turbines are exceedingly rare. The instances of ‘blade throw’ are so rare that Infigen’s insurance provider, which insures wind farms worldwide, does not even compile or track data with regards to how often it occurs. There are no reported instances of a human being ever being injured by a wind turbine blade “throw.”
		12o --- EMF from the 132kV power line is a concern	<p>Aurecon has estimated, in Appendix R, that the magnetic field directly underneath the 132kV line to be 76mG---dropping off to only .5mG at a distance of 100 metres. As previously stated, this compares to general public exposure guidelines of 1000-3000 mG.</p> <p>Aurecon has estimated the electric field directly under the line to be .95 kV/metre dropping off to only .02kV/metre at a distance 50 metres from the line. This compares with the current general public exposure guideline of 5kV/metre.</p> <p>Aurecon states the EMF contribution of the 132kV line to the electric or magnetic fields at the nearest house to be “virtually nil”.</p>
13	Decommissioning	13a --- The Statement of Commitments does not cover decommissioning	It is stated in Section 3.7.5 of the EA that FCWF will remove the turbines and above ground facilities at the end of the project life at its expense. This legal requirement is also included in our lease agreements with the project landowners, and will undoubtedly be included in the project’s conditions of consent, should the project be approved. Last, the obligation is clearly stated in the Decommissioning Plan which appears as Appendix N.

No.	Subject	Issue Raised	Infigen Response
13	Decommissioning (cont.)	13b---A decommissioning bond is required to assure the turbines are removed	<p>The proponent states in the EA that the above ground infrastructure will be removed once the wind farm ceases operation. This same requirement will also likely appear in the conditions of consent should the project be approved. In addition, the proponent has this same legal obligation in its lease arrangements with the landowners involved in the project.</p> <p>It is routine for large infrastructure projects, like the Flyers Creek wind farm, to be debt financed before, or after, construction of the project. In the unlikely event that the proponent was to become insolvent, the finance company would take over operation of the wind farm, earning the revenue from the project, and at the same time assuming all obligations of the project. In this unlikely case, the financier(s) would decommission the wind farm.</p> <p>It is important to note that various studies have documented that the scrap value of current wind turbines will largely, if not completely, offset the cost of decommissioning the wind turbines. This was not true of smaller trestle tower wind turbines 20 years ago.</p> <p>The expertise level of the “Centre of Waste Management in Abu Dhabi” with regards to wind energy facilities is not clear; however, their concluding remark in Appendix 2 of the FCWTAG submission that, the NSW Government should,</p> <p style="padding-left: 40px;">“take extreme caution in dealing with this application...for an outdated and otherwise ineffective method of renewable energy.”</p> <p>makes it clear that they have other objections to wind energy besides waste management and decommissioning.</p> <p>For the above reasons, Infigen Energy is strongly of the view that there is no need for a decommissioning bond. It should be noted that decommissioning bonds increase the cost of wind farm projects---a cost which will then have to flow through to consumer electricity bills in one form or another.</p> <p>However, the draft NSW wind farm guidelines stipulate that decommissioning funding arrangements be considered as part of a Wind Farm Decommissioning Plan. A Decommissioning Plan for the Flyers Creek wind farm is attached as Appendix N and includes the provision of funding arrangements should the scrap value of the turbines be less than the decommissioning costs ten years after the commissioning of the wind farm.</p>

No.	Subject	Issue Raised	Infigen Response
13	Decommissioning (cont.)	13c---Infigen's comment about repowering of wind farm sites is "farcical".	The FCWTAG submission states that a letter from Infigen stating that, historically, wind farms are far more likely to be re-powered then decommissioned is "farcical" as there is no history of this occurring in Australia. The letter refers to the substantial number of projects, particularly in Europe, where historically this has occurred. It is quite likely that some older wind projects in Australia will be re-powered later this decade.
		13d – The concrete foundations should be removed at decommissioning	There is no question that removal of the concrete foundations would cause more environmental disturbance and harm than leaving them in place. Therefore, there is no rationale to removing the foundations.
14	Waste Management	14a---Waste management is dealt with perfunctorily in the EA	Waste management is primarily covered in Section 3.9.6 of the EA. Further details of waste management during the construction and operation of the wind farm will be dealt with in the Construction and Environment Management Plans which will be developed should the wind farm be approved and proceed to construction.
15	Miscellaneous	15a – Will the zoning of the land change; what rates will be paid?	It is up to Blayney Shire to determine zoning for the land in the Shire. The proponent does not expect the Shire will change the zoning of the project area as the predominant land use remains farming. NSW does not charge rates on improvements to the land; therefore, the wind farm project, just like any other structure built on the land, is not charged rates.
		15b – Reduced agricultural productivity	The farmer will lose a 6-7 metre diameter area of land for each wind turbine. While this does represent a miniscule loss of "agricultural productivity", it is more than made up by the farmer receiving a guaranteed payment every year regardless of commodity prices or weather conditions. Hosting wind turbines have enabled many farmers to stay "on the land" and continue to farm as a result of this extra income. Therefore, wind farms are a benefit to the farmer's agricultural business and contribute to increased agricultural productivity.

No.	Subject	Issue Raised	Infigen Response
15	Miscellaneous (cont.)	15c – Can further turbines be proposed; what would the process be?	Should the wind farm be approved, additional wind turbines beyond the number approved would be the subject of a separate planning application. The proponent has no plans for a “Phase 2” of the project; the wind resource, environmental, mining, and township constraints would preclude such a proposal in any case.
		15d ---Wind turbines detrimentally affect chickens’ ability to lay eggs	It is stated by Mr Steele in his submission that, “there is evidence to support a detrimental impact on egg production is likely within 5 kilometres of wind turbines.” The proponent has met with Mr Steele twice, including once at his property, taking him up on his invitation to visit the property made in an email dated November 11, 2010. During both meetings, Mr Steele made this claim, and stated he had evidence to back up this assertion. Mr Steele was informed during both meetings that the proponent would be very interested in seeing this evidence, and Mr Steele indicated he would send it. The proponent has not received anything in this regard. It is also worth noting that during the meeting at his house, the proponent considers that they answered every one of Mr Steele’s questions and concerns in a polite and honest manner.
		15e---Neighbour was allegedly told no turbines would be located within 2km of their home	In their submission, David & Maureen Coleman write that Jonathan Upson from Infigen Energy told them at a meeting at their home in March 2011 that there would be no turbines within 2km of their home. This statement was not made. A proposed turbine layout map had been mailed to the Colemans in November, 2010, and was also available at the Community Information Day, documenting that this was not the case.
		15f --- The proponent have been known to buy people to get their own way	While the exact meaning of the statement is not clear, the proponent has not “bought” any people and does not belittle other people’s opinions.
		15g --- The proposed location of the 132kV on Cadia’s mine lease presents several issues	The proponent, in consultation with Cadia Mine, has revised the location of the proposed 132kV line to avoid locating it on Cadia’s mining lease. The revised 132kV line route and switchyard is shown in the Preferred Project Report. The proponent will come to a mutually satisfactory resolution to the contingency of the line needing to be relocated in the future with Cadia’s management.

No.	Subject	Issue Raised	Infigen Response
15	Miscellaneous (cont.)	15h --- Internet and phone service can be disrupted	There certainly is no evidence of wind turbines having any effect on landline phone service (and ADSL internet service). It is also very unlikely that mobile phone coverage will be affected as described in Section 14.4.1 of the EA, and should such disruption occur, there are steps the proponent can undertake to mitigate any problems.
		15i --- There are 36 non-host residences within 2km of a wind turbine	As documented, in the EA (see pages C1-13 to C1-22), there are 22 non-host residences within 2km of a wind turbine.
		15j --- The substation should be moved near WTG #12	This suggested location would place the substation at the top of a hill thereby increasing its visual impact on the district. In addition, the suggested location would have very poor access---all vehicular access would have to be from the Beneree-Carcoar road on the other side of the project.
		15k --- Wind turbines cause a "molestation" of natural air flow for 20km	It is not clear how a photo of offshore wind turbines in the ocean with a vapour trail behind them proves the Flyers Creek project will have a detrimental impact. In addition, it is self-evident that the wind and other environmental conditions of a wind farm located in the ocean bear no resemblance to the Flyers Creek wind farm proposed to be located on several ridgelines.
		15l --- A neighbour states there are 16 turbines proposed within 3km of his residence	The residence in question has two turbines within 1900 metres of their residence and 8 turbines proposed between 1900 and 2800 metres from their residence (now that WTG 17 has been deleted).

No.	Subject	Issue Raised	Infigen Response
15	Miscellaneous (cont.)	15m – A potential B&B may not be viable should the proposal proceed	<p>If the Flyers Creek proposal proceeds, it is very likely that a B&B near the project site would enjoy a very high occupancy rate---particularly during construction as workers on the project would seek to rent the nearby accommodation. After the wind farm begins operation, the B&B would still be unlikely to be adversely impacted by the wind farm. A submission to the Fielding Senate Inquiry last year by Geoff Tonks, who operates a B&B 1.5-2kms away from the turbines of the Codrington Wind Farm turbines, stated:</p> <p><i>“Thousands of guests pass through our business each year; we’ve just had about 2,000 guests over the Xmas break...some say they would like to get a closer view, others comment that they find watching the turbines relaxing and graceful. Some make negative comments of various types. When you discuss the wind farm with them, we find that the negative comments are largely based on false knowledge or misconceptions.”</i></p>
		15n – Infigen Energy is in an unstable financial position and its UK arm has gone into liquidation	<p>Infigen Energy never had a significant presence in the UK and once the sale of its European assets was completed, the UK office was no longer needed. Infigen Energy (Eifel) Limited met all of its financial obligations before closing and was simply wound up as a presence in the UK was no longer required. Privately owned large infrastructure projects are usually debt financed, so it is not surprising that Infigen Energy is carrying debt on its balance sheet.</p>
		15o – There are over 100 residences within 3km of a wind turbine	<p>There are 67 neighbouring residences within 3km of a wind turbine---2/3 of these are over 2 kilometres away from the nearest wind turbine.</p>

Endnotes

ⁱ See Table 2 of the *2011 SA Supply & Demand Report*, AEMO

ⁱⁱ <http://www.environment.nsw.gov.au/resources/climatechange/GHGabtmntWindFarms.pdf>
[http://www.sustainability.vic.gov.au/resources/documents/Greenhouse abatement from wind report.pdf](http://www.sustainability.vic.gov.au/resources/documents/Greenhouse%20abatement%20from%20wind%20report.pdf)

ⁱⁱⁱ Published in the Yass Tribune on 29 July 2011; the text can be found at: <http://yes2renewables.org/2011/07/29/wind%E2%80%99s-10-million-local-injection/>

^{iv} http://www.epa.sa.gov.au/xstd_files/Noise/Report/infrasound.pdf

^v Ontario Environmental Review Tribunal Case Numbers 10-121/10-122 Erickson v. Director, Ministry of the Environment

^{vi} [http://docs.health.vic.gov.au/docs/doc/5593AE74A5B486F2CA257B5E0014E33C/\\$FILE/Wind%20farms,%20sound%20and%20%20health%20-%20Technical%20information%20WEB.pdf](http://docs.health.vic.gov.au/docs/doc/5593AE74A5B486F2CA257B5E0014E33C/$FILE/Wind%20farms,%20sound%20and%20%20health%20-%20Technical%20information%20WEB.pdf)

^{vii} The FOI documents can be requested via the following website: <http://www.foe.org.au/articles/2012-01-31/time-stop-listening-front-group%E2%80%99s-junk-science>

^{viii} <http://www.planning.nsw.gov.au/LinkClick.aspx?fileticket=OLU9qaQPsl0%3d&tabid=205&mid=1081&language=en-US>

^{ix} <http://www.renewableenergyworld.com/rea/news/article/2011/03/setting-emc-standards-for-turbines>

^x <http://www.windrush-energy.com/update%20Jul%202024/Appendix%20D%20-%20Magnetic%20Field%20Survey/Magnetic%20Field%20Report.pdf>

^{xi} [http://www.austlii.edu.au/cgi-bin/sinodisp/au/cases/nsw/NSWLEC/2010/1102.html?stem=0&synonyms=0&query=title\(gullen%20orange%20\)](http://www.austlii.edu.au/cgi-bin/sinodisp/au/cases/nsw/NSWLEC/2010/1102.html?stem=0&synonyms=0&query=title(gullen%20orange%20))

^{xii} http://www.lpi.nsw.gov.au/_data/assets/pdf_file/0018/117621/t0L51WT8.pdf

^{xiii} <http://eetd.lbl.gov/ea/ems/reports/lbnl-2829e.pdf>

^{xiv} Letter to the Editor of the Crookwell Gazette by Judy Alcock published 12 July 2011