



ENVIRONMENTAL IMPACT STATEMENT

SUBMISSIONS REPORT

Mount Emerald Wind Farm

November 2014

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1 GENERAL

No.	Submission	Issue	Response	Section Amendment
1.	S010	Actual assessments on environmental aspects are unclear and contradictory. No mention is made of groundwater, blasting is stated as being 'little', yet this is clearly contradicted in the report when impact on Quoll communities are assessed, where mention is made of blasting and its effect on the quolls.	<p>Given the topographic position of the proposed construction activities and shallow nature of the proposed earthworks, consideration of impact on groundwater is limited to shallow seasonal perched waters, as recharge to deeper aquifers will be unaffected by the development. It is proposed to conduct the majority of the bulk earthworks such as footing and cabling trench preparation outside the peak wet season months; this will minimise any requirements to dewater these operations. Less than 2% of the area will be affected by earthworks, therefore any impacts associated with dewatering are considered to be minimal. Construction and operation phase sewage effluent will be either trucked to Mareeba for treatment and disposal via the municipal system or treated to tertiary standard and disposed via septic/irrigation in accordance with local and state regulations.</p> <p>Detailed Geotech surveys will be conducted at each proposed turbine location to determine the correct footing structure. Blasting is not a preferred activity due to environmental constraints.</p>	<p>Volume 2 Section 12.5.3.1</p> <p>Volume 2 Section 15.3.1.1.</p>
2.	S010	There is a reliance on mitigation measures AFTER EIS approval, rather than addressing the management of pertinent natural resources such as flora and fauna, and the focus would appear to be on the quoll population while not properly examining the impact on flying and migratory species.	<p>Other flying and migratory species not identified as at risk will also be protected with the utilisation of these measures.</p> <p>The Preliminary EMP provides some detail on the schedule of activities required before any works can be conducted.</p>	<p>Volume 2 Chapters 16-18 - detailed mitigation measures.</p> <p>Appendix 31 Preliminary EMP</p>
3.	S017	It is not known whether the information in Table 24.1 Pre-Construction and ERA Key Mitigation Measures will be incorporated into the Environmental Management Plans. Some of the recommendations of the report writers have merit but there is little indication of a commitment on the part of the proponent to take up these recommendations. Demonstrate a commitment to adopt the recommendations of the report writers and the actions contained in the Pre Construction Table 24 and ERA Key Mitigation Measures.	The proponent has committed to the measures identified in the EIS and EMP. This is a requirement for inclusion into the EIS as per section 5.11 of the MEWF Guidelines	Appendix 1

2 DESCRIPTION OF THE PROPOSAL

No.	Submission	Issue	Response	Section Amendment
4.	S019	<p>An accurate description of the project proponents and their relationship as the property owners should be included in the final EIS.</p> <p>The proponents have not provided a clear description of the proponents. Mount Emerald Wind Farm Pty Ltd is a joint venture between RATCH and the land owners, Port Douglas-based property developers Port Bajool (the Noli and Morris families). The draft EIS states: “It is intended that Mount Emerald Wind Farm Pty Ltd (under RACL) will secure a 30-year lease over the entire site” (p.12, p.60). The proponents later state: “the project represents a collaborative partnership between Mount Emerald Wind Farm Pty Ltd, landowners and Powerlink” (p.55) when Mount Emerald Wind Farm Pty Ltd is actually a partnership between the land owners (Port Bajool) and RACL. It is unknown why it isn’t clearly articulated in the draft EIS, when Mount Emerald Wind Farm Pty Ltd lodged the development application with the local Council, now called in by the State Government.</p>	<p>RATCH Australia Corporation Limited (RACL) made the referral under the EPBC Act on behalf of Mount Emerald Wind Farm Pty Ltd. Mount Emerald Wind Farm Pty Ltd is a company with equal shares held between RATCH-Australia and Port Bajool.</p> <p>Port Bajool are the owners of the land and have developed property in the Port Douglas and Tablelands areas for over 30 years. They remain the major landholders at Oaky Creek Farms.</p> <p>RATCH-Australia Corporation Limited is 20% owned by Transfield Services Australia and 80% by Ratchaburi Electricity Generating Holdings PCL, a Thai based electricity company with over 5,700MW of operating power stations in SE Asia.</p> <p>RATCH-Australia owns and operates a portfolio of power stations across Australia with a total capacity of 815 megawatts (MW). The company owns and operates three wind farms, including the Windy Hill project which has been operating successfully in the region for over 10 years, and has an interest in a number of wind farm development sites.</p> <p>Transfield Services is an Australian-owned company and is a leading provider of operations, maintenance, asset and project management services. The company – with a workforce in excess of 28,000 employees - works across diverse industries including mining, hydrocarbons, transport, water, energy, telecommunications and defence.</p> <p>Transfield Services provides operations and maintenance services for all of RATCH-Australia’s operating power stations.</p> <p>Both companies have extensive experience in project development and delivery across Australia, and has fostered close relationships with landowners and host communities, with an enviable track record of working with communities to develop solutions to community issues.</p>	Section 1.3

2.1 Location

No.	Submission	Issue	Response	Section Amendment

2.2 Surrounding Land Use

No.	Submission	Issue	Response	Section Amendment
<u>Residential Development</u>				
5.	S011	the statement in the draft EIS that “the site is not bordered by any future residential or rural residential settlements so will not impact upon the preferred settlement pattern of the area” (Volume 1 page 59). This is clearly incorrect. There are new residential settlement areas being developed at Tolga. Examples are one development at Filippo Close; and another major residential development under construction at Maidment Road, Tolga. I believe the proposed wind farm development will have, and in fact is already having, a detrimental effect upon the “settlement pattern of the area”.	<p>At the time of the wind farm proposal there were no planned residential or rural-residential developments bordering or in close proximity to the site.</p> <p>A review of the Planning Schemes for both the Mareeba Shire and Tablelands Regional Shire show the majority of the lands in proximity to the wind farm to be zoned as “Rural”.</p> <p>There are some existing areas zoned as “Rural Residential”, predominantly in the Rangeview area. Where applicable these areas have been noted as “Rural Residential”, and treated as such under provisions of the wind farm assessment.</p>	
6.	S019	The proponents highlight the area’s intensive agri-industrial use and only briefly acknowledge lifestyle blocks near the proposed site. The proponents have failed to explain there are a growing of number of people who are choosing to live around the Mount Emerald plateau for	<p>The nature of the development patterns and uses show the diverse range of activities being undertaken in the area, which are outlined in Section 2.2 and include sugar mill, waste management, quarry, prison, intensive agriculture, accommodation etc.</p>	

No.	Submission	Issue	Response	Section Amendment
		lifestyle reasons. Rural living and nature tourism has been described as one of Australia’s five emerging economies, especially in hinterland areas which are becoming a focus for residential development, tourism and associated infrastructure and where people seek out opportunities to enjoy aesthetically pleasing, more natural landscapes (Luck et al, CSIRO 2011). A number of rural residential developments have been approved by the Council around the Mount Emerald plateau, suggesting they are considered compatible with the primarily agricultural uses in our area. Many of these blocks were developed by Mount Emerald Wind Farm Pty Ltd joint venture partners Port Bajool, making the omission of these subdivisions from the draft EIS even more perplexing. Port Bajool’s rural residential development Springmount Park is about 3km north-west of the wind farm site. The 24 two-hectare allotments “set in a bushland environment” are zoned rural residential. Port Bajool also developed over 40 blocks at Oaky Creek on the south-western to south-eastern edges of the Mount Emerald plateau. They have been sold mainly to lifestylers who keep a couple of horses, sheep or cattle as a hobby and rely on off-farm incomes. (One exception is the Fung family, proponents of the Aquis mega-resort proposal, who purchased a large grazing block and have developed it for intensive cane production.) After acquiring the Mount Emerald site, Port Bajool subdivided and sold an estimated 390 hectares from the eastern side of the plateau along Kippin Drive into four or five blocks in 2010. The new owners appear to be establishing lifestyle blocks, although one property owner has recently fenced extensive frontage along Kippin Drive, suggesting potential cattle grazing. The cumulative impacts of these rural residential developments on the environment and other issues relating to offsets are described in more detail elsewhere in this submission.	<p>Specific property developments mentioned in the submissions are located;</p> <ul style="list-style-type: none"> Filippo Close is approximately 4,700m from the property boundary of the wind farm site land and 5,700m from the nearest wind turbine. Current Zone – Rural; Revised Zone – Rural Residential Maidment Road is approximately 7,600m from the property boundary of the wind farm site land and 8,700m from the nearest wind turbine. Current Zone – Rural; Revised Zone – Low Density Residential Springmount Park is approximately 2,600m from the property boundary of the wind farm site land and 3,500m from the nearest wind turbine. Current Zone – Rural; Revised Zone – Rural Residential <p>The defined Zoning for each development has been determined from current Planning Scheme Mapping. Revisions of this mapping are pending with updated designations noted.</p> <p>The revision of planning zoning and subdivision of these areas provides evidence development activity in the region of the proposed wind farm has not been affected and “Future Settlement Patterns” are not impacted. This is further supported by a review of Tablelands Regional Council development applications for regions within approximately 15km of the proposed wind farm. Over the past 12 months, 6 applications have been decided in relation to settlements with an additional 7 applications pending.</p> <p>In Mareeba Shire Council, over the past 9 months (January to September 2014), 4 applications have been decided in relation to settlement patterns. Information regarding applications pending is not publically available.</p>	
7.	S019	The diverse range of our local land uses and the potential impacts on their future expansion should be considered in the assessment of the Mount Emerald wind farm application. Establishing a wind farm effectively constrains the potential for other developments which may be noise-sensitive, such as residential developments and tourist ventures. For example, an area near Tolga is designated an Emerging Communities Precinct under the draft Tablelands Regional Council planning scheme and a recognised area for future settlement. The Mount Emerald proposal is already having significant impacts on future preferred settlement patterns (see comments regarding declining property values). These facts contravene the proponents’ claims that the proposal “will not impact upon the preferred settlement pattern of the area.”		
<u>Surrounding Land Use</u>				
8.	S019	The proponents have repeatedly emphasized the “changing land uses of the area” and “intensifying existing farming operations” to encourage an impression that the area is already industrialised and therefore the wind farm should be approved (p.12-13). At the same time, the proponents have not considered the cumulative impacts of further industrialisation by the wind farm. Elsewhere in the draft EIS, the proponents declare that the wind farm would have less physical impact than mining and extractive activities (see for instance p.58). Residents believe the wind farm should not be compared to other industrial and extractive uses as it has far greater physical impacts on our environment, homes and livelihoods.	<p>The intention of Section 2.2 Surrounding Land Uses is to describe the types of activities currently undertaken in the area of the proposed wind farm development.</p> <p>It does not state the area is already industrialised, but rather does state;</p> <p><i>“the surrounding area is unique in nature by virtue of the activities which surround the site, and as such, the character of the area is not purely agricultural or rural, but rather an eclectic mix of both traditional farming (including both agriculture and grazing) intensive farming and semi-industrial uses (marked by the presence of the correctional facility, drag strip, concrete batching plant and ethanol distillery).”</i></p> <p>The impacts of the wind farm are directly considered by this EIS. Cumulative Impacts are considered throughout the document in relation to species matters.</p> <p>It is practical to envisage a mining operation to have a greater clearing footprint than the wind farm and hence a greater impact, particularly on Matters of National Environmental Significance.</p> <p>A direct comparison can be made between developments of a wind farm and mining or extraction activities on the physical environment.</p> <p>Of the 2422ha site, only 57ha on the site is to be physically impacted. A mining or extractive lease of similar size proportions would remove up to 90% of the lease to conduct activities. While a mining or extractive industry may be less visible, the pollutants and noise issues are greater.</p> <p>Wind energy has no air or water pollution as there is no fuel burned to generate energy.</p>	

No.	Submission	Issue	Response	Section Amendment																	
<u>Population Estimates</u>																					
9.	S006	Table 2.2 which is wholly inaccurate and a gross underestimation of residences nearby. It is also slyly presented to not show actual cumulative counts. A new independent comprehensive survey conducted door-to-door is required.	Using the current 63 wind turbine layout the estimated population of residents in proximity to the wind farm is shown below. Information on population numbers is based on the data for Tablelands Regional Council in Census 2011, (2.5 persons/household) unless otherwise noted.	Volume 1 Section 2.2																	
10.	S019	On Page 15 of the draft EIS, the proponents identify 118 receptors within a 5km radius and Table 2.2 lists 118 residences within 5km of the wind farm. The table does not include Rangeview and Walkamin residents or the Lotus Glen facility (a small township itself with over 1000 staff and inmates). We don’t understand why the proponents have not accurately portrayed the number of residents who live within 5km of the proposed site. There are 700 properties listed in standard Local Government ratepayer databases. The proponents have had five years to contact each residence and find out how many people live and work on each property. Why hasn’t this been done? The final EIS should clearly state the number of people living within a 5km radius of the proposal.	<table><tr><th>Distance for WTG</th><th>Number of Receptors</th><th>Est. Population</th></tr><tr><td>1000</td><td>0</td><td>0</td></tr><tr><td>2000</td><td>9*</td><td>73*</td></tr><tr><td>3000</td><td>46**</td><td>185**</td></tr><tr><td>4000</td><td>68***</td><td>740***</td></tr><tr><td>5000</td><td>110****</td><td>1,624****</td></tr></table> <p>* – includes Springmount Waste Facility and backpacker accommodation (50 person)</p> <p>** - includes Springmount Waste Facility, backpacker accommodation (50 person) and Allawah Retreat (20 person)</p> <p>*** - includes Springmount Waste Facility, backpacker accommodation (50 person), Allawah Retreat (20 person) and Lotus Glen Prison (500 person)</p> <p>**** - includes Springmount Waste Facility, backpacker accommodation (50 person), Allawah Retreat (20 person), Lotus Glen Prison (500 person), 80% of Walkamin and 50% of Rangeview</p>		Distance for WTG	Number of Receptors	Est. Population	1000	0	0	2000	9*	73*	3000	46**	185**	4000	68***	740***	5000	110****
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<u>Regional Context</u>																					
11.	S023	<p>It has become obvious over the past three years that Ratch Australia has attempted to minimize any impacts on the locals by withholding information, incorrectly presenting data, omitting data and altering data. To point to just one situation, I refer you to the following map prepared by RPS displaying the Regional Context of the wind farm site.</p> <p>Should you look closely at this map the channel is drawn next to the western end of Channel Road, but they have neglected to put in Channel Road for the eastern half. Instead they draw a road down Morganbury Road, which in fact is a one lane dirt track. Channel Road has not even been named, but it is where the residents will be severely impacted from this development. Alongside forgetting Channel Road on the map, RPS has also forgotten about Oaky Creek Road and the side roads servicing the Oaky Valley subdivision on the southern side of the site.</p> <p>The question must be asked, is this in an attempt to show that few people live in the immediate surroundings and that the roads are at a distance from the site, when in fact the opposite is true?</p>	<p>The map referenced in this submission is actually not part of the EIS but is included in the Development Application Information Request as Attachment 3 – Regional Context Map - PR100246-111 and also on the home page of the project website.</p> <p>A close inspection of the map shows the local road networks in red, along with other topographic data. This includes both Channel Road and Oaky Valley Avenue, however local roads at this level are not named for clarity.</p> <p>Particular topographic attributes (locations, roads etc.) have been highlighted in blue or black to reinforce the proximity to the project site.</p> <p>The representation of this map (included and referenced to in the submission) is of a poor quality and may be the cause of the submitter’s concerns.</p>																		
<u>Domestic Animals</u>																					
12.	S002	Your EIS has not addressed the impact of wind turbines on domestic animals. Why Not? There is also a growing amount of evidence in Australia where wind turbines have had a devastating effect on poultry, sheep and cattle farming. This has caused financial stress amongst many.	We have not found any peer reviewed scientific publications that identify the impact to domestic animals from wind turbines. The MEWF site is not conducive to grazing activities (and has no history of such) and domestic animals will be several km from the nearest WTG.																		

No.	Submission	Issue	Response	Section Amendment
13.	S019	<p>The proponent has failed to detail significant property development undertaken in the surrounding area by Mount Emerald Wind Farm Pty Ltd joint venture partners, Port Bajool. As previously noted, Port Bajool has effectively ringed the Mount Emerald plateau with rural residential subdivisions and lifestyle blocks. There are a number of associated impacts which have not been properly assessed by the Cumulative Impact Assessment. Most notably, owners of the newly subdivided blocks have brought in domestic cats and dogs. It is often discussed among concerned residents that these animals successfully hunt native wildlife including quolls, striped possums and gliders on a nightly basis. Quolls are listed as endangered on the IUCN Red List which states: “Current threats are uncertain, but the species may be vulnerable to disease, possibly related to the presence of cats. Cats and dogs are known to kill individuals, although they apparently do not like to eat them.” This is an issue raised recently in the media by the Minister. Feral and domestic animals also compete with quolls for prey, another important factor listed as a threat in the National Recovery Plan. It is possible cats can spread potentially disastrous diseases such as toxoplasmosis and lymphocytosis to quolls. We note that Table 15.1: Significant Impact Assessment of the Northern Quoll states: “there is no evidence of any diseases causing population declines for Northern Quoll”. Given that disease is mentioned in state and national recovery plans, and given that the proposed turbine road network will increase access by domestic and feral animals, there is a definite risk that disease could be introduced to the Mount Emerald population.</p>	<p>Toxoplasmosis has been identified in a number of marsupial species including dasyurids (Quolls). However, the incidence in wild populations has been minimal even with the activity of feral cats around the population. The incidence is much greater in captive populations where a marsupial may ingest cat faeces or similarly contaminated invertebrates.</p> <p>The role of disease in the decline of Northern Quolls throughout their range is not well understood. Oakwood and Pritchard (1999) found little evidence to support the hypothesis that toxoplasmosis was responsible for the declines of northern quolls in Kakadu Nation Park. The majority of quolls tested in the study (n=22) showed little or no serological reaction to the parasite (Oakwood and Pritchard, 1999). Feral/domestic cats have been confirmed to occur on the project site and the surrounding areas, and it is likely that toxoplasmosis is present in the feral cat population.</p> <p>It is not certain whether the construction of a track network would necessarily increase the abundance of feral animals on the project site, although it is acknowledged that it may result in a concentration of their activity in the vicinity of the tracks. It is possible increased dingo activity along tracks could in fact assist with suppressing feral cats abundance across the site. It is not possible to accurately quantify the likely impact of increased feral animal abundance/density on the northern quoll population occurring on the project site. It is acknowledged that northern quolls occurring in the vicinity of the track network may experience increased levels of predation and potential exposure to disease such as toxoplasmosis</p>	Volume 2 Section 15.2.4

2.3 Other Potential Developments

No.	Submission	Issue	Response	Section Amendment
<u>Tourist Facilities</u>				
14.	S012	Tourist viewing facilities – where is the detail regarding the required visitor facilities – sewage management in particular; but also daily rubbish collection, water storage and management of vehicular access restrictions and pedestrian control?	At this time no tourist viewing facilities are considered as part of the wind farm proposal. The Development Application for the project states; <i>“No specific visitor information centre or other viewing platforms are proposed as part of this current development application.”</i>	
15.	S019	The draft EIS states that a “tourist viewing facility is likely to be built but its location is currently unknown” but also states that Kippin Drive is likely to provide access to a viewing area and generate tourist traffic of 100 vehicles a day (p.84). As many hundreds of vehicles travel each day along the Kennedy Highway and would be able to view at least 48 turbines, why do the proponents wish to disturb rural residents and agricultural industries with additional and unnecessary traffic? If the proponents wish to establish a “tourist viewing facility” they should apply to the Mareeba Shire Council for appropriate rezoning.	References to viewing facilities have been made in regard to previous wind farm approvals which have included conditions requiring facilities to be built. Should any viewing facilities be required they would be subject to their own development application and supporting studies and assessments. The location of any such tourist viewing facilities would also be subject to determination at a later stage, but it is not considered appropriate for the facility to be located on the subject land.	
16.	S017	If tourist viewing facilities are proposed, this facility along with turnaround areas, tourist signage and associated carparking need to be considered in the EIS as cumulative impacts of the project.		
<u>Asia-Pacific Energy Innovation Centre</u>				
17.	S019	The proponents have not included the impacts of the proposed visitor centre/ restaurant complex in the draft EIS. Yet the project is still listed on proponent’s website which states: “Port Bajool Pty Ltd (the Project Partners) are so assured that more tourists will want to visit the area, that they propose to build a \$12 million Asia-Pacific Energy Innovation Centre adjacent to the Mount Emerald Wind Farm. It will showcase renewable energy technology and benefits to the many people expected to visit the site.” There is no information provided about the visitor centre/restaurant and therefore it is impossible to guess the potential social, economic and	At this time the Asia-Pacific Energy Innovation Centre or any like facility is not being considered as part of the wind farm proposal. The Development Application for the project states; <i>“No specific visitor information centre or other viewing platforms are proposed as part of this current development application. While the Asia Pacific Innovation Centre, mooted by Port Bajool is intended to be established on site, the exact locations of centre, access details and details of the</i>	

No.	Submission	Issue	Response	Section Amendment
		environmental impacts on residents, industries and matters of National Environmental Significance. The proponents should state publicly whether they intend to proceed with the visitor centre/restaurant proposal and carry out the required impact assessment.	<i>built form have not been confirmed and will form part of a future, independent application by Port Bajool."</i>	
18.	S017	The draft EIS Flora Report mentions the Asia Pacific Energy Innovation Centre (APEIC) "could impact on the environmental values of the site" but no further detail is supplied. The EIS must identify and address cumulative impacts including activities which are facilitated by the wind farm development or which are likely to change the nature or scale of environmental impacts (Section 5.10.4(h) & (j)). Provide further details required as per Section 5.10.4 of the EIS Guidelines. Specifically include in this consideration the potential short-term and long-term environmental impacts of extra vehicles and people visiting the site.	Any facility proposed would be subject to its own development application, including supporting studies and assessments.	
<u>Other Developments</u>				
19.	S019	The draft EIS has failed to consider a number of major developments which could have significant cumulative impacts on matters of National Environmental Significance. Table 21.1 in particular requires significant revision	The economic factors constraining Nullinga Dam as a feasible option for the Mareeba-Dimbulah region remain consistent in 2014. It is for this reason that it was previously excluded from the EIS.	Volume 2 Section 21.1
20.	S019	The draft EIS lists mining ventures hundreds of kilometres away but fails to mention the 365,000 megalitre Nullinga Dam proposal on the Walsh River about 6km from the wind farm site. Construction of the dam would lead to extensive clearing of habitat for listed species both for the dam itself and as a result of agricultural expansion. The Far North Queensland Regional Water Supply Strategy 2010 identified Nullinga as one of the options for long-term additional water supply for Cairns and Port Douglas. We understand that it is being investigated by the CSIRO as an outcome of the recently released Northern Australia White Paper (2014). Securing future water supplies to support a northern food bowl has been a key topic for the Joint Select Committee on Northern Australia and the Committee inspected the Nullinga Dam site on 1 May 2014. The committee was informed the existing Mareeba Dimbulah irrigation scheme has about 10,000 ha under intensive cultivation and a further 30,000 ha of uncleared land could be converted if the Nullinga Dam is built. The committee was told construction is required within the next 18 months, with the issue of water supply becoming more urgent with the expected approval of the \$8 billion Aquis mega-resort near Cairns. Cairns Mayor Bob Manning and local industry development organisations have called for the Nullinga Dam to be fast-tracked because it addresses three key regional issues: urban water supply; agricultural expansion; and baseload hydro power supply (Hansard: Development of Northern Australia, Cairns, Monday 28 April 2014). This is particularly important because, as the draft EIS notes, it is not currently understood what minimum area is required for the Far North Queensland quoll metapopulation to remain viable (p.102). Another dam proposal on the Gilbert River in the northern Gulf also has potential to impact on Northern Quoll and Sarus Crane populations. The dam is part of the Etheridge Integrated Agriculture Project, a 65,000 ha "megafarm" which has been declared a coordinated project by the Queensland Government and an EIS is under preparation. These proposals highlight the importance of maintaining key habitat on the Mount Emerald plateau when the surrounding area is likely to undergo significant, catalytic changes in the future.	In an effort to consider all aspects of potential cumulative developmental impact it has now been included in the cumulative impacts table of the EIS.	
21.	S019	The proponents have failed to consider the significant cumulative impacts associated with the \$8 billion Aquis mega-resort approximately 50km (a 50 minute drive) from the Mount Emerald wind farm site. The Mareeba Chamber of Commerce believe there are "major opportunities for Mareeba based business and workforce to help meet the shortage of construction workers in Cairns" (Economic Snapshot 2013-14, p.15). The Chamber lists local opportunities including demand for building materials including sand and aggregate (also required for wind turbine structures), worker accommodation and food supplies. These additional traffic movements have not been adequately dealt with by the Mount Emerald Traffic Management Plan or in terms of increased quoll mortality due to vehicular collisions. Following construction of Aquis, a 20 per	With the proposed Aquis Resort being located approximately 50km away from the wind farm site it is unlikely to have a significant cumulative impact. While it is recognised there may be increased population numbers on the Tablelands, the increased numbers in proximity to the wind farm site will be limited. Current planning provisions and settlement patterns do not allow for the intensive increases to population numbers which would have a significant impact. Likewise, any increase in traffic numbers as a result of the Aquis Resort (either construction workers or operation staff) are likely to be confined to roads a distance away from the wind farm	Volume 2 Section 21.1

No.	Submission	Issue	Response	Section Amendment
		cent population increase is expected for Cairns and the Tablelands, along with a major increase in visitors to the Tablelands. It is surprising the proponents overlooked the Aquis proposal, given the existing association between Aquis proponents the Fung family and Mount Emerald Wind Farm Pty Ltd joint venture partners, Port Bajool.	<p>site. The main road in the vicinity of the wind farm is the Kennedy Highway, located approximately 3km from the nearest point of the wind farm property boundary and separated by currently open farm land. Local roads in closer proximity (Channel Road, Oaky Valley Avenue) would only see increased numbers from localised residents associated with Aquis, which is considered to be limited in number.</p> <p>Given the increased traffic activity in proximity to the wind farm is considered to be very low, the resultant increase in quoll mortality is also very low.</p>	
22.	S019	The proponents' justification of the proposal relies heavily on the local economic benefits during construction of the wind farm. The Cummings report estimates 158 local jobs will be created during the wind farm's construction (relying upon data provided by other wind farm developers). It is surprising the proponents have not mentioned the \$8.4 billion Aquis mega-resort which is 50km (a 50 minute drive) from the proposed wind farm site. It is proposed to begin construction in 2015, at the same time as the Mount Emerald wind farm. The construction workforce is expected to peak at around 3750 employees in 2017, and will provide significant employment opportunities for Tablelands residents. The Mareeba Chamber of Commerce states there are "major opportunities for Mareeba based business and workforce to help meet the shortage of construction workers in Cairns" (Economic Snapshot 2013-14, p.15). Tablelands workers will prefer the longer employment offered by Aquis, and the regional benefits of the Aquis development are substantially greater than those offered by the Mount Emerald proposal. The final EIS should consider the purported Mount Emerald wind farm benefits in the context of the Aquis development and competing demands for and pressure on the labour market, construction resources and the road network.	<p>It is noted the timing of the construction of the Aquis Resort does roughly coincide with the construction period of the wind farm; however the workforce for the wind farm is less than 10% of the stated peak employee numbers for the Aquis construction. Given the likely longer construction period for Aquis and the relatively shorter timeframes for wind farm construction packages (civil works, electrical works, turbine installation) rather than a negative impact the increased construction activity is seen as a positive in that the amount of available skilled labour in the region is increased.</p> <p>From discussions with local service providers in Cairns and the Tablelands the coinciding construction periods are not seen as an obstacle to the successful construction of both projects.</p>	Volume 2 Section 21.1
23.	S019	The proponents have failed to properly consider the impacts of cane expansion in the Mareeba-Dimbulah region. While the expansion of the Arriga Mill is noted, the draft EIS does not mention that most Tablelands cane producers are refusing to supply the mill and are hauling their cane to Mossman. The Arriga Mill has actively sought replacement growers and offered financial incentives to assist land owners to convert additional land to cane to meet their needs from 2014. As a result, the area is experiencing unprecedented conversion of undeveloped and grazing land to sugar cane production. The Mayor Tom Gilmore has described "the exponential increase in the production of sugar in the Tablelands region which will double the amount of water used by the industry in the next two years" (Joint Select committee on Northern Australia 29/04/14). This conversion places additional pressure on the long-term survival of listed species such as Northern Quoll and Bare-Rumped Sheathtail Bat.	<p>Volume 2 Section 21.2 states;</p> <p><i>"Concurrently, there has also been an increase in the intensity of existing farming operations over a number of a number of Lots on Oaky Creek Road, including change from grazing livestock to sugar cane production, as a direct result of the Arriga Sugar Mill increasing its capacity"</i></p>	
24.	S019	Finally, the proponents have not considered the cumulative impacts of the proposal on our community. They include our quality of life, the decline in property values, the increased demand for our finite resources, the impacts on other industries and our own safety from increased construction traffic, dust, vibration and noise impacts on surrounding residents during construction, increased fire risks for surrounding properties and volunteer fire brigades... the list goes on.	The range of studies contained within and supporting the EIS have been undertaken to consider the impacts of the proposal on the community.	

2.4 Wind Farm Infrastructure

No.	Submission	Issue	Response	Section Amendment
<u>Turbines</u>				
25.	S004	The project was originally set for 2MW Turbines but is now set for 3MW Turbines. In any one's language, this is not a reduction of impact, even with the slightly deduced number of turbines. This increase from 2MW to 3 MW will have a pronounced effect on NOISE and VISUAL IMPACT, and must be recognized as having an Increase of Impact.	<p>The assessment of impacts has been undertaken on a conservative basis, to represent the worst case.</p> <p>As an example the visual impact assessment was undertaken using 70 x 3MW turbines, although the final layout is now proposed to be 63 turbines.</p>	
26.	S006	<p>Wind Turbine Generators contains unsubstantiated wind industry concocted claims of "cut-in speeds" and "shut down" wind speeds which have never been independently verified. These figures are to be rejected unless rigorously proven in reality using actual wind turbines not under the control of wind developers. A study [1] quotes that more probable limits are:</p> <p>Cut-in speeds require wind blowing at slightly less than 20 km/h (NOT 11 km/h)</p> <p>Shut down are necessitated at gale force wind slightly above 60 km/h (NOT 90 km/h)</p>	<p>The operational performance of each wind turbine is of the utmost importance to the owner and operator of the wind farm.</p> <p>The supplier of the wind turbines is obligated under contract to guarantee the performance of the wind turbines, especially in regard to its operating parameters (including noise emissions).</p> <p>Independent performance testing is conducted following the installation of the turbines to ensure the guaranteed performance parameters are met.</p> <p>This testing includes power generation testing across the full range of operating wind speeds from cut-in to cut-out.</p>	
27.	S006	Another wind turbine crippling operating factor is temperature, too high or too low.	<p>As such wind turbine suppliers undertake rigorous testing of wind turbine models in the field to ensure the operating parameters they guarantee are able to be met.</p> <p>Actual information provided by wind turbine suppliers state;</p> <ul style="list-style-type: none"> • Cut-in wind speed of 3m/s or 10.8km/h • Cut-out wind speed of 25m/s or 90km/h • Minimum temperature (stand still) -20°C • Maximum temperature (stand still) 45°C <p>The actual performance of many installed Australian wind farms is tracked by the Australian Electricity Market Operator (AEMO) an independent organisation charged with overseeing the operation of the electricity grid.</p> <p>A statement on their website (http://energy.nero.id.au/wind-energy) states;</p> <p><i>"On average wind farms in south-east Australia operate at a capacity factor of around 30-35%."</i></p>	
28.	S006	All claims by the wind industry of capacity factor values of wind turbine is hyped guesswork and not a useful measure for intermittent energy sources like wind energy [2]. RACL claims of producing 650,000 MWh annually over 20 years cannot be verified independently, has zero validity and should be absolutely rejected. Could it even truly produce net output of 100,000 MWh annually over its actual shorter lifespan of 10-15 years? Take note that IWT performance degradation is quite rapid and that the parasitic energy used by wind turbines is never disclosed [3].		
29.	S006	IWT generation is highly variable, unreliable and unscheduled. More fuel is consumed by the shadowing Open Cycle Gas Turbine power station when it has to support a wind farm with extra "spinning reserve" to the point where the net total effect is more fuel consumed than if there were none to support [3] [4]	<p>Wind farms do not require additional back-up or "spinning reserve".</p> <p>The power grid is a dynamic system, designed to ramp up or down to respond to changing demand, and with the ability to provide back-up for all types of generation including wind, hydro, gas or coal. The network is designed to overcome even the unplanned loss of the largest generating unit (approx. 800MW). The network is capable of dealing with, responding to, and managing a range of fluctuations, including variable output from wind farms.</p> <p>The concept that more fuel is consumed if there were no wind farm to support defies any sensible logic.</p> <p>As an example, in South Australia for the period 2008-09 to 2012-13 AEMO historical market information showed ;</p> <ul style="list-style-type: none"> • Wind generation increased from 14% to 24% • Gas generation decreased from 50% to 47% • Coal decreased from 34% to 15% <p>During this time no new plant was installed to provide back-up generation.</p>	

No.	Submission	Issue	Response	Section Amendment
30.	S007	A power point presentation of exact technical details of size, capacity and proximity of turbines and excavation sites to each other by a qualified electricity provider conforming to government regulations, to clarify points not clearly defined by RATCH should be considered	Volume 1 Sections 2.4 and 2.5 provide the information sought.	
31.	S012	Which model Turbine is going to be used? How can an EIS be released even in draft form if the final details related to turbine size and model have not been decided upon		
<u>Other Structures</u>				
32.	S017	As required by 5.5(b)(vii) provide “a description of each structure to be built, including details of proposed external cladding and materials”	Volume 1 Sections 2.4 to 2.8 provide the information sought.	
33.	S019	details of fencing to be undertaken - presumably around each turbine and the substation - and its potential impact on nocturnal animals such as bats, gliders and owls;	No permanent fencing will be required around each turbine or access roads. Fencing will be required around the wind farm substation and switchyard under health and safety regulations. Galvanised rail-less chain-wire security fences and gates shall be used and shall extend 2,500mm above ground level and include 4 strands of barbed wire on top approximately 150mm apart.	
34.	S019	whether firebreaks will be required to be established and the extent of clearing required;	No firebreaks are to be established.	Volume 2 Section 19.3.3

2.5 Wind Farm Layout

No.	Submission	Issue	Response	Section Amendment
<u>Disturbed Area</u>				
35.	S006	does not fully depict the extent of destruction of the mountain range landscape. The attempts to minimize what is entailed in this massive destructive assault on the landscape could not mask the horrendous irreversible environmental disaster of the worst possible kind to befall this majestic pristine spectacular mountain ranges. A travesty of cruelty to nature only the vilest deprave criminals could think nothing to profit off.	The range of activities and associated disturbance areas are outlined in Section 2.5 and further expanded in Section 2.6, along with any assumptions made in determining them. The total of the disturbance areas is approximately 57 hectares. A further breakdown of the disturbance areas is provided in Table 20.7. Montane Heathland is estimated to comprise 5.1 hectares.	Volume 2 Section 20.4
36.	S006	is another glossing over of the magnitude of the destruction involved in the construction phase. Of roads on the mountain that require larger than the suggested 10 m width clearance, the tearing up of electrical underground cabling trenches and the assorted buildings and car parks construction desecrating practically the entire mountain landscape site: only those totally devoid of love for nature could take part in this dastardly flagrant rape of the montaine heathland ecosystem.		
<u>Turbine Spacing</u>				
37.	S007	The size, model numbers, capacity and distance of proximity to each other of proposed wind turbines needs to be clearly stated to the public and comply with government regulations.	The specific turbine selected for the wind farm will be available following a detailed tender and contract negotiation process. It is unreasonable to be expected to enter into a contract and thus know the exact turbine to be installed, at an early stage of development. Any such early contract would simply cease to be valid over such an extended period. As such for the purposes of project design and approvals a wind farm design and layout is produced which is suitable for a range of wind turbine makes and models likely to be installed. When designing a wind farm layout the general rule (as accepted by wind turbine suppliers) is to	
38.	S012	Has the distance between turbines been researched to ensure there is no wind disturbance between turbines?		
39.	S013	Lack of research and understanding in the field wind power is exceedingly present in your layout map of turbines. In 2011 a Belgium study was completed that states “large wind farms are		

No.	Submission	Issue	Response	Section Amendment																																								
		typically spaced about seven rotor diameters apart.” However “placing the wind turbines 15 rotor diameters apart—more than twice as far apart as in the current layouts—results in more cost-efficient power generation”. Now considering you have conveniently mentioned three different types of turbines because even though they are what you are proposing to build, you don’t actually know what one you are going to use – please excuse me while I laugh. The turbines you use will most likely be 3MW or 3.4MW, 100m sweep, you can do the maths. Your current layout is far too close to each other to be at optimum efficiency.	allow a distance of around 5 to 6 rotor diameters in all directions between turbines. However, if the weather patterns for the site show a predominant wind direction, then an elliptical spacing arrangement can be used. The more prominent the prevailing wind direction the tighter the ellipse can become. For Mount Emerald, given its predominant easterly winds, an elliptical spacing with a long axis of 5 diameters and a short axis of 3 diameters was used for initial design purposes.																																									
40.	S018/S020	provide evidence to support the assertion that the “best practice” standard for turbine separation is 5 rotor diameters apart in the prevailing wind direction and 3 diameters apart in the crosswind direction, as proposed for this development.	Turbine wake effects are an important consideration for wind farm layout designers to factor into the arrangement and spacing of proposed turbine locations. Specifically, wake effects can potentially reduce the efficiency and reliability of the turbines; turbine arrangements and spacings are therefore chosen to reduce these effects.																																									
41.	S018/S020	Provide details of the closest turbine spacings in the proposed 63-turbine layout, in the perpendicular and crosswind directions, having regard to the blade diameter (108m) of the largest candidate turbine. It is noted that the Fauna, Vegetation & Flora Assessment that “turbines are spatially separated by 300-400m”.	Extrapolating further on the noted Belgian Study, the optimum arrangement in terms of wake effects and spacing would see a single turbine erected on-site and thus experience zero wake effects. However, a balance must be reached in terms of overall project generation, numbers of turbines and associated wake effects and losses.																																									
42.	S019	Parsons and Brinckerhoff noted that the wake losses of 14.5 – 15% “are notably higher than typical wind farm layouts seen in other projects” (p.2). This is a significant and valuable loss in wind resource. Wake losses occur when turbines are placed too close together. The CSIRO states that: “net wake losses for a poorly designed wind farm can be 7-10 per cent, but well optimized wind farms can reduce wake losses to 3-4 per cent” (2003). When turbines are sited too closely, the resulting turbulence or “dirty wind” generates infrasound and audible low frequency noise that has caused problems for residents living around wind farms. Parsons and Brinckerhoff noted the spacing between turbines was closer than industry standards. It appears the proponents did not follow the turbine placement recommended by Parsons Brinckerhoff and the turbines remain too closely spaced. We believe additional distances between the turbines are required because of the site’s complexity, highlighted by the differing wind speeds and directions at the two monitoring towers. The final EIS should clearly state the distances between each turbine and explain the reasoning behind the spacing.	As part of contract negotiations wind turbine suppliers are required to provide a site certification for the turbine model to be installed on-site. This certification includes engineering assessments in regard to the structures ability to withstand the conditions experienced on the site, and includes the impact from neighbouring turbines. Should a particular location be a concern there are options available to remedy the situation, such as; <ul style="list-style-type: none">• change the location of the turbine within the provision of the development permit (micro-siting)• alter the operating regime of the turbine to reduce output and hence loading during specific wind directions and speeds• potentially remove the turbine altogether																																									
43.	S019	Parsons and Brinckerhoff also raised the impact of higher turbulence on the fatigue life of the turbines and suggested that RACL should seek clarification on any limitations turbine manufacturers may wish to place on power guarantees at the site. Considering the current global downturn in wind energy uptake, we consider it is unlikely the turbine manufacturers will raise the issue of power guarantees. Recommended wind turbine separation distances in the manufacturer’s own product specifications are frequently ignored by Australian wind developers and regulators. This practice of siting wind turbines too close together is against the law in countries such as Germany, which may explain why Australia has a disproportionate number of infrasound and low frequency noise complaints. Australian regulators are not auditing turbine separation distances before or after construction. Locations in Australia which are known to have closely spaced turbines are Cullerin (NSW), Waterloo (SA), Macarthur and Waubra, (Victoria) however there may be many more, because no one has done a systematic audit. It appears the financial returns outweigh the impacts of turbulence on the turbines, the environment and the surrounding community.	Thus, the final wind turbine layout is a collaborative design between the wind farm owner and their engineers and the wind turbine suppliers and their technical experts. The impact of wake effects on energy generation and turbine structural integrity are a financial decision which ultimately falls to the wind farm owner to accept. A table showing the relative spacings for the 63 wind turbine layout using the largest rotor (SWT 3.0-108) considered is provided below. <table><tr><th>WTG No.</th><th>Nearest WTG No.</th><th>Min. Spacing Distance (m)</th><th>Min. Spacing in Rotor Diameters</th></tr><tr><td>1</td><td></td><td></td><td></td></tr><tr><td>2</td><td></td><td></td><td></td></tr><tr><td>3</td><td>4</td><td>344</td><td>3.2</td></tr><tr><td>4</td><td>5</td><td>343</td><td>3.2</td></tr><tr><td>5</td><td>4</td><td>343</td><td>3.2</td></tr><tr><td>6</td><td>7</td><td>413</td><td>3.8</td></tr><tr><td>7</td><td>8</td><td>321</td><td>3.0</td></tr><tr><td>8</td><td>7</td><td>321</td><td>3.0</td></tr><tr><td>9</td><td>8</td><td>351</td><td>3.3</td></tr></table>	WTG No.	Nearest WTG No.	Min. Spacing Distance (m)	Min. Spacing in Rotor Diameters	1				2				3	4	344	3.2	4	5	343	3.2	5	4	343	3.2	6	7	413	3.8	7	8	321	3.0	8	7	321	3.0	9	8	351	3.3	
WTG No.	Nearest WTG No.	Min. Spacing Distance (m)	Min. Spacing in Rotor Diameters																																									
1																																												
2																																												
3	4	344	3.2																																									
4	5	343	3.2																																									
5	4	343	3.2																																									
6	7	413	3.8																																									
7	8	321	3.0																																									
8	7	321	3.0																																									
9	8	351	3.3																																									
44.	S019	We believe the Mount Emerald wind farm proposal is repeating the pattern witnessed elsewhere in Australia where there have been ongoing issues for surrounding communities. Often, a developer has no intention to build a particular wind farm and an approved wind farm is on-sold. (In fact a representative of Mount Emerald Wind Farm Pty Ltd partners Port Bajool informed a resident they intend to sell the Mount Emerald site as soon as development approval has been secured.) The layout is chosen at the planning application stage without knowledge of which turbine will eventually be used. Site layout issues such as minimum separation distances																																										

No.	Submission	Issue	Response				Section Amendment	
		are not considered by the consultant acoustician. Once approved, only micro-siting changes of 50-100 metres are allowed and the only stipulation about the final turbine choice is its sound power rating. The developer then goes out to tender for the cheapest turbines. Companies like Vestas, Acciona or Goldwind offer their turbines in accordance with the approved layout. They won't risk the loss of sales by admitting the turbine spacing will alter the sound emissions. Consequently, there is increased stress on turbine components and significantly increased generation of infrasound and low frequency noise (NASA, 1989).		10	9	357	3.3	
				11	10	449	4.2	
				12	6	472	4.4	
				13	14	449	4.2	
				14	13	449	4.2	
				15	16	331	3.1	
				16	15	331	3.1	
45.	S022	Will the turbines be spaced at intervals to ensure there are no cumulative impacts?		17	18	397	3.7	
				18	17	397	3.7	
				19	18	434	4.0	
				20	21	353	3.3	
				21	20	353	3.3	
				22	23	313	2.9	
				23	22	313	2.9	
				24	23	313	2.9	
				25	26	308	2.8	
				26	25	308	2.8	
				27	28	306	2.8	
				28	27	306	2.8	
				29	30	466	4.3	
				30	29	466	4.3	
				31	32	418	3.9	
				32	31	418	3.9	
				33	34	384	3.6	
				34	33	384	3.6	
				35	36	363	3.4	
				36	35	363	3.4	
				37	38	405	3.8	
				38	37	405	3.8	
				39	38	477	4.4	
				40				
				41				
				42				
				43				
				44	45	339	3.1	
				45	46	325	3.0	
				46	45	325	3.0	
				47	48	319	3.0	
				48	49	308	2.9	
				49	48	308	2.9	
				50	51	318	2.9	
				51	52	306	2.8	
				52	51	306	2.8	
				53	49	391	3.6	
46.	S022	<p>Ratch is proposing 63 x 3 or 3.4MW turbines on ridgelines 300m above surrounding properties on the valley floor. The candidate turbines are 101 to 108m in diameter and which appear to be placed quite close together in complex terrain. It is noted that the energy yield assessment highlights the issue of this complex terrain and raises the question of the close spacing of the turbines.</p> <p>One would have to question what the real impact from multiple turbines within such close proximity will be, when you take into account the terrain turbulence or wake turbulence and add in temperature inversions.</p>						

No.	Submission	Issue	Response				Section Amendment	
				54	56	352	3.3	
				55	31	442	4.1	
				56	57	294	2.7	
				57	56	294	2.7	
				58	57	306	2.8	
				59	58	351	3.3	
				60	61	329	3.0	
				61	60	329	3.0	
				62				
				63	64	359	3.3	
				64	65	337	3.1	
				65	64	337	3.1	
				66	67	370	3.4	
				67	66	370	3.4	
				68	69	303	2.8	
				69	68	303	2.8	
				70	69	304	2.8	
<u>Wind Resource and Energy Yield</u>								
47.	S019	Consultants Parsons Brinckerhoff prepared a Wind Resource and Energy Yield Assessment on behalf of the proponents in November 2012 (Appendix 5). Their report acknowledges a number of limitations to the assessment, most importantly the difficulty in extrapolating wind speeds over a large and complex area from two monitoring masts which were recording different wind speeds and directions. They noted the uncertainties of their predictions could be reduced with additional measurements, in particular by installing “strategically located and specified, additional monitoring tower(s) at the site” (p.3, 35). In spite of having time to implement this recommendation, no action has been taken by the proponents. We can only assume the decision not to undertake further testing is based on the fact the proponents are determined to locate as many turbines as possible on the site, regardless of the potential problems. Additional monitoring towers should be erected and the data used to inform the final EIS.	Information pertaining to the quality of the wind resource assessment and subsequent energy yield analysis is considered to be part of the overall financial viability of the project and as such is considered to be more relevant to any decision to proceed from the Mt Emerald Wind Farm Board rather than part of the development approval. Wind Resource assessment at the Mount Emerald site commenced in May 2010, with the installation of two monitoring towers (1 x 80m tower and 1 x 50m tower). Each tower includes monitoring equipment installed at multiple levels to measure wind speed and direction, temperature and humidity. In addition to these towers, two additional measuring devices (SODAR) which utilise sound waves, have been installed across the site to provide further coverage and reduce the uncertainty associated with the assessment. These units are easily transportable and do not require tall structures to be built to enable data to be collected at the heights required. By incorporating these units along with the tower installations, a robust understanding of the site wind resource can be compiled.					
48.	S019	The assessment also highlights the difficulties of calculating long-term averages from less than ideal datasets. Parsons and Brinckerhoff have attempted to extrapolate long-term wind resources at Mount Emerald using a 20m mast situated in rolling, cleared hills 36km away at the High Roads wind farm site. It is obvious the site doesn’t have the same topographic complexity of Mount Emerald. It is worth noting that the closest long-term weather station is at the Mareeba Airport only 12.1 km away on the valley floor, yet of the possible weather stations it was the least similar to the Mount Emerald masts, correlating only 50 per cent of the time. This highlights the very different wind fields between the valley floor and Mount Emerald, a significant concern to our communities living below the plateau. This is a critical issue when considering the impacts of noise on residents and turbulence on aerial agriculture and avian fauna, which has not been adequately addressed by the draft EIS.	Correlation of various wind data sets is a complex task with any number of variables which may lead to a poor correlation, which is why a number of sources of long-term wind data are investigated to find the best correlation. The better correlation to the High Road wind farm site is likely due to the weather patterns and associated winds at each site not being impacted by local terrain and obstacles before reaching the monitoring towers. Rather the predominantly easterly winds reach each site in a relatively undisturbed state. The topographic complexity of each site is also comparable.					
49.	S019	Where will the long-term monitoring masts be located?	The location of monitoring masts is yet to be decided. The purpose for installing these masts is to provide sufficient wind data to allow wind turbine performance testing to be conducted,					

No.	Submission	Issue	Response	Section Amendment
			<p>particularly for power curve and noise guarantees. Such testing is conducted in accordance with International Standard IEC61400. Under IEC61400 the allowable distance between the mast and the wind turbine being tested should be 2 to 4 rotor diameters, with a recommended distance of 2.5 rotor diameters.</p> <p>Under this scenario the masts would be located within 270m of a wind turbine.</p>	

2.6 Design Parameters

No.	Submission	Issue	Response	Section Amendment																																																															
Structural Engineering																																																																			
50.	S006	Major cyclones occur here, and it strikes more frequently in the Far North Queensland, which certainly includes the proposed site. Does this not categorically put the risks of flying debris of deadly wind turbine blades and nacelles which would snap like matchsticks in a cyclone to be flung randomly far away an unacceptable clear present danger to people and properties up to 10 km away [14]?	<p>Wind turbines will require certification against International Electrotechnical Commission (IEC) standards. IEC61400 is a class of standard specifying design requirements made to ensure wind turbines are appropriately engineered against damage from hazards, including cyclones. IEC61400-23 applies specifically to structural testing of wind turbine blades.</p> <p>The design climatic conditions are the boundary conditions at which the turbine can be applied without supplementary design review. Applications of the wind turbine in more severe conditions may be possible depending upon the overall circumstances and following a site-specific review.</p> <table><tr><th colspan="5">Design Climatic Conditions</th></tr><tr><th>Subject</th><th>Issue</th><th></th><th>Unit</th><th>Value</th></tr><tr><td rowspan="3">Wind</td><td>Mean wind speed</td><td>V_{ave}</td><td>m/s</td><td>10</td></tr><tr><td>Max. 10 min. speed</td><td>V_{ref}</td><td>m/s</td><td>50</td></tr><tr><td>Max. 3 sec. gust</td><td>V_{e50}</td><td>m/s</td><td>70</td></tr><tr><td rowspan="4">Temp</td><td>Min. temp. at 2m, stand still</td><td>T_{min s}</td><td>°C</td><td>3.2</td></tr><tr><td>Min. temp. at 2m, operation</td><td>T_{min o}</td><td>°C</td><td>3.2</td></tr><tr><td>Max. temp. at 2m, operation</td><td>T_{max o}</td><td>°C</td><td>3.8</td></tr><tr><td>Max. temp. at 2m, stand still</td><td>T_{max s}</td><td>°C</td><td>3.0</td></tr><tr><td rowspan="2">Corrosion</td><td>External class (ISO12944)</td><td>-</td><td>-</td><td>C3</td></tr><tr><td>Internal class (ISO12944)</td><td>-</td><td>-</td><td>C3</td></tr><tr><td>Lightning</td><td>Lightning protection level (IEC62305)</td><td></td><td></td><td>LPL1</td></tr><tr><td rowspan="2">Hail</td><td>max. hail diameter</td><td></td><td>mm</td><td>20</td></tr><tr><td>max. hail falling speed</td><td></td><td>m/s</td><td>20</td></tr></table> <p>The wind turbines are designed to withstand the conditions experienced on site including the incidence of cyclone.</p> <p>In March 2006, the path of Cyclone Larry passed directly through the Windy Hill wind farm with minimal damage to the turbines. In fact, had the transmission network been intact and available</p>	Design Climatic Conditions					Subject	Issue		Unit	Value	Wind	Mean wind speed	V _{ave}	m/s	10	Max. 10 min. speed	V _{ref}	m/s	50	Max. 3 sec. gust	V _{e50}	m/s	70	Temp	Min. temp. at 2m, stand still	T _{min s}	°C	3.2	Min. temp. at 2m, operation	T _{min o}	°C	3.2	Max. temp. at 2m, operation	T _{max o}	°C	3.8	Max. temp. at 2m, stand still	T _{max s}	°C	3.0	Corrosion	External class (ISO12944)	-	-	C3	Internal class (ISO12944)	-	-	C3	Lightning	Lightning protection level (IEC62305)			LPL1	Hail	max. hail diameter		mm	20	max. hail falling speed		m/s	20	Volume 2 Section 19.5.5
Design Climatic Conditions																																																																			
Subject	Issue			Unit	Value																																																														
Wind	Mean wind speed	V _{ave}		m/s	10																																																														
	Max. 10 min. speed	V _{ref}		m/s	50																																																														
	Max. 3 sec. gust	V _{e50}		m/s	70																																																														
Temp	Min. temp. at 2m, stand still	T _{min s}		°C	3.2																																																														
	Min. temp. at 2m, operation	T _{min o}	°C	3.2																																																															
	Max. temp. at 2m, operation	T _{max o}	°C	3.8																																																															
	Max. temp. at 2m, stand still	T _{max s}	°C	3.0																																																															
Corrosion	External class (ISO12944)	-	-	C3																																																															
	Internal class (ISO12944)	-	-	C3																																																															
Lightning	Lightning protection level (IEC62305)			LPL1																																																															
Hail	max. hail diameter		mm	20																																																															
	max. hail falling speed		m/s	20																																																															
51.	S006	Tropical Cyclone cannot ignore the very real high probability of dangerous cyclones that would wreck the wind turbines easily. This alone should make this project extremely ill-advised for the time-bomb of dangerous flying debris of broken wind turbine parts just waiting to happen.																																																																	
52.	S016	Cyclonic events, extreme weather, severe electrical storms, the density & close proximity of the turbines to each other, has not been adequately addressed																																																																	
53.	S017	As required by Section 5.5(j)(iii) provide details of the environmental parameters the structures are able to withstand, based on the expected life of asset																																																																	
54.	S017	Cyclones are discussed at Sections 18.4.5 and 19.4.3 of Vol 2 draft EIS refers to cyclones and their effects on fauna. As per the requirements of Section 5.10(i) of the EIS Guidelines, discuss potential impacts considering how the interaction of extreme environmental events and any related cumulative impacts may impact on the proposal and the environment (both independently and cumulatively). Refer particularly to the potential environmental impacts due to damage to or malfunctioning of turbines as a result of extreme weather events																																																																	
55.	S022	What evidence is there to support that the turbines used will be structurally sound?																																																																	
56.	S022	How on earth can Ratch be contemplating constructing 3 MW turbines in an area prone to cyclones?																																																																	

No.	Submission	Issue	Response	Section Amendment
			<p>the wind farm would have been able to provide electricity to the surrounding regions in the immediate aftermath.</p> <p>Wind speeds experienced on-site during this event showed;</p> <ul style="list-style-type: none"> a 10 min. avg wind speed of 34.9m/s a 3 sec gust wind speed of 51.8m/s <p>At Mount Emerald during February 2011, Cyclone Yasi produced site wind speeds of;</p> <ul style="list-style-type: none"> a 10 min. avg wind speed of 27.9m/s a 3 sec gust wind speed of 35.6m/s <p>Blade Throw</p> <p>An analysis of potential from the Kittias Valley Power Project (Kammen 2003) assessed the risk of separation and throwing of a whole or partial wind turbine blade. The analysis involved theoretical calculations of individual risk (IR) – the probability a member of the public will die from an accident if he/she is permanently at a certain place without protection and assessment of actual probabilities of a blade fragment striking a member of the public. Kammen (2003) noted the following;</p> <p><i>The risk levels for a blade thrown from a wind turbine depends on the assumptions one makes about the probability of a person(s) being at the exact spot where a flying object might land at that exact moment in time. Given the rural, sparsely populated nature of the area that probability appears to be very low.</i></p> <p>The theoretical calculations indicate the risk is 1 in a million within 150m of a turbine.</p> <p>By way of comparison the relative risks of common day to day activities causing death have a 1 in a million chance.</p> <ul style="list-style-type: none"> Spending 1 hour in a coal mine, with death caused by black lung disease Travelling 10 miles by bicycle, with death caused by accident Travelling 300 miles by car, with death caused by accident Living 2 months in a stone or brick home with death from cancer caused by natural radioactivity One chest x-ray taken in a good hospital, with death from cancer caused by radiation 	
<u>Lifespan</u>				
57.	S010	How efficient are windmills given that their lifespan is somewhat limited at around thirty years?	<p>Wind turbines are actually quite efficient at transforming the available fuel source into electricity. The efficiency of a wind turbine varies depending on the available wind speed and ranges between 12% - 50%. At an average wind speed of 8m/s the turbine efficiency is around 45%. This compares to other generation types such as;</p> <ul style="list-style-type: none"> Brown coal – 25% Black coal – 35% Black coal (super critical) – 45% Gas (open cycle) – 30% Gas (combined cycle) – 50% 	

No.	Submission	Issue	Response	Section Amendment
			<ul style="list-style-type: none"> • Nuclear – 35% • Solar PV – 15% • Hydro – 90% • Biomass – 35% <p>Depending the quality of the maintenance regime the degradation and loss of the mechanical and electrical equipment over the lifespan of the turbines leads to losses in the expected generation from the wind farm. These losses are included in the initial generation estimate as “Other Losses” and are assumed to be 1%.</p>	

2.7 Site Access

No.	Submission	Issue	Response	Section Amendment
58.	S019	The proponents’ maps consistently show Kippin Drive within the project site boundary. Yet the impacts of the road upgrade and intensified use on the environment, surrounding land uses and residents is consistently ignored throughout the assessment. Daily (and possibly night-time) vehicle traffic travelling along Kippin Drive is likely to have a significant negative impact on listed populations but is not considered by the draft EIS. As well as causing fatalities through collisions, ongoing vehicle use of Kippin Drive will act as a barrier to wildlife movement (especially to the permanent water source of Granite Creek) and further fragments and reduces habitat for threatened species such as the Northern Quoll. There are many studies of wildlife avoidance of roads and traffic disturbances (Fahrig and Rytwinski 2009, Gucinski et al. 2001, Trombulak and Frissell 2000). This literature on wildlife and roads shows that roads have consistently negative impacts on a wide range of species through direct mortality, vegetation alterations, and disturbance caused by human activity such as noise, lights and traffic motion (Fahrig and Rytwinski 2009). Kippin Drive is superficially dealt with in SKM’s report on the surrounding road network and is not included as a “site access road”. There are no vertical alignment checks or traffic generation figures and the visual impact and construction noise are not considered. Kippin Drive passes close by a commercial organic orchard, two residences, crosses several small watercourses and runs parallel to and within 100m of Granite Creek. There are banana and pineapple plantations, a horticultural nursery, farmhouses and homestays on the other side of Granite Creek (accessed from Channel Road). The draft EIS states that: “construction noise modelling has not been undertaken, however the closest construction activity with a minimum separation distance of 1km to the closest receptor is the new site access road”. This is incorrect - the closest home is about 200 metres from Kippin Drive. Farms along Channel Road are less than 300 metres from Kippin Drive, including an accommodation business which houses 40 farm workers. Proper consideration of the environmental and socio-economic impacts associated with upgrade of Kippin Drive should be included in the final EIS, including construction noise modelling.	<p>The project is not envisioned to result in any significant increase in night time traffic and as such is not expected to contribute to a significant increase in road mortality or act as a barrier to the movement of the northern quoll. Northern Quoll appears to readily traverse sealed roads as indicated by their occurrence as road kill in the Walkamin/Mareeba region.</p> <p>It is envisage there will be negligible night-time traffic associated with the wind farm as this would fall outside of the designated construction hours.</p> <p>Kippen Drive is a council controlled road which extends for a distance of approximately 700m from its intersection to Springmount Road.</p> <p>Statement of Commitments in regard to sealing Kippen Drive, SOC 5.02 includes;</p> <p><i>Upgrade of Kippen Drive to a standard required to accommodate expected vehicle types, including sealing to reduce dust and noise at nearby properties.</i></p> <p>This would provide reduction in impacts to both the noted Martin property and other near neighbours, however would be subject to the approval of the local council.</p> <p>Noise is addressed in detail in Section 8 and Appendix 7</p> <p>Traffic Impacts are addressed in detail in Section 9 and Appendix 8</p> <p>All access roads and tracks including the road from the end of Kippen Drive are included in disturbed areas.</p> <p>Table 20.7 shows breakdown of new and existing tracks/roads.</p>	<p>Volume 2 Section 15</p> <p>Volume 3 – Appendix 8B</p> <p>Volume 3 – Appendix 7B</p> <p>Volume 2 Section 20.4</p>
59.	S019	The Preliminary Environmental Management Plan has a performance objective during operation of the wind farm to “minimize disruption to landholder activities along Kippin Drive” but there are no efforts to establish a similar objective during the Pre-construction and Construction phases when there will be significant impacts. In particular the Martin family has an organic farm beside Kippin Drive. The proponents have been told the farm risks loss of product quality and possible loss of its organic status if dust and vehicle emissions from Kippin Drive affect the nearby orchards. The proponents promised to get back to them over a year ago, but the Martins are still waiting. The Preliminary Environmental Management Plan should establish similar performance objectives to protect Kippin Drive and Channel Road properties during Pre-construction and Construction phases.		

No.	Submission	Issue	Response	Section Amendment
60.	S019	A performance objective of the Decommissioning Phase is: “to maintain acceptable limits of vehicular and machinery operating emissions and to receive zero complaints from local landholders regarding air quality.” This should be a performance objective during Pre-Construction, Construction and Operating Phases. Residents who live near Kippin Drive have repeatedly asked the proponents for information about the future road alignment, traffic impacts including operating hours, whether the road will be sealed, and how the impacts of three years of construction on their residences, agri-businesses and local waterways will be mitigated. No advice has been received. The community should be informed as soon as possible, and the details included in the final EIS.		
61.	S019	The proponent suggests Kippin Drive will be upgraded and opened to the public, “potentially saving the Council (and the community) significant time and cost.” Why should ratepayers be responsible for maintaining a road they don’t want and don’t need? Kippin Drive services several properties which were subdivided from the plateau and sold by Mount Emerald Wind Farm Pty Ltd joint venture partners Port Bajool. It should be the proponents’ responsibility to maintain this access road, as outlined in the FNQROC Building and Design Guidelines.		
62.	S019	The proponents state that the plateau is in a natural state and the only existing land modification “is associated with the existing 275 kV transmission line infrastructure and its series of access tracks”. A rough 4WD access track previously provided access to the transmission line. In 2010 the proponents graded two additional tracks with an estimated combined length of 3.75km in order to erect wind monitoring towers. They are described throughout the draft EIS as “existing access roads” but should be considered part of the development proposal. Have the significant upgrades required for Kippin Drive and all internal access roads (including turnaround areas) been included in the disturbance footprint?		
63.	S019	Much of the track under the existing powerline is extremely steep and the draft EIS states push/pull units will be required, but doesn’t state where and whether there are additional social and environmental impacts (eg. clearing for staging areas, noise, etc). Figure 2.8 is meant to show gradients of access roads but doesn’t include Kippin Drive and doesn’t show any gradients for the plateau’s existing or proposed roads. These details should be made available in EIS.		

2.8 *Electrical Infrastructure*

No.	Submission	Issue	Response	Section Amendment
64.	S006	Electrical Infrastructure is another example of the enormity of the ground disturbance caused by vast trenching to a depth of possibly more than 1 m deep network of underground cabling connections to all the remote wind turbine towers. Please take note of the importance of burying these cables very deep in order to minimize the harmful effects of dirty electricity and ground current to be discussed later. Is it to be assumed that such digging all over the mountain site is justifiable for the pathetically negligible net returns on electric energy generated?	<p>The range of activities and associated disturbance areas are outlined in Section 2.5 and further expanded in Section 2.6, along with any assumptions made in determining them.</p> <p>A further breakdown of the disturbance areas is provided in Table 20.7.</p> <p>Disturbance areas include those associated with Electrical Infrastructure.</p> <p>The depth and manner cable trenching is conducted is in accordance with Australian Standards (AS2067, AS3000).</p>	
65.	S006	Relevant Queensland Legislation requires under the Electricity Act 1994 that electricity industry participants ensure efficient and reliable supply of electricity. IWT do not meet these criteria because wind turbines are highly inefficient and introduce serious instability to the national electricity grid [1].	<p>As part of the negotiation of a connection agreement for the wind farm, the network service provider (Powerlink) is charged with ensuring the wind farm will not have an impact on the supply of electricity under the Electricity Act.</p> <p>If the wind farm was unable to achieve this it would not be able to connect to the network.</p>	

2.9 Operations and Maintenance

No.	Submission	Issue	Response	Section Amendment
66.	S006	Operation and Maintenance does not reveal a fundamental weakness of the wind turbine gearbox which typically requires a rebuild within 5-7 years, a very costly and massive maintenance procedure that contradicts the claims of not requiring heavy machinery once established [6].	<p>Provided the maintenance and servicing regime is followed in accordance with manufacturer specifications it is not expected major equipment failures (including gearboxes) would occur. Early detection of gearbox issues, particularly gearbox bearings, allows for on-site repair to be performed and as such removes the need for a large crane needed for a full gearbox replacement.</p> <p>Major failures may still occur throughout the life of the wind farm but these are infrequent.</p>	
67.	S012	Access roads ongoing maintenance plan? – especially if the intention is to open the site for tourist visitation – who covers the cost of ongoing maintenance?	Access roads are included in the maintenance as “associated facilities” and will be maintained as part of the overall site program	
68.	S017	Will the vibration-sensitive underground security fencing at the prison be impacted by ground vibrations through the rocky substrate? (In Scotland wind turbines are excluded within a 15km radius of a seismic monitoring array at Eskdalemuir. Infrasound vibration from large wind turbines has been identified up to 30km from some Australian sites).	<p>Underground security fencing is available in two main forms. One is triggered by a deformation of the sensor cable caused by the pressure exerted on it by an intruder, and the other uses magnetic fields and is triggered by the presence of metallic objects such as pliers or bolts cutters.</p> <p>Given the distance of over 4km from a wind turbine to the high security zone of Lotus Glen Prison any ground vibration would be measured in the nanometer range and would fall within the existing background ground vibration levels. More severe impacts on ground vibration would be caused by traffic on nearby Chettle and Springmount Roads.</p> <p>Facilities such as the Eskdalemuir Seismic Array are particularly sensitive to ground vibrations and are able to detect nuclear bomb tests at distances of over 1000km. The Scottish government has recently sought to protect the facility by imposing a limit on the magnitude of ground bourne vibration from proposals in the vicinity. This limit is 0.336nm.</p> <p>No facilities of this type are located in proximity to the proposal.</p>	

2.10 Decommissioning and Site Restoration

No.	Submission	Issue	Response	Section Amendment
69.	S010	And in the decommissioning of the wind farm, are the turbines deconstructed and removed from the site, and the environment restored to pre wind farm status?	Volume 1 Section 2.10 outlines the type of activities to be undertaken during “Decommissioning and Site Restoration”.	Volume 2 Section 20.2
70.	S004	There needs to be ‘Site Rehabilitation Plan’ included in the EIS. There also needs to have a guarantee or bond, held by the local council, to ensure that this “\$2” company does not just pack up and return to Thailand when the heat gets too hot. Please include a Site Rehabilitation Plan and a Bond Guarantee, clearly documented.	<p>Volume 2 Section 20.2 outlines the configuration of the Environmental Management Plan and includes decommissioning as Part 6.</p> <p>Reference to Appendix 33 – Preliminary Environmental Management Plan</p> <p>Rehabilitation Plans are developed following a projects approval and conditioning of activities stages. If the MEWF project obtains approval the Site Rehabilitation Plan will be developed with input from the regulators. It is too early in the EIS process to create the plan when additional measures during preconstruction and construction phases will impact on the outcome.</p>	
71.	S006	Decommissioning and Site Restoration falsely claims the operational life of up to 30 years for the wind turbines when in fact most suffer catastrophic gearbox failure within 5-7 years. Such repeated failures may eventually lead to a write off and very early decommissioning of a wind turbine. The degradation through wear and tear over the years also diminishes the already initially poor efficiency of IWT to even worse whereby more electricity is consumed than produced. Possibly, this entire wind farm would be permanently out of operation in about 10-15 years [7]. There is no way that site restoration measures mentioned would negate the permanent grievous scarring and devastation of the natural landscape and ecosystem of this beautiful pristine mountain range.		
72.	S012	After the turbines remarkably short shelf life – will you be responsible for pulling the turbines down, removing them and rehabilitating the site?		

No.	Submission	Issue	Response	Section Amendment
73.	S019	The proponents state that “if not wanted by the landowner” the internal access roads would be removed and the land rehabilitated in the Decommissioning Phase. The landowner is the wind farm Mount Emerald Wind Farm Pty Ltd partner Port Bajool. It is highly unlikely the wind farm proponents will pay to remove and rehabilitate internal access roads. Why would they voluntarily take on these additional costs? Decommissioning should include the cost of fully rehabilitating the site, including the removal of access roads. This issue also highlights the very long-term impacts of fragmentation that will occur if the development is allowed to proceed.		
74.	S018/S020	Revise Decommissioning EMP, particularly 6.3 to 6.8, which refer to construction instead of decommissioning	Document has been revised.	Appendix 33 Preliminary EMP Section 6
75.	S019	The Decommissioning Phase performance indicators listed in the Preliminary Environmental Management Plan include: “Matters of National Environmental Significance are maintained in their current condition with negligible declines in population dynamics and the numbers of species present on the site.” It is pointless to include it in the Decommissioning Phase if threatened species have already been impacted. It should be adopted as a performance indicator during Pre-Construction, Construction and Operational Phases.	Document has been revised.	Appendix 33 Preliminary EMP Volume 1 Section 4.2 and 5.3

2.11 Wind Farm Development Program

No.	Submission	Issue	Response	Section Amendment
76.	S019	The EIS Guidelines specifically require: “All construction, operational and decommissioning components of the action should be described in detail. This should include the precise location (including coordinates) of all works to be undertaken, structures to be built or elements of the action that may have impacts on matters of National Environmental Significance.” As stated elsewhere in this submission, the draft EIS has repeatedly failed to provide the details required by the Guidelines in order for the community to provide informed comment and for the Minister to make an informed decision about the proposal.	The information contained in Section 2 outlines the components making up the action and wherever possible the location of these components. Drawings showing the relative location of components are shown in Figures throughout the documentation.	
77.	S019	Unlike other EIS reports produced for wind farms elsewhere in Australia, the proponents have not provided a detailed work schedule, despite the unique and critical constraining factors such as the Far North’s monsoonal wet season and breeding cycles of threatened animals such as the Northern Quoll. There are no substantive details relating to time windows for construction and wet weather shutdowns. For instance, the draft EIS states that primary earthworks will be undertaken from February to October. February is our wettest month of the year, with an average rainfall of 250mm. No amount of sediment and erosion control works will stop significant environmental damage if work is undertaken during the wet season. At the other extreme, the Rural Fire Service issues extreme fire danger warnings each September and warns people: “if you are using machinery, do it in the morning or late at night”. Operating heavy machinery on the plateau during this time is not only a risk to matters of National Environmental Significance, it is also a risk to surrounding properties. As noted elsewhere in this submission, the timing and impacts of the development should be made publicly available immediately and included in the final EIS.	To provide a detailed works schedule at this time would not be appropriate. The schedule requires the input from the party responsible for the works, who would be selected following a tendering process and contract negotiations. Any restrictions placed on timing along with obligations in relation to environmental and cultural clearances would need to be incorporated into the detailed schedule by the successful contractor. The contractor would also be made aware of obligations to adhere to commitments in relation Fire and Bushfire.	
78.	S019	the approximate number of people and vehicles working on the site during the various development phases stages and the number of associated traffic movements within the site.	Refer to Volume 1 Section 9 Traffic and Transport	

2.11.1 Pre-Construction

No.	Submission	Issue	Response	Section Amendment
79.	S019	Upgrading and building access roads is part of the 12-month Preconstruction Phase. Also occurring at this time are important wildlife surveys which are proposed to fill the information gaps and ensure mitigation measures alleviate threats to matters of National Environmental Significance. The ecological surveys should be undertaken prior to extensive damage caused by upgrading and developing new roads across the plateau. The studies should be completed and submitted with the final EIS so that the Minister can make an informed decision on whether the proposal should be approved.	Investigation activities to date have included over 12 months of field research into flora and fauna species on-site. Following the approval of the project further research programs as noted in the EIS would be commenced, however, it is not envisaged these would commence unless further certainty in the project proceeding is obtained.	
80.	S019	The draft EIS states the 12-month Pre-construction Phase would include the establishment of a temporary construction compound and the location of a mobile concrete batching plant. Where will these facilities be established? Many residents are very concerned about the potential noise and disturbance from these sorts of facilities. Have these areas been included in the disturbance footprint? The proponents have been refining the wind farm proposal for five years: surely they have considered some options? The locations and any potential impacts should be made available immediately to our community and described in the final EIS.	Figure 1.2 shows the location of the Contractor Yard and Site Compound. Volume 1 Section 2.11.1.2 states "...concrete batching plant (if required)." Further, Volume 1 Section 4.1.2 and Section 6.3 note the concrete batching plant requiring further approvals.	

2.11.2 Construction

No.	Submission	Issue	Response	Section Amendment
<u>Complaints</u>				
81.	S006	Wind Farm Development Program portrays an all too nonchalance attitude to the hundreds of legal and non-legal complaints and protests that would be the overwhelming response of entire affected communities directed against RACL and all those complicit in this criminal IWT project should it proceed [8].	The Proponent has Committed to establishing a Complaints Hotline for the project. (SoC 2.07). This is also addressed in Volume 3 – Appendix 33 Preliminary Environmental Management Plan – Section 2.8	
<u>Disturbed Areas</u>				
82.	S010	Lack of map/table of the total disturbance footprint for a project of this size, which we would expect to include detailed information about the building of the turbines, and detail such things as substation and infrastructure, topsoil dumps and sediment control, onsite (or otherwise) concrete plant and sewage treatment plants; fire control and management, erosion management, weed control and management, water management arising from baseline water quality assessments for both Oaky and Granite Creek. These appear to be ignored as inconsequential or non impacting – all things which are directly disturbing to the environment.	The extent of clearing is identified in Volume 1 Figure 1.2- Turbine Locations and Development Footprint. Volume 2 Table 20.7 identifies the area of impact from the development footprint with a breakdown into the infrastructure components.	Volume 2 Section 20.4
83.	S010	As it is unclear from the document which turbine model will be used on the site, how can the environmental impacts be properly assessed? There is unclear information re: construction e.g. volume of concrete required, and where it will come from (onsite or elsewhere) ; whether blasting will be required; engineering studies into rock strength which fall short, with investigation having only been carried out to 6metre depth.	The specific turbine selected for the wind farm will be available following a detailed tender and contract negotiation process. It is unreasonable to be expected to enter into a contract and thus know the exact turbine to be installed, at an early stage of development. Any such early contract would simply cease to be valid over such an extended period. As such for the purposes of project design and approvals a wind farm design and layout is produced which is suitable for a range of wind turbine makes and models likely to be installed.	
84.	S019	An area of 10m has been allowed for access tracks including drains and batters 2.6.1.4). It should be clearly stated in the EIS if the underground cabling trenches of .5-.7m and an area beside the trench for windrowing stockpiled material are additional to the 10m disturbance area provided for road construction.	An average of 10m disturbance has been used for calculation purposes, and includes all activities causing disturbance.	

No.	Submission	Issue	Response	Section Amendment
85.	S019	The proponents discuss different construction techniques (and subsequent footprints) which may be required for turbine hardstands ranging from 1000 to 1200 square metres (2.5.1). Given the lack of detail provided, it should be assumed the maximum area will be disturbed (ie. 1200 square metres). We think this equates to clearing of 75,600 square metres for hardstands beside turbines (7.56 ha).	As noted the greater area of clearance has been used for calculations.	
<u>Associated Infrastructure</u>				
86.	S010	Other potential developments associated with the windfarm e.g. sewage treatment plant, tourist facility etc are mentioned with no indication of potential location for these, and no assessment of contribution of these developments on cumulative impacts.	Volume 3 – Appendix 33 Preliminary Environmental Management Plan – Section 4.7 states; <i>disposing of sewage and sullage from camp site via a packaged mini sewerage treatment plant (greywater may be discharged to land in accordance with local approvals).</i>	
87.	S012	Construction sewage requirements – where is the detail regarding the sewage management plan for the required facilities for up to 250 people during construction?		
88.	S019	The proponents discuss the need for additional wind monitoring masts (2.5.3). It is unclear with the installation of monitoring masts will require additional roadworks or lighting and therefore the EIS has not considered the additional masts in terms of potential threats to matters of National Environmental Significance.	The location of monitoring masts is yet to be decided. The purpose for installing these masts is to provide sufficient wind data to allow wind turbine performance testing to be conducted, particularly for power curve and noise guarantees. Such testing is conducted in accordance with International Standard IEC61400. Under IEC61400 the allowable distance between the mast and the wind turbine being tested should be 2 to 4 rotor diameters, with a recommended distance of 2.5 rotor diameters. Under this scenario the masts would be located within 270m of a wind turbine.	
89.	S019	Why are the rock crushing equipment and concrete batching plant listed as a potential visual impact – where will they be located?	Figure 1.2 shows the location of the Contractor Yard and Site Compound.	
<u>Blasting</u>				
90.	S019	details of blasting that may be required during construction of roads and other infrastructure;	Volume 1 Section 2.5.2 states; <i>Geotechnical investigations have indicated that little blasting will be required as the substrate is sufficiently weathered to be removed using ripping and non-explosive rock splitting.</i> Volume 1 Section 8.4 states; <i>Chemical and mechanical rock breaking is to be preferred over low energy blasting where mechanical ripping and excavation are not feasible for track and turbine construction.</i> Any noise and vibration from blasting would need to conform to <i>QLD EPA EcoAccess Guideline Noise and vibration from blasting.</i> The guideline specifies activities must be carried out in such a manner that blasting noise at a sensitive place; <ul style="list-style-type: none">• must not be more than 115dB(linear) peak for nine out of ten consecutive blasts, regardless of interval (continuous)• must not exceed 120dB(linear) peak for any blast (impulsive) This guideline specifies a ground-bourne vibration must not exceed a peak particle velocity of; <ul style="list-style-type: none">• 5mm/s for nine out of ten consecutive blasts, regardless of interval (continuous)• 10mm/s for any blast (impulsive)	Volume 1 Section 8.4
91.	S019	How much blasting will take place and what will be the impact of noise and vibrations associated with these operations on surrounding residents, groundwater and listed species?		
92.	S010	Actual assessments on environmental aspects are unclear and contradictory. No mention is made of groundwater, blasting is stated as being ‘little’, yet this is clearly contradicted in the report when impact on Quoll communities are assessed, where mention is made of blasting and its effect on the quolls.		

2.12 Resource Requirements

No.	Submission	Issue	Response	Section Amendment
93.	S012	Concrete source – not enough clear information provided. Can you confirm that if you need to put in a concrete batching plant you will reapply for the necessary permits?	Volume 1 Section 4.1.2 and Section 6.3 note the concrete batching plant requiring further approvals.	
94.	S019	The EIS Guidelines require a proposal description “in sufficient detail to allow an understanding of stages (including interdependencies between stages)”. The proponent states road base material would be sourced from excavations for turbine foundations (2.11.2.1). Table 2.6 suggests the roads would be constructed in the Pre-construction Phase prior to foundation excavation. Gravel requirements outlined in 2.12.2 also state that fill for road subgrade construction will be sourced from foundation excavations, when it would seem the roads would have to be constructed prior to foundation excavation? It is stated that the remainder would be sourced “from established facilities off-site in the local area.” The draft EIS also states “the external sourcing of materials for the road base and the tower foundations will be done in the first six months, so there will be increased activities in the first six months during the construction period” (p.83). Why the mystery? The final EIS should state clearly where the road base is going to come from, how many truckloads will be required, what route they will use to travel to the site, and where the materials will be stored. Under 2.12.2, the proponent states that 20,000 cubic metres of gravel could be required for the foundations and 60,000 cubic metres would be required for roads. We estimate the maximum amount of material which could be excavated from the foundations is 28,350 cubic metres which would leave about 50,000 cubic metres to be sourced off-site. It is assumed that large amounts of sand will also be required for the concrete turbine foundations. This continued obfuscation fails to comply with the basic tenet of the EPBC Act and the Guidelines. The EIS should be easily understood by the local community so we can make informed comments. Other EIS documents submitted by wind farm developers under the EPBC Act have provided this level of information to the public. The community should be consulted on this issue and other Pre-Construction and Construction issues we have raised as soon as possible and our comments included as part of the final EIS.	Volume 1 Section 2.12.2 outlines the requirements for gravel and aggregates. As is noted in this section volumes of materials are based on a worst case scenario and assumes no material can be re-used from site activities. Elsewhere in the EIS documentation it notes the use of excavated material from foundations may be used as a source of road subgrade material. This would reduce the amount of material source externally.	
95.	S019	The proponent states 20kl/day of water would be required for moisture conditioning and dust suppression. No timeline has been provided, but presumably this amount will be required throughout the three-year Pre-construction and Construction phases. Based on a 300-day annual work program, we think this adds up to 18,000 kL (18 megalitres). The proponent has not listed the amount of water which would be required for a concrete batching plant. Even if the plant is located offsite, the water requirement should be listed due to the potential impact on local water resources and other users. If one cubic metre of concrete requires 450 kg of cement and 180 litres of water, each turbine foundation will require 12,757 tonnes of cement and .08 megalitres of water. That is a total of 5 megalitres of water for 63 towers. An unspecified amount of water would also be required for proposed revegetation and offset areas. On Page 50 (3.2.12) the proponent states “where this water supply is proposed to be sourced from nearby watercourses”. As part of the EIS, it is imperative that the potential water sources are identified so that local residents area aware of the impacts and can provide informed comment on the potential impacts. Our watercourses are important for wildlife listed under the EPBC Act and are used by local residents for recreational and domestic purposes. These details should be made available immediately to our community and included in the final EIS.	Volume 1 Section 2.12.1 outlines the requirements for water. Volume 1 Section 4.1.2 and Section 6.3 note the concrete batching plant requiring further approvals, it is expected this would entail the specific water requirements and sourcing.	

3 KEY LEGISLATION AND POLICIES

No.	Submission	Issue	Response	Section Amendment
<u>Draft Wind Farm State Code</u>				
96.	S010	In particular, the Draft wind Farm State Code of Regulation which was released for public comment April this year has not been addressed.	The Minister for State Development, Infrastructure and Planning (DSDIP) is now the relevant party responsible for deciding the Development Application for the project.	
97.	S005	Guidelines. As this wind turbine development is located in Queensland, there is a requirement to comply with their guidelines. These guidelines are under development, and as such the EIS needs to wait for these to be completed.	At the time of compiling this report, the proposed Wind Farm State Code and associated Guidelines remain as draft documents. The draft Planning Guideline (April 2014) outlines the circumstances for the when the Wind Farm State Code will apply (refer Part 1, Section 2.1.1 Application of the Wind farm state code). The draft guideline states that the code will apply <i>‘to all new wind farm developments that comprise one or more wind turbines... The Code does not have a retrospective effect. A wind farm proposal that is already under assessment will continue to be subject to that assessment process.’</i> DSDIP have advised given the timing of the application and the release of the Draft Queensland Planning Guideline for Wind Farms, the draft guidelines would not be applicable to the assessment of the project.	
<u>Development Application</u>				
98.	S019	The proponents mention they received a “relatively detailed” Information Request from the Council in response to their Information request. As the proponents did not include the information request and their responses, we attach it for the Minister’s information (Attachment 2). We wish to highlight the fact that the proponents have avoided or incompletely answered many questions raised by the Council. We find the general tone of the document to be dismissive of the issues raised by the Council. We bring to your attention the proponent’s failure to properly address Council requests for more information about: why 2km setback distances and noise requirements specified in Victorian and New South Wales wind farm guidelines have not been applied (nine properties with an estimated 59 residents are less than 2km from turbines); the generic approach of adding 10dB to establish outdoor/indoor noise values; failure to provide individual assessments of affected residences; failure to provide details of how many affected residences have air conditioners; the weak correlation between monitoring mast wind speeds and the background noise at receptors; failure to provide additional background monitoring for representative dwellings; justification of over-reliance on manufacturers’ standards rather than actual and modelled operational noise at wind farms; how the State Planning Policy (Noise) and Planning for Noise Control Guidelines will be met; failure to consider wake effects; failure to consider visual impact of access road; and failure to provide viewshed analysis. The development application was subsequently called in by the Queensland Government and many of the same questions have been repeated in its Information Request to the proponents (see Attachment 3).	The Information Request Response was provided to Mareeba Shire Council, 28 April 2014, to specifically address concerns raised in relation to the Development Application. The Information Request Response was provided in accordance with Section 278(1) of the Sustainable Planning Act 2009 (SPA). Under this section the applicant has the ability to respond to <i>‘(b) part of the information requested with a written notice asking the requesting authority to proceed with the assessment of the application;...’</i> A copy of the Information Request Response to the Mareeba Shire Council is publically available from the Ratch Australia website (www.ratchaustralia.com) and from the local Mareeba Shire Council office. A copy of the Information Request Response to DSDIP is publically available from the Department of State Development, Infrastructure and Planning website. (http://www.dsdip.qld.gov.au/development-applications/ministerial-call-in.html) While the EIS and the Development Application are separate processes much of the information is shared between both processes and many of the assessment reports are attached to both. Under the requirements of Planning Scheme Amendment 01/11 – Wind Farms – Mareeba Shire Planning Scheme 2004, a proposed wind farm will be designed, constructed and operated in accordance with recognised standards for the assessment of environmental noise. In relation to recognised standards, New Zealand Standards 6808:2010 Acoustics – Wind Farms Noise (NZS6808:2010) and Queensland Environmental (Noise) Policy 2008 (EPP Noise) are specifically noted in the Planning Scheme amendment. As such, these standards have been used as the basis for noise compliance.	Volume 1 Section 4.3
<u>Vegetation</u>				
99.	S019	It should be noted by the Minister that the proponent will not be required to have a permit to clear native vegetation under Queensland’s Nature Conservation (Wildlife) Regulation 2006 because the works will be considered “for the purposes of electrical works” by the Queensland	No response necessary	

No.	Submission	Issue	Response	Section Amendment
		Government. When these Regulations were developed, electrical works of this scale were carried out by government or semi-government agencies, not the private sector. The situation is mirrored in the Mareeba Shire Planning Scheme 2004, under which the proposal will be code assessed as a material change of use for a “Utility Installation”. This lack of governance increases the Minister’s responsibility to apply the precautionary principle when assessing this proposal.		
100.	S019	The proponent states the development could potentially trigger Queensland’s Vegetation Management Act 1999 giving the impression the project will be adequately assessed and conditioned under state legislation. The proponent states that “all 63 turbine sites currently being considered are proposed to be located in remnant vegetation habitats as defined under the Vegetation Management Act 2009 (Regional Landscape values, pg 54). It should be noted that the Queensland Government has withdrawn the requirement to comply with this Act, and has refunded the proponents’ assessment fee.	No response necessary	
101.	S019	The Land Protection (Pest and Stock Route Management) Act 2002 requires landowners to manage declared species. While the proponent states the Environmental Management Plan will address the management of weeds, it is noted that the new access tracks established by the proponents are already lined with weed species and no apparent attempt has been made to control them from spreading, already degrading the environmental integrity of the plateau.	A Pest Management Plan has been developed by the proponent and is included as Appendix 33B.	Volume 3 Appendix 33B
<u>Planning Scheme</u>				
102.	S019	The proponents have quoted extensively from some policies in the Far North Queensland Regional Plan yet ignored others. While noting the FNQ Regional Plan’s regulatory provisions have been repealed by the Queensland Government, the proponents go on to quote selectively from the Plan, for example: “essential community infrastructure such as power lines ... may be permitted in areas of high ecological significance, subject to adverse impacts being avoided or mitigated, including the use of offsets.” There is no evidence provided that the Mount Emerald wind turbines are “essential community infrastructure”. As noted previously, electricity demand continues to fall, and the Queensland Energy Minister has stated no new power sources are required until after 2025. The proponents fail to state the intent of the FNQ Regional Plan: “Prior to making commitments about regionally significant infrastructure, the Government will undertake a thorough assessment of the infrastructure needs that provide the best overall outcomes for the community.” These assessments have not been carried out in the case of the Mount Emerald proposal. Wind farm applications are being dealt with individually and without any strategic view to their need and the associated cumulative social, environmental and economic impacts. The proponents have also failed to mention that the FNQ Regional Plan supports the implementation of separation distances in Section 1.3.2 Air and Acoustic Environment Protection: “Development that generates emissions must be adequately separated or planned, designed, constructed and operated to ensure the impacts of air and noise emissions on sensitive land uses meet the objectives of the Environmental Protection (Air) Policy and the Environmental Protection (Noise) Policy.” The proponents are planning to breach these policies by imposing unacceptable levels of noise on residents.	<p>We note that the FNQ Regional Plan Regulatory Provisions have been repealed by the Queensland Government.</p> <p>The project proposal is consistent with the Far North Regional Plan energy objective and land use policies for electricity generation through the supply of viable energy resources.</p> <p>The Queensland State Planning Policy 2013 (SPP) relevantly states that ensuring the provision of a safe, reliable and affordable energy supply is vital to meeting the basic needs of communities and for Queensland’s economic prosperity.</p> <p>Under the requirements of Planning Scheme Amendment 01/11 – Wind Farms – Mareeba Shire Planning Scheme 2004, a proposed wind farm will be designed, constructed and operated in accordance with recognised standards for the assessment of environmental noise. In relation to recognised standards, New Zealand Standards 6808:2010 Acoustics – Wind Farms Noise (NZS6808:2010) and Queensland Environmental (Noise) Policy 2008 (EPP Noise) are specifically noted in the Planning Scheme amendment. As such, these standards have been used as the basis for noise compliance.</p>	
103.	S019	The proponents refer to the Desired Environmental Outcomes in the decade-old Mareeba Shire Planning Scheme in seeking to substantiate the wind farm development. The Minister should be aware when considering this proposal that the Tablelands Regional Council proposed far more stringent guidelines in their Temporary Local Planning Instruments and the draft planning scheme which would have replaced the Mareeba Planning Scheme (if de-amalgamation had not occurred earlier this year). The proponents have chosen to avoid giving a technical summary against the draft Scheme, even though the Council’s tougher guidelines were specifically developed in response to the Mount Emerald wind farm proposal. The Tablelands Regional	<p>An assessment against the Temporary Local Planning Instrument 01-11 (Wind Farms) was undertaken and provided as part of the Development Application lodged with the Tablelands Regional Council on 15 March 2012.</p> <p>Further the Temporary Local Planning Instrument was formally incorporated into the Mareeba Shire Planning Scheme as an Amendment in September 2013, whilst still under the stewardship of the Tablelands Regional Council.</p>	

No.	Submission	Issue	Response	Section Amendment
		Council has firsthand experience (more than any other level of government in Queensland) of the problems ensuring wind farms are appropriately located, designed and operated to minimize the impacts on surrounding residents, land uses and the environment. Ongoing Windy Hill noise issues have placed a considerable burden on staff resources, as well as significant legal and expert costs that are borne by the Council - and therefore ratepayers. It should also be noted by the Minister that the Queensland Government diluted the Tablelands Regional Council's proposed planning instruments and planning scheme in order to expedite wind farm planning approvals. For instance, the Queensland Government insisted on changing the Council's Renewable Energy Facility Code's fundamental purpose from "ensuring renewable energy facilities are located appropriately and have social, environmental and economic benefits" to "facilitating the establishment of new or expansion of existing facilities". Given the Queensland Government's previous track record, residents are reluctant to trust state decision-makers to protect our interests and matters of National Environmental Significance. We hope these concerns will be considered by the Minister when considering the Mount Emerald wind farm application.		
104.	S019	As previously mentioned, the draft Tablelands Regional Council planning scheme was developed to include the Mount Emerald plateau and the proposed wind farm. The scheme's Biodiversity Areas Overlay Code would have required that development does not occur in Biodiversity High areas unless it was "required community infrastructure or utility that cannot be feasibly located to avoid clearing." Renewable energy facilities such as Mount Emerald wind farm are private enterprises, they are not required community infrastructure. The Biodiversity Areas Overlay Code states that: "Noise resulting from development does not exceed 10dBA above background more than 50 metres within the boundary of Biodiversity Area High." The proposed Mount Emerald wind farm is incapable of meeting this requirement.	<p>It should be noted the draft Tablelands Regional Council planning scheme remains as draft, and the Biodiversity Areas Overlay Code does not apply.</p> <p>The EIS documentation addresses the impacts of the proposal on environmental protection and biodiversity conservation of the site land and its surrounds.</p>	

4 OTHER APPROVALS AND CONDITIONS

No.	Submission	Issue	Response	Section Amendment

5 STRATEGIC JUSTIFICATION OF THE PROJECT

No.	Submission	Issue	Response	Section Amendment
<u>Wind Resource</u>				
105.	S006	Strategic Justification of the Proposal subtopic Wind Resource claims of average wind speeds are not stated to have been independently verified so how are we to know these values are true? How were these measurements made exactly, over what frequency of intervals and over how long a period? These averages are not realistic and the wind resource on the mountain ranges are very far from "excellent". A truly independent team with no connection to the wind developers must be allowed to conduct this investigation anew. The wind certainly does not blow most of the time at useful productive speeds to power these hopeless inefficient wind turbines [1]	<p>The wind speeds stated are considered to be a true reflection of actual measurements recorded on-site.</p> <p>Wind speeds are collected through the use of anemometers, a device specifically designed to measure wind speeds. The anemometers are attached to masts at various levels above ground. The way the anemometers are mounted on the mast is configured to minimise the flow disturbance due to the tower and connecting booms in accordance with IEA Standard "Wind Speed Measurement and Use of Cup Anemometry".</p> <p>Anemometers are laboratory calibrated prior to installation and again following removal.</p> <p>Anemometers are connected to a data logger which continuously monitors the wind speed at a set interval (3 seconds). Following the completion of each monitoring period (10 minutes) the</p>	

No.	Submission	Issue	Response	Section Amendment																																																				
			<p>logger processes the data and stores the average, standard deviation, maximum and minimum of the data. The process then repeats for the next period.</p> <p>The collection, verification and provision of wind data is conducted by external consultants who’s reputation and professional integrity in providing accurate findings is of vital importance to the company’s livelihood.</p>																																																					
<u>Economic Justification</u>																																																								
106.	S017	Only economic reasons have been given for choosing the Mt Emerald site for the development. As required by 5.5(b)(i) provide details on why the Mt Emerald site is likely to have the least impact on matters of National Environmental Significance.	The impacts on Matters of National Environmental Significance are discussed throughout the EIS documentation.																																																					
107.	S017	As required by 5.5(b)(viii) provide “economic justification and analysis for the number of turbines to be commissioned”.	Discussion in Section 6.2 outlines the process for determining the number of turbines.																																																					
<u>Carbon Abatement/Payback Period</u>																																																								
108.	S006	It is also a fallacy to claim that payback period of 7 months for the energy costs involved in the construction and installation of IWT. This paper quotes a more accurate period of 1.5 years [4]. The life time of IWT is at most 15 years and not that claimed for 25 years. The performance degradation of wind turbines is shockingly rapid. And obviously, all talk about saving greenhouse gases/CO2 emissions is meaningless drivel [13].	<p>A more detailed assessment of the Carbon Abatement, which estimates the energy balance for the proposed wind farm from the ‘cradle to grave’ including five phases of the project is provided in Table 5.2.</p> <p>Phase 1 – Construction – comprise the extraction of raw materials (concrete, aluminium, steel, glass fibre, etc.) needed to manufacture the tower, nacelle, hub, blades, foundation, grid connection and cables.</p> <p>Phase 2 – Assembly – work of erecting the wind turbine</p> <p>Phase 3 – Transport – includes transport of raw materials to produce different components, transport of turbine components to site and during operation.</p> <p>Phase 4 – Operation – activities related to maintenance including oil changes, lubrication and transport for maintenance</p> <p>Phase 5 – Dismantling – dismantling the turbines, and transport from site. Assumes recycling of some components.</p> <table><thead><tr><th>ACTIVITY</th><th>ENERGY USE (MWh)</th><th>ACTIVITY</th><th>ENERGY USE (MWh)</th></tr></thead><tbody><tr><td colspan="2">Manufacturing WTG</td><td colspan="2">Transport</td></tr><tr><td>Steel</td><td>131,597</td><td>Blades and rotor</td><td>15,485</td></tr><tr><td>Stainless Steel</td><td>9,001</td><td>Tower</td><td>848</td></tr><tr><td>Cast Iron</td><td>19,579</td><td>Nacelle</td><td>1,538</td></tr><tr><td>Copper</td><td>6,176</td><td>Machining</td><td>2</td></tr><tr><td>Aluminium</td><td>20,958</td><td>Control System</td><td>18</td></tr><tr><td>Carbon Fibre</td><td>60,378</td><td>Sub-total</td><td>17,891</td></tr><tr><td>Epoxy</td><td>24,703</td><td colspan="2">Operation and Maintenance</td></tr><tr><td>Plastic</td><td>7,424</td><td>Vehicle</td><td>1,996</td></tr><tr><td>Oil</td><td>854</td><td>Refurbish</td><td>1,603</td></tr><tr><td>Sub-total</td><td>280,670</td><td>Lubrication</td><td>8,921</td></tr><tr><td colspan="2">Manufacturing Foundation</td><td>Sub-total</td><td>12,520</td></tr></tbody></table>	ACTIVITY	ENERGY USE (MWh)	ACTIVITY	ENERGY USE (MWh)	Manufacturing WTG		Transport		Steel	131,597	Blades and rotor	15,485	Stainless Steel	9,001	Tower	848	Cast Iron	19,579	Nacelle	1,538	Copper	6,176	Machining	2	Aluminium	20,958	Control System	18	Carbon Fibre	60,378	Sub-total	17,891	Epoxy	24,703	Operation and Maintenance		Plastic	7,424	Vehicle	1,996	Oil	854	Refurbish	1,603	Sub-total	280,670	Lubrication	8,921	Manufacturing Foundation		Sub-total	12,520	Volume 1 Section 5.2.7
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109.	S017	An estimate the carbon abatement period, or time it takes to generate sufficient electricity (without any greenhouse gas emissions) to offset the emissions created in the creation and installation of the facility, based on wind industry data, has been provided in the draft EIS. There is no breakdown of the data and methodology used. This is confusing and does not seem to meet the requirements of 5.5(b)(ix) of the EIS Guidelines which does not refer to greenhouse gas emissions and states:																																																						
110.	S017	Revise Table 1, providing details of the data and methodology used, relevant to the Mt Emerald Wind Farm development specifically, and having regard to 5.5(b)(ix) above (including operation, maintenance, repairs and decommissioning including disposal of 1900 tonnes of non recyclable blades). It is noted that a capacity factor of 35% “using specific site wind modelling” was used in Table 1. This needs to be revised downwards to reflect NET capacity factor, as identified by Parsons Brinckerhoff in its Energy Yield Assessment (26.1% to 28.7%, depending on candidate turbine). Any mention in the EIS of the wind farm being able to generate sufficient power for 75,000 homes also needs to be revised downwards to reflect the NET capacity factor.																																																						
111.	S019	The EIS Guidelines specifically require: “an energy balance, i.e. the ratio between the amount of primary energy and resources used for construction and operation of the wind farm and the amount of energy which the wind farm will supply throughout its lifetime, should be prepared. Consideration should be given to energy used for manufacturing, transport, installation, operation, maintenance and repairs as well as material recycling after decommissioning. The expected energy payback time should be specified.” The data provided by the proponent in Table 1 is simplistic, inadequate and does not appear to be specifically relevant to the Mount Emerald proposal – for instance, it states a capacity factor of 35 per cent, yet the energy yield assessment says net capacity factor is 26.1 to 28.7% depending upon the turbine type.																																																						

No.	Submission	Issue	Response				Section Amendment		
			Concrete	43,851	Dismantling and Scrapping				
			Reinforcing Bar	49,758	Dismantle turbines	665			
			Excavator	2	Transport	529			
			Small truck	179	Sub-total			1,194	
			Dump truck	5,513	Recycling				
			Semi-trailer	170	Steel	-5,657			
			Concrete truck	447	Stainless Steel	1,336			
			Pump	134	Cast Iron	5,059			
			Front-end Loader	89	Copper	-869			
			Truck for Crane	103	Aluminium	-6,735			
			Crane	13	Carbon Fibre	-2,709			
			Sub-total		100,259			Epoxy	-1,544
			Preparatory Works					Plastic	-599
			Road construction	21,622				Oil	-189
			Level hardstand areas	8,649	Sub-total			-11,907	
			Excavation for cables	295					
			Cables/Connection	95,725					
			Sub-total		126,291				
			Total MEWF Energy Usage (MWh)526,918						
			MEWF 1 Year Energy Production (MWh)579,870						
			Using this additional detailed information the estimated payback period for the wind farm proposal is 0.91 years, or just under 11 months.						
Operating Regime									
112.	S017	As required by 5.5(b)(xiii) of the EIS Guidelines, provide the hours of operation for the wind farm including any on-site variations or seasonal variations.	The wind farm would be able to operate whenever there is sufficient wind to generate electricity.						
113.	S019	While promoting the “excellent wind resource” on Mount Emerald, the proponents failed to mention that the wind resource is at its lowest when Far North Queenslanders need it most. The 80m mast (measuring wind speed at the proposed hub height) recorded low wind speeds from about 10am to 5-6pm, which coincides with times of high electricity demand. The months of December to March recorded significantly low wind speeds, when these hot months are times of high electricity demand in Far North Queensland. Reports from the Australian Energy Market Operator (AEMO, 2012) clearly show that energy demand in Queensland is highest during the daytime and highest during the summer, when the Mount Emerald wind farm would produce the least energy. In addition, the monitoring towers recorded higher wind speeds at night - when there is lower demand for electricity and residents surrounding the plateau are trying to sleep. In addition, the proponents suggest they may curtail turbines in an effort to reduce the number of bat and bird fatalities. At other wind farm sites the key times are two hours before and after dark on warm nights, which also coincides with periods of high electricity demand.	While collected wind speed data does show a reduction during the afternoon period, and also during the summer (December – March) period it should be noted the wind speeds do still fall within the operating range of the wind turbines and thus the wind farm would still be generating. It should be further noted at any given time the wind speed and hence generation can vary from nothing to full output regardless of time of day or time of year. The minimum wind speed needed for a wind turbine to commence generating electricity is around 3m/s (11km/h) and turbines will continue to generate until they reach a maximum speed of 25m/s (90km/h). A review of wind data records show the amount of time winds is outside of this operational range is roughly 5%. This means the site winds are within the operating range of the turbines for 95% of the year.						
Electricity Network									
114.	S006	There is practically no net savings in fuel consumption from these useless IWT and so it is pure hogwash to claim "insulates electricity markets ...". The basis and assumptions for deriving	In July 2013, the Australian Electricity Market Operator (AEMO) released historical market information on the South Australian electricity network. South Australia has the greatest number						

No.	Submission	Issue	Response	Section Amendment
		significant electricity generation of IWT is pure fantasy and has never been subjected to independent verification anywhere in the world. Why should we pay to power these wind turbines to turn like oversized toys?	of operating wind farms in Australia with 16 for an installed capacity of 1,200MW. When comparing these figures with those five years ago (2008) some interesting facts arise:	
115.	S006	Economic Efficiency plays on the apparent weaknesses of the current electric network grid for the Atherton Tablelands which nonetheless has been working very well. The claim of coal-fired "base load generation at Collinsville is comparatively inefficient" is an absolute shameless lie. Compared to what? To IWT that could hardly produce any electricity in comparison?	<ul style="list-style-type: none"> • Generation from wind increased from 14% to 24% of South Australia's energy production • Generation from gas decreased from 50% to 47% • Generation from coal decreased from 34% to 15% • During this time no new plant was installed to provide back-up generation • Wind power produces more electricity than coal • Power pool prices have reduced from 5.1¢/kWh to 3.0¢/kWh • Equivalent CO2 emissions have reduced from 8.1 million tonnes to 5.1 million tonnes 	
116.	S022	Current reports suggest that wind power is not only inefficient and uneconomical but a danger to our grid security if we continue to add more and more industrial wind turbine developments.	<p>This has been achieved without additional cost or loss of security to the grid network. The Network Operator in South Australia – ElectraNet, stated in a submission to the governments RET Review Panel that;</p> <p><i>"The connection of wind generation in South Australia has been achieved without the requirement for additional transmission network charges to electricity consumers."</i></p>	
117.	S017	The draft EIS Executive Summary states: "The base load power stations from which most of the region's power is derived, are located in Central Queensland over 1000 km away. Substantial transmission losses are involved and the economic cost of replacing this power with a non fossil source, are lower." In order to be factual, the EIS needs to state that the transmission losses to the Far North (Turkinje/Windy Hill) are only 13%. This is confirmed by data from the AEMO and has been confirmed by the Department of Energy and Water Supply. As required by Section 5.5(b)(viii), the claim that the "economic cost of replacing this power with a non fossil source, are lower" needs to be substantiated, especially in regard to there being an excess of fossil fuel generation available in Queensland and the capital cost of the wind turbine development.	<p>The submitter notes a transmission loss of 13% at Turkinje/Windy Hill of 13%. While this loss factor is applicable to a different transmission system (132kV) as opposed to the 275kV Chalumbin – Woree line the proposed wind farm would connect to, the size of the loss is generally in accordance with loss factors to the region.</p> <p>It is losses of this magnitude which result in Community Service Obligation (CSO) payments of some \$600 million to be applied to power bills as a component of the network costs which make up almost half of a residential power bill.</p> <p>Network system modelling was conducted by ROAM Consulting in regard to CSO payments in the North Queensland region.</p>	
118.	S019	<p>The proponents state there will be "economic efficiency gains in meeting government objectives, by replacing fossil fuel electricity supply in areas where long transmission distances from generation sources lead to extra costs due to transmission loss and susceptibility to power disruptions". This statement is misleading and should be removed from the final EIS.</p> <p>The meaning behind this statement is unclear but it would seem the proponents are claiming that the carbon tax and the Renewable Energy Target make non-fossil fuel sources cheaper than fossil fuel sources. The Federal Government is implementing its election promises to remove the carbon tax and review the Renewable Energy Target. If the proponents' key premise of economic efficiency is based on a former Government's policies, then no decision should be made by the Minister until after the RET Review has been completed and the Government has acted upon the Review's recommendations.</p>	<p>This modelling shows the Marginal Loss Factor (MLF) in 2017-18 for the Chalumbin Node to be 10.4% and Woree Node 11.8%. With the inclusion of the wind farm in the modelling the MLF reduces to 6.6% and 8% for Chalumbin and Woree respectively.</p> <p>The modelling also estimated the CSO Payment for the year 2017-18 to be \$550 – \$610 million, with a reduction of \$11.2 – \$24.7 million due to the wind farm. This equates to a reduction of 1.8% to 4.9%.</p>	
119.	S019	The proponents suggest there will be economic efficiency gains because the wind farm will help to reduce transmission losses. We have seen regular comments in the media from wind farm supporters stating Mount Emerald would reduce the \$600 million paid to Ergon by the Queensland Government as a community service obligation (CSO) to provide power to remote areas of Queensland. Minister McArdle has told us the wind farm will have no impact on the CSO. The proponents also claim the wind farm will replace fossil fuel electricity supply. Wind power is intermittent and can't be stored, therefore wind turbines cannot provide baseload power.		

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120.	S017	The draft EIS Executive Summary, Volume 1 and Appendix 4 all state: “Long transmission lines are more prone to being affected by disruptions. The whole area from Central Queensland to the Far North is cyclone prone with the area of highest cyclone frequency along the coast from Bowen to Townsville being in the centre of transmission routes. Local sources of generation enhance power security in the Far North Queensland region.” This statement appears to be trying to justify the “need for the proposal” as per Section 5.1(a) of the EIS Guidelines. It implies that wind generation will enhance power security by supplying power when transmission power lines are cut after a cyclone. This statement needs to be substantiated by providing evidence that the wind farm can operate to supply power independently from southern baseload power stations. Alternatively, if this is not what is implied, the statement needs to be either deleted or re-worded to make sure that it cannot be misconstrued.	<p>There are many instances in Australia where power is supplied through grid networks which are not connected to the National Grid, particularly;</p> <ul style="list-style-type: none"> • Western Queensland • Northern Territory • Western and Northern South Australia • Western Australia; outside of the Southeast corner <p>The type of generation facilities used in these small networks varies depending on availability of fuel sources. Areas in South Australia and Western Australia have incorporated wind generation into such networks for many years without issue.</p>	
121.	S019	The proponents suggest that, in the event of a cyclone damaging our long transmission lines from the south, the wind farm would provide “energy security” to Far North Queensland. On 2 July 2014 members of our group met with Queensland Energy Minister Mark McArdle and he made it clear that the wind turbines would not be able to supply power if transmission lines to the south were damaged (supply and demand must be matched 100 per cent of the time and a wind farm cannot operate independently of baseload power). The term “energy security” is more commonly used in Europe where many countries depend on foreign gas and oil resources. Yet north Queensland has abundant and secure coal, gas and hydro resources. In comparison to these sources of baseload power, wind power is a serious energy security risk because it is intermittent and therefore unreliable. The International Energy Agency defines energy security as: “The uninterrupted physical availability [of energy] at a price which is affordable, while respecting environment concerns.” (Energy Security, 2012). The Mount Emerald wind farm cannot guarantee uninterrupted availability of electricity, it is not affordable, and it does not respect environmental concerns. It cannot deliver energy security.	<p>In a similar way it would be feasible for North Queensland to be able to operate as an islanded network away from the National Grid.</p> <p>The ability for North Queensland to operate independent of the National Grid Network is further justified by the varied mix of generation sources; gas, hydro, biomass, solar and wind currently all play a part in generation. By utilising these available resources and generation types in sufficient quantities there is no reason why the region could not support its own energy needs independent of the National Grid Network.</p>	
122.	S019	There is no justification for building the wind farm in terms of electricity demand. The proposal comes at a time when the national downturn in electricity demand is showing no sign of ending. After slumping more than seven per cent between 2009-10 and 2013-14, demand will slide a further 3.3 per cent over the next three years, according to the latest forecast of the Australian Energy Market Operator. AEMO’s assessments suggest the National Electricity Market is over-supplied with existing generation capacity. Even without any further new-entry, their forecasts of subdued growth in demand will not consume this over-supply until after 2020. The NEM-wide Historical Information Report (2012) shows that Queensland exports more energy than it imports, far more than any other state. Queensland Energy Minister Mark McArdle has stated we have an excess of generated electricity and will not need any more power stations for at least ten years (pers. com., 2014).	The latest version of the National Electricity Forecasting Report released in June 2014 by the Australian Electricity Market Operator, shows for Queensland the annual energy forecast growth is 4.1%. While this is down from the 2013 estimate of 6.8%, it is still predicted to increase.	
123.	S019	The proponents state frequently throughout the draft EIS and in the local media that the wind farm “will generate enough electricity to power 75,000 homes” – this figure has remained the same in spite of a reduction from 225MW to 189MW capacity. Some Walkamin pensioners are convinced the wind farm is going to provide them with free electricity and they won’t have to pay another power bill once it is constructed. Yet around the world it is widely accepted that only about eight per cent of a wind farm’s capacity can be relied upon to service peak demand for power. AEMO de-rated the wind generating capacity of New South Wales wind farms in 2013/14 down to two per cent of their installed capacity in summer and 4.1 per cent in winter, based on their contribution factors during 2012/13.	<p>The number of homes supplied by the wind farm is based on the estimated annual generation of the wind farm. As is discussed in Section 6.2, early wind farm designs comprised 75 wind turbines in the 2MW size range with an estimated annual generation of 506,000 MWh. Assuming the average Queensland home uses 18.5 kWh/day or 6.75MWh/year; this equates to 75,000 homes.</p> <p>Changes to the wind farm design have seen the configuration revised to include 63 turbines in the 3MW size range and an annual generation estimate of 579,800MWh. This would see the number of homes supplied increase to over 85,000. The figure of 75,000 homes has been maintained throughout development even though it may be conservative.</p> <p>These figures are based on the estimated annual generation, the actual number of homes supplied at a particular point in time can vary depending on the wind.</p> <p>When no wind is blowing (around 5% of the year) no homes would be supplied, but when maximum output is reached (above 14m/s or 50km/h) up to 245,000 homes could be supplied. Site wind data records show this would occur for around 13% of the year.</p>	

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124.	S019	The proponents frequently cite the abatement of greenhouse gases as an important advantage of the wind farm proposal. The Federal Government's current Direct Action policy maintains that there are much cheaper and more effective ways to abate greenhouse gases than wind farms. This week the Climate Change Authority stated purchasing international carbon credits would be an even cheaper option.	No response necessary	
<u>Electricity Pricing</u>				
125.	S019	The proponents suggest the project is 'expected' to bring positive benefits to the local, regional and national economies throughout the life cycle of the project. The Queensland Competition Authority has confirmed that the Renewable Energy Target has been pushing up the cost of electricity supply, equating to \$81.24 added to an average household electricity bill (McArdle, 2013). Recent modelling by Deloitte Access Economics suggests the current growth in wind farms is causing long-term, far-reaching damage to the Australian economy. The Deloitte analysis has forecast the Renewable Energy Target (the mechanism which compels electricity retailers to buy high-cost wind energy) will lead to the loss of 4900 full-time jobs by 2020, and more than 6000 by 2030. Job losses will outweigh job creation in the renewable sector by about 4900 by 2020, Deloitte says. The increase in electricity prices will undermine national competitiveness and household budgets, resulting in a \$34 billion hit to the Australian economy by 2020, including nearly \$3 billion in export cuts. The wide-ranging, negative impacts of renewable energy projects are highlighted in submissions received by the Federal Government's Renewable Energy Target Review (see for example the Business Council of Australia submission). The Renewable Energy Target was originally introduced to provide 20 per cent of Australia's energy supply from renewable sources by 2020. With the demand for power shrinking aggressively, Australia is on target to achieve 27 per cent by 2020. Approving more wind farms is forcing expensive, unreliable energy into an oversupplied market. It will mean greater financial burden to households and industries.(Energy Supply Association of Australia, The Australian, 16 June 2014). The additional costs added to our electricity bills and broader economic impacts should be considered in the final EIS.	<p>The Qld Competition Authority released a report <i>Estimated Energy Costs 2014-15 Retail Tariffs</i>, in May 2014, by ACIL Allen, in this report it is stated the cost of complying with the LRET to a consumer is \$4.01/MWh. For an average household using 6.6MWh/year this equates to \$26.50 or a little over \$2/month.</p> <p>Other benefits are recognised in the Queensland Renewable Energy Plan (QREP) 2009, released by the Queensland Government, which states;</p> <ul style="list-style-type: none"> The Federal RET plan aims to stimulate about \$12 billion of investment in renewable energy across the country by 2020. Through measures outlined in our plan we are seeking to leverage \$3.5 billion of that investment creating 3,500 jobs in these exciting new industries. This will result in the generation of 9,000 gigawatt hours or approximately 2,500 megawatts of Queensland based renewable energy by 2020. 	
<u>Renewable Energy Target</u>				
126.	S022	Is it because of the lucrative Renewable Energy Certificates from the Federal Government which can amount to a substantial percentage of a company's income from an industrial wind turbine development that RATCH would contemplate this project?	The Renewable Energy Target or RET; is a federal government initiative which has the ultimate goal of seeing 20% of Australia's electricity generation sourced from renewable energy by 2020. To accomplish this; for each unit of electricity (Megawatt hour - MWh) produced by a credited renewable power station a renewable energy credit (REC) is created.	
127.	S022	Infigen Energy claims that the Renewable Energy Certificates generate 40% of their income and the Carbone Tax means another \$15 million a year to them. Yet they are still losing millions a year despite this(FY12 \$60 million FY13 \$80 million) and claim that if these benefits are removed their business will fail. So if industrial wind turbines were energy efficient would this be the case?	<p>At the end of each year electricity retailers (Ergon, AGL, Origin etc.) must surrender a number of these credits equivalent to the target percentage of their customer base. Credits can be bought directly from the power station owner (just like the electricity) or from an open market.</p> <p>The addition of the credit allows renewable power to compete with traditional sources such as coal and gas which are cheaper but do not take account of their pollution. The removal of the credits would make it difficult for renewable projects to compete against traditional generation sources, particularly in the short term future.</p>	
128.	S022	Is RATCH Australia relying on these forms of subsidies to be financially successful and if these lucrative benefits are removed what will happen to this project?	<p>The Mount Emerald wind farm project will be subject to the federal government RET scheme, just like any other renewable power station throughout the country, whether it be a wind farm, hydro plant or even solar panels on your roof.</p> <p>Most jurisdictions world-wide do have governmental incentives to support more rapid transition to less harmful and not well entrenched technologies such as wind and solar generation. In Australia, this is provided through the RET Scheme. Incentives for renewables help level the playing field. They match and exceed existing market distortions favouring traditional forms of fossil fuel generation and attempt to account for the un-costed negative impacts (pollution) whilst</p>	

No.	Submission	Issue	Response	Section Amendment
			<p>providing an incubator environment to allow supply chains, manufacturing and labour forces to grow with greater certainty.</p> <p>In May 2013, the Bureau of Resources and Energy Economics release a report <i>Energy in Australia</i>. From this report for the period 2011-12, it is estimated;</p> <ul style="list-style-type: none"> • Australia's total electricity generation was around 255 TWh • The average electricity pool price paid to generators from retailers for electricity was \$28.50/MWh; a total of \$7.3 billion. • Retail prices paid by Australian households are approximately \$142/MWh, which gives an overall revenue figure to retailers of \$36.2 billion. • Wind generation accounted for 2% or 5TWh • At a REC price of \$38/MWh this equates to \$184 million or 0.5% of the total spent on electricity. 	
129.	S022	One of the main objectives of the RET is outlined in the Renewable Energy (Electricity) Act 2000 on page 15 under Part 1 Preliminary, Section 3 Object/Outline (b) to reduce emissions of greenhouse gases in the electricity sector. Has this been the case? It certainly appears the answer would be NO!	Refer to the item 114-116; actual data for South Australia shows annual CO ₂ emissions have reduced from 8.1 million tonnes to 5.1 million tonnes.	

5.2 Economic Benefits

No.	Submission	Issue	Response	Section Amendment
130.	S006	Economic Benefits is a very deceptive portrayal of a major industrial project that is in the long term, especially after the brief construction phase, an extremely wealth-ruining economic theft of the most destructive subversive kind of any industry sector ever. IWT is a billions-dollar industry fraud that is typified by wind multinational corporations greed-oriented preying on and annihilation of rural communities all over the world. These vile tricksters manipulative fake economics hides the criminal thieving through very high electricity costs and other indirect taxations in the billions while throwing scraps of paltry money at rural communities as bait.	<p>Jacobs Group (Australia) was commissioned to undertake a revised and complete economic impact assessment to identify and assess potential economic benefits as well as potentially adverse economic impacts associated with the project. The economic impact assessment found the construction and operation of the Mt Emerald Wind Farm would have a positive economic contribution to output, value added, employment and household income in the Tablelands region and the broader Queensland and domestic economy.</p> <p>Refer to Volume 3 Appendix 4A Section 4 of the Economic Impact Assessment Report by Jacobs, for further information.</p>	Volume 3 Appendix 4A
131.	S014	The economic report does not cover external costs. These costs need to be estimated, such as increased road repairs for both local and state governments. A complete update of these costings should have been provided. The economic report is hollow and should have had more detail on costings	<p>The Economic Impact Assessment Report (Vol 3 Appendix 4A) considers external costs such as traffic, tourism and energy impacts. The report concluded that traffic impacts associated with the project would be minor. This is mainly due to the optimised route planning of the transportation of wind farm components. However it was noted additional costs would arise from the need for added signage and road maintenance. MEWF will work closely with local government throughout the project planning and construction and has agreed to cover costs associated with additional signage.</p> <p>Refer to Section 6.1.4 of the report for further information.</p>	Volume 3 Appendix 4A
132.	S017	Describe the local and regional economic, social and built context, including historical and future trends, within which this project is proposed, as required by Section 5.1(e) and Section 5.5(c) of the EIS Guidelines. Identify key industries and employment, unemployment rates, socio-economic characteristics of its people or households and population growth projections.	For a complete socio-economic baseline assessment, including a description of the economic, social and built context as required by Section 5.1 (e) and Section 5.5 (c) of the EIS Guidelines, refer to Section 3 of the revised Economic Impact Assessment (Volume 3 Appendix 4A).	Volume 3 Appendix 4A

No.	Submission	Issue	Response	Section Amendment
133.	S019	The proponents commissioned an Economic Impact Assessment by Cummings Economics in 2013. The Cummings report relies heavily on the wind industry report Review of the Australian Wind Industry 2011 and economic multipliers provided by the wind industry. We believe this information is highly subjective as its key objective is to highlight wind industry benefits to the Australian economy. There are no instances in which the Cummings Report investigates or details any negative economic impacts of the wind farm. The economic analysis is superficial and inaccurate. For instance, in detailing the benefits to the Tablelands economy, Cummings has included \$900,000 a year in “land rental payments”. This is a standard input for other wind farms where land is leased from a number of farmers. In this instance, the land is owned by Mount Emerald Wind Farm Pty Ltd joint venture partners Port Bajool who do not live on the Tablelands. Cummings estimated these land rental payments would generate 3.2 jobs and \$806,000 a year in “flow-on benefits” which equates to \$42.6 million for the Tablelands over the 20-year life of the project. This false inflation of benefits raises serious questions about the accuracy of other figures in the Cummings report. The Economic Impact Assessment should be reviewed by an independent expert before it is submitted with the final EIS.	<p>A revised Economic Impact Assessment Report, including economic modelling was completed by Jacobs (Volume 3 Appendix 4A).</p> <p>Jacobs developed the economic impact assessment using multipliers derived from an in-house regional Input-Output Model. It is worth noting that the Cummings Economic Impact Assessment did not utilise wind industry multipliers but rather used multipliers derived from their own in-house model (from the North Australia Research Group).</p> <p>The Jacobs economic modelling was calibrated to separately estimate the economic impacts on Far North Queensland, Queensland and Australia.</p> <p>Land rental payments were not included in the economic modelling since they are paid in compensation for reduced output and therefore do not constitute new economic output as a result of the project. Thus the findings of the economic analysis do not include the land repayments.</p> <p>Refer to Section 4, Economic Impact Assessment (Volume 3 Appendix 4A) for further information.</p>	Volume 3 Appendix 4A
134.	S019	The Cummings report and the draft EIS fail to consider or itemise the full costs of renewable technologies and their impacts on the electricity market. The proponents have not factored in the hidden costs of supplying wind energy such as transmission, infrastructure, back-up power and the negative impacts on system security and reliability. The top utilities regulator in Texas in the United States has called on the wind industry to pay the true cost of accommodating wind power in the grid including additional upgrades, maintenance and operational costs. In its submission to the Renewable Energy Target review, the Queensland Government states: “not only are generators and consumers being impacted but the changes are also delivering significant challenges for the distribution businesses as they look to incorporate new technologies into their network.” The full costs of renewable technologies and their impacts on the electricity market should be included in a revised economic analysis and submitted with the final EIS.	<p>An analysis of the potential impacts on the supply of power was completed.</p> <p>This analysis found there would be some additional costs associated with a wind energy project. These costs were mostly attributable to the wind generation process and are expected to be around \$1.13/MWh, which is less than one per cent of the average state-wide long run marginal cost of feasible wind farms. Thus, the economic costs related to the supply of power are expected to be negligible.</p> <p>Refer to Section 9, Economic Impact Assessment (Volume 3 Appendix 4A) for further information.</p>	Volume 3 Appendix 4A
<u>Employment</u>				
135.	S010	Jobs, jobs jobs! There is no detailed information re: jobs. Will these be local jobs? What level of skill will be required? Will the workforce building the proposed wind farm be one that is imported into the area during the construction phase?	<p>Estimates of the associated jobs of the construction and operational phases of the projects are discussed in Section 4, Economic Impact Assessment Report (Volume 3 Appendix 4A).</p> <p>The construction phase for the project is anticipated to be around 24 months in duration. A range of skills would be required during construction, including construction, assembly, technicians and tradespeople and labourers.</p> <p>During construction, it is anticipated the project would create around 51 direct and 45 indirect average annual full-time equivalent positions in the Far North Queensland region, and around 85 direct and 74 indirect full-time equivalent positions in Queensland.</p> <p>Peak employment during the construction phase can be expected to rise to 155 jobs.</p> <p>Data from the 2011 ABS Census indicates that the relevant labour is available in the Tablelands region and the project would be able to source construction staff from the existing Tablelands population. Some training is likely to be required for some local staff, representing an opportunity to up-skill and diversify the skill sets of local residents.</p> <p>During operation of the project, approximately 20 full time equivalent positions are expected to be required. MEWF is committed to maximising local employment opportunities throughout the operation of the project and has a local content commitment embedded in the project’s Commitments Register and will maximise local labour for the operational phase where possible. MEWF will also work with the construction contractor to maximise local employment</p>	Volume 3 Appendix 4A
136.	S012	Who will get the construction jobs? What expertise is going to be required for these jobs? How many locals will be employed and for how long?		
137.	S014	The Ratch Australia EIS Economic Report it claims to support 158 local jobs during 24 months construction and 15 jobs during the operation phase. The report does not cover what skilled labour would be needed or the amount of unskilled labour. A breakdown of these positions is not included in the report. To examine the economic report properly, a detailed outline of what the labour breakdown would be is needed, for example wind farm trained specialists, local trade personnel and local unskilled labourers. Same would apply for labourers in the operation phase		

No.	Submission	Issue	Response	Section Amendment
			<p>opportunities during the construction phase of the project where possible.</p> <p>Estimates of the likely jobs associated with the construction and operational phases of the project are discussed in Section 4, Economic Impact Assessment Report (Volume 3 Appendix 4A).</p>	
<u>Negative Impacts</u>				
138.	S017	No assessment of any potential negative impact is attempted and this gap needs to be clearly identified in relation to the following if they are not to be assessed (this list is not exhaustive and further examination is required)	<p>Jacobs Group (Australia) was commissioned to undertake a revised and completed economic impact assessment to identify and assess potential economic benefits as well as potentially adverse economic impacts associated with the project. The revised economic impact assessment considered positive and adverse potential impacts to the economy, social environment, tourism, property prices, and impact to existing agricultural practices. Overall, the economic impact assessment found the construction and operation of the Mt Emerald Wind Farm would have a positive economic contribution to output, value added, employment and household income in the Tablelands region and the broader Queensland and domestic economy.</p> <p>Refer to Sections 4 to 9 of the Economic Impact Assessment Report (Volume 3 Appendix 4A) for further information.</p>	Volume 3 Appendix 4A
139.	S017	<p>On the continental USA alone bats have an estimated value of \$22.9 billion per year through their pest suppression services. There have been no studies specifically quantifying the economic values of any Australian microchiropteran bat species; however it can be inferred that these values would also be significant in Australia, due to similar agricultural practices. There have been no studies specifically quantifying the social or cultural values of any Australian microchiropteran bats.”</p> <p>Given the above, what will be the worst-case potential financial impact of the loss of bat population (when the bat impacts have not even been quantified)</p>	<p>The Economic Impact Assessment Report (Volume 3 Appendix 4A) assessed the potential impacts of the project on ecosystem-related services which are provided by local bat populations. Overall, the project is not expected to result in significant economic impact as a result of potential impacts to local bat populations.</p> <p>Refer to Section 5, Economic Impact Assessment (Volume 3 Appendix 4A).</p>	Volume 3 Appendix 4A
140.	S017	What will be the potential financial impact of the restriction of aerial spraying or inability to spray when required? (worst case: complete loss of crops or loss of ability to farm property altogether – up to 13,000ha)	<p>Wind modelling completed for the Mt Emerald Wind Farm EIS (RPS 2014) determined the project would not result in any significant impacts to local aerial spraying. In addition, MEWF is committed to working with the project neighbours to minimise any potential impacts and will temporarily shut down wind turbines in consultation with property owners/ managers and aerial sprayers if wind turbines threatened the functioning of an aerial spray.</p> <p>However, multiple scenarios on potential impacts to aerial spraying were considered for the purpose of this assessment.</p> <p>A banana farm is the only property in proximity to the MEWF that would require aerial spraying. Under the scenario of a termination of aerial spraying at this property, agricultural output could decline by about 50 per cent. This would represent an average annual loss of between \$770,000 and \$2,580,000. This fall in output equates to around a 2.8 per cent reduction in the output of the bananas in the Tablelands region.</p> <p>If the termination of aerial spraying resulted in a stop to the operation of the banana farm, this would lead to loss in farm output of between \$1.54 and \$5.16 million per year.</p> <p>This fall in output equates to a 5.5 per cent reduction in the output of the bananas in the Tablelands region. Overall, the Tablelands region would experience a decline in economic activity if aerial spraying to the banana farm was to cease as a result of the project. It follows that there would be slight economic impacts to the Far North Queensland economy.</p> <p>Refer to Section 5 of the Economic Impact Assessment Report (Volume 3 Appendix 4A), for further information.</p>	Volume 3 Appendix 4A
141.	S017	Will efficient operation of the Lotus Glen Correctional Centre, located 2.5km downwind of the project, continue?	We are unable to speculate as to the efficiency of operation at the Lotus Glen Prison. It is unclear as to what specific potential impacts this submission refers to.	Volume 3 Appendix 4A

No.	Submission	Issue	Response	Section Amendment
142.	S017	Costs which will be externalised onto other sectors also need to be estimated. This includes financial impacts on the less efficient operation of the Arriga Sugar Mill when its cane hauling B-double trucks are delayed (operating 24/7 May to December) by transportation of wind farm components and other site requirements.	<p>Arriga Sugar has advised they do not foresee any unmanageable issues with the operation of their facility.</p> <p>The Economic Impact Assessment Report (Volume 3 Appendix 4A) considers external costs such as traffic, tourism and energy impacts. The assessment found that traffic impacts associated with the project would be minor, due to the optimised route planning of the transportation of wind farm components. However, it was noted that additional costs would come from the need for added signage and road maintenance. MEWF will work closely with local government throughout the project planning and construction and has agreed to cover costs associated with additional signage.</p> <p>Refer to Section 4 of the Economic Impact Assessment Report (Volume 3 Appendix 4A) for further information.</p>	Volume 3 Appendix 4A
143.	S019	The Cummings report briefly considers the impacts on aerial agriculture but then fails to assess the impact. The Rehbein Consulting report identifies potential aerial spraying impacts up to 5km downwind of the turbines due to turbulence causing a “critical hazard” to aircraft. There are approximately 13,000ha of good quality agricultural land within 5km of the turbine site. The EIS suggests that aerial spraying will not be restricted beyond 600m, but fails to account for the different wind fields identified in both the Noise Mapping Australia and Marshall Day Acoustics reports. This means that the turbines can be operating in high winds on the ridgelines whilst the valleys below would normally be suitable for aerial spraying activities. Spraying activities are often time critical and banana farmers in particular have statutory requirements to control sigatoka in their crops. Ground access for spraying purposes is impossible during the wet season and aerial agriculture offers the only alternative.	<p>Wind modelling completed for the Mt Emerald Wind Farm EIS (RPS 2014) determined the project would not result in any significant impacts to local aerial spraying. In addition, MEWF is committed to working with the project neighbours to minimise any potential impacts and will temporarily shut down wind turbines in consultation with property owners/ managers and aerial sprayers if wind turbines threatened the functioning of an aerial spray.</p> <p>However, multiple scenarios of potential impacts to aerial spraying were considered for the purpose of this assessment. A banana farm is the only property in proximity to the MEWF that would require aerial spraying. Under the scenario of a termination of aerial spraying at this property, agricultural output could decline by about 50 per cent. This would represent an average annual loss of between \$770,000 and \$2,580,000. This fall in output equates to around a 2.8 per cent reduction in the output of the bananas in the Tablelands region.</p> <p>If the termination of aerial spraying resulted in a stop to the operation of the banana farm, this would lead to loss in farm output of between \$1.54 and \$5.16 million per year. This fall in output equates to a 5.5 per cent reduction in the output of the bananas in the Tablelands region. Overall, the Tablelands region would experience a decline in economic activity if aerial spraying to the banana farm was to cease as a result of the project. It follows that there would be slight economic impacts to the Far North Queensland economy.</p> <p>Refer to Section 5 of the Economic Impact Assessment Report (Volume 3 Appendix 4A), for further information.</p>	Volume 3 Appendix 4A
144.	S019	The Cummings report fails to consider the economic impacts from traffic congestion during wind farm construction. One of the many issues confronting our community is how the increase in traffic during the proposed three-year construction period will impact on businesses, farms and other road users. This issue has not been adequately dealt with in the draft EIS.	<p>The Economic Impact Assessment Report (Volume 3 Appendix 4A) considers external costs such as traffic, tourism and energy impacts. The assessment found that traffic impacts associated with the project would be minor, due to the optimised route planning of the transportation of wind farm components. However, it was noted that additional costs would come with the need for added signage and road maintenance. MEWF will work closely with local government throughout the project planning and construction and has agreed to cover costs associated with additional signage.</p> <p>During construction, increased heavy traffic on main roads and highways may cause safety concerns for schools and other uses along the proposed routes. Residential amenity may also be temporarily impacted at times during the construction period, due to additional construction traffic and construction impacts. These impacts are expected to be short-term in nature. MEWF will work with relevant authorities to develop and implement a traffic management plan, as part of expected development approval conditions, to minimise potential impacts on traffic and land uses along the proposed haulage routes. MEWF will also notify neighbouring properties of upcoming works and activities to minimise potential impacts to residential amenity where possible.</p> <p>Refer to Section 4 and Section of the Economic Impact Assessment Report (Volume 3 Appendix 4A) for further information.</p>	Volume 3 Appendix 4A

No.	Submission	Issue	Response	Section Amendment
<u>Property Values</u>				
145.	S016	Devaluation of property prices will be significant, as most of these properties are at the high end of the market, with a residence, shed/s, fences and garden improvements	Potential impacts to property values were considered in the Economic Impact Assessment Report (Volume 3 Appendix 4A). Overall, the assessment found that wind farms have not been found to affect property prices negatively. A large number of studies by respected and independent organisations in many countries including Australia have not found any evidence of wind turbines reducing values of either agricultural or residential property in the long term. However, some studies did find evidence to support a decrease in property values during project planning, largely due to the uncertainty of the project going ahead. Generally, the evidence suggests property values improve post-construction of wind farm projects. Properties at Oaky Creek Farms and Springmount Park underwent changes to property values due to subdivisions by developed Port Bajool Pty Ltd. Properties at the Springmount Park subdivision development are currently valued between \$200,000 and \$225,000. Some properties in the area have experienced a decline in property value. For example, a property consisting of 1.4 square kilometres of farming land on Springmount Road was sold in 2008 for over \$1 million. However, in 2012, the property sold for about \$750,000. Another example is Lot 5 located on Springmount Road. It has been on the market since July 2012 and was valued at \$445,000, and as of September 2014, its value decreased to \$399,000. However, the region in general has experienced a net increase in property values. From year 2000 to 2014, house values in Mareeba have almost tripled in price. More recently, house values increased by about 5.5% from 2013 to 2014 in Mareeba. This demonstrates that house values in the region are likely to continue to improve. Property values rise and fall for many reasons. People have difficulties in selling property or receive less than their asking price in a range of locations, markets and size and quality of housing. The evidence suggests that if a property close to a wind farm is taking time to sell or is not attracting the offers the vendor would like, consideration could be given to the broader economy and market, quality and locational aspects as reasons for the situation. Please refer to Section 8 of the Economic Impact Assessment Report (Volume 3 Appendix 4A), for further information.	Volume 3 Appendix 4A
146.	S017	Provide details in the EIS of current (as at July 2014) and previous valuations of the properties at Oaky Creek Farms and Springmount Park subdivisions. This information is available from the Department of Natural Resources and Mines and is direct evidence of devaluations. The loss of property value of surrounding land needs to be clearly stated in the EIS as a potential negative impact.		
147.	S019	The Cummings report does not consider the decline in property values already being experienced around the proposed wind farm site. The rural residential subdivision of Rangeview has the highest number of quality homes on the Tablelands, with an average property value of \$500,000. Over 400 Rangeview properties are within 5km of the turbine site, and many more just outside 5km. In recent Planning and Environment Court proceedings (P v TRC&B) real estate agents testified under oath that Tolga properties were already slow to sell because of the proposed wind turbine development. Home owners - who have made a once-in-a-lifetime purchase of the most valuable asset they will ever own - face the prospect of long-term financial hardship. Real estate agents are also reporting difficulties selling properties elsewhere around the proposed Mount Emerald site. In Oaky Creek, official property valuations have fallen by 25 per cent, wiping \$1.5 million off their value. These devaluations force other ratepayers living elsewhere in the shire to pay more to cover the Council budget. These hard facts also contravene the proponents' claims that the proposal "will not impact upon the preferred settlement pattern of the area". The diverse range of our local land uses and the potential impacts on their future expansion should be considered in the assessment of the Mount Emerald wind farm application. Establishing a wind farm effectively constrains the potential for other developments which may be noise-sensitive, such as residential developments and tourist ventures. We believe if the wind farm goes ahead, we won't be able to subdivide our land or build additional houses for our children. The final EIS should consider the loss of property values, changes in preferred settlement patterns, constraints on future subdivision and noise-sensitive developments around the Mount Emerald plateau.		
148.	S022	The issue of property devaluation is one that has been fiercely denied by the industry, however consultation with local communities around developments in Australia clearly suggests that if one can sell their property the negative impact of and industrial wind turbine development within close proximity certainly reduces the valuation and negotiating power. What many residents have found is in fact that there property is unsaleable.		
<u>Tourism</u>				
149.	S019	The executive summary states: "there does not seem to be any evidence to support the notion that wind farms have a negative impact on tourism." That is because there has been no attempt to investigate impacts in the draft EIS.	Potential impacts to tourism were considered in the Economic Impact Assessment Report (Volume 3 Appendix 4A). Overall, from both the Australian and overseas experiences, there is little evidence of any significant negative tourism impacts to date. In fact, based on the reviews of the wind farms in this report, there appears to be a positive local impact albeit small. The current operational wind farms in Australia seem to have attracted some new visitation into the regions in which they are located and they also seem to provide an additional destination for visitors already in the region or travelling through as part of a broader organised tour. The attraction can potentially be increased if there is significant linked interpretation as demonstrated in some of the overseas experience but even limited interpretation and information can add significantly to the visit	Volume 3 Appendix 4A
150.	S019	Far North Queensland is one of Australia's most popular tourist destinations, and the tourism industry plays a significant role in the regional economy of the Tablelands. Our natural landscapes are our biggest drawcard. Tourism organisations in other countries are lobbying their governments for more appropriate siting of wind farms away from scenic areas. The Victorian Government has moved to protect areas of high tourism value from wind farms, recognising the detrimental visual impacts of wind farms on the visitor experience. The South Australian wind farm policy was amended in 2012 to establish "character preservation districts" such as the Barossa Valley.		

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151.	S019	The proponent has not reviewed international research in this field and has not adequately addressed this issue in the draft EIS. Tourism studies in Scotland have found there is widespread support not to locate wind farms in designated landscape areas or be visible from these areas (Stevens, 2010). Studies have also shown scale is a material factor affecting visitor perceptions with larger developments (such as the Mount Emerald proposal) causing a higher level of negative reaction than smaller developments. There is evidence of a connection between visitors' perceptions of a destination's image and branding as a 'wild place' and the erosion of this brand as a result of intrusion by industrial developments such as wind farms. The Scottish tourist industry consistently expresses strong concerns about the negative impacts of wind farms on their businesses and, more significantly, on the tourism profile of their destination. Riddington (2008) found that the value of scenery to tourists declines with the construction of a wind farm and states that: "The most aggrieved tourists will relocate to a place without wind farms ... the effects are large enough to make consideration of the implications a formal part of the planning process."	experience. As a result, the project is not expected to have an adverse impact on tourism in the Tablelands region. Refer to Section 7 of the Economic Impact Assessment Report (Volume 3 Appendix 4A), for further information.	
152.	S019	A review of images used to depict the Tablelands on tourism destination websites create and substantiate perceptions of the Tablelands as a place with great, unspoilt scenery. Large-scale wind farms such as the Mount Emerald proposal directly contradict these images and erode the foundations upon which the brand values of the Tablelands is based. The areas surrounding Mount Emerald (the adjacent Mount Baldy mountain bike track network and the Atherton to Mareeba rail trail) are being developed as part of a major tourism strategy to attract cycling activities. These specialist activities are based upon tourists having an intimate involvement with the natural environment. One of the strengths of our area is the absence of dominant and intrusive structures in the landscape. The Mount Emerald wind farm will diminish the 'natural' experience for these emerging markets. We note that Mount Emerald Wind Farm Pty Ltd joint venture partners Port Bajool, in particular the Morris family, have close associations with the tourism industry and are long-term, paid up members of tourism marketing and economic development organisations. We doubt these groups are aware of the negative impacts of wind farms on tourism industries overseas, and we doubt they will speak out against the wind farm proposal. In fact, they will probably submit tacit letters of support without properly considering the economic, social and environmental impacts of the proposal.		
153.	S019	James Cook University research into the visitor experience at Lake Tinaroo (about 15km from the proposed wind farm) found that people are seeking rest and relaxation, to socialise with family and friends, to experience tranquillity, be close to/experience nature and to see natural features and scenery. A large-scale wind farm like Mount Emerald represents an industrialised landscape that directly contradicts these experiences and images, eroding the foundations of the Tablelands brand value. The Kennedy Highway is the most popular route for people travelling to the Tablelands and the turbines would be clearly visible for at least 20 minutes as visitors travel between Mareeba and Atherton. At least 48 turbines will be visible between Walkamin and Tolga (calculated from proponent's response to Council Information Request, 2014). This is in sharp contrast to the natural experience which draws visitors to the Tablelands.	The potential impacts to tourism were considered in the Economic Impact Assessment Report (Volume 3 Appendix 4A). Overall, it is unlikely the project will have an adverse impact on tourism and with some local investment in visitor facilities and interpretation could well have a positive impact. Refer to Section 7 of the Economic Impact Assessment Report (Volume 3 Appendix 4A), for further information.	Volume 3 Appendix 4A
<u>Traffic</u>				
154.	S017	The Traffic Impact Assessment needs to assess the impacts (ie the potential positive and negative short term outcomes and long term impacts to the social, economic and natural environment).	During construction, increased heavy traffic on main roads and highways may impacts on perceptions of safety for schools and other uses along the proposed routes. Residential amenity may also be temporarily impacted at times during the construction period, due to additional construction traffic and construction impacts such as increased noise and dust. These impacts are expected to be short-term in nature. MEWF will work with relevant authorities to develop and implement a traffic management plan, as part of expected development approval conditions, to	Volume 3 Appendix 4A

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			<p>minimise potential impacts on traffic and land uses along the proposed haulage routes. MEWF will also notify nearby properties of upcoming works and activities to minimise potential impacts to residential amenity where possible.</p> <p>Refer to Section 6 of the Economic Impact Assessment Report (Volume 3 Appendix 4A), for further information.</p>	

6 ALTERNATIVES TO THE PROPOSAL

No.	Submission	Issue	Response	Section Amendment
<u>Assessment of Alternatives</u>				
155.	S017	As required by 5.5(b)(ii) describe “all feasible, economic alternative site options for the proposal (for example, through a multi-criteria analysis)”	To assist in focusing the development activities of the wind farm opportunities a system for ranking wind farm sites has been developed. Under this system, there are two main aspects to be assessed, namely;	Volume 1 Section 6.1
156.	S019	The EIS Guidelines require a description of: “all feasible, economic alternative site options for the proposal (for example, through a multi-criteria analysis); and development options, including an explanation of prudent and feasible alternatives.” As noted elsewhere of this submission, the proponents have chosen not to fulfill this requirement. The Guidelines stipulate the EIS should provide “an analysis of prudent and feasible alternative sites and why this site is likely to have the least impact on matters of National Environmental Significance”. The draft EIS does not provide details of alternative site options and does not explain why their chosen site is likely to have the least impact on matters of National Environmental Significance. The proponent cites just one area “to the southwest of the subject land” which is not described other than “it would seem to be more rugged” and “require additional road upgrades”. This cursory description does not provide our community or the Australian Government with enough information to make an informed decision about alternative sites that may have less impact on matters of National Environmental Significance. It is clear to our community that the proponents wish to proceed solely with this site because they own it. Put simply, the proponents are unwilling to invest in another property that would be less environmentally sensitive. Alternative sites should be properly investigated and reported upon in the final EIS.	<ul style="list-style-type: none"> Commercial factors – such as a project’s rate of return, value or required break-even energy price. Non-commercial factors – these factors are harder to quantify and comprise items such as the environmental impact, access to site and ability to integrate with the existing infrastructure of the area <p>Commercial</p> <p>To allow for direct comparison between sites a common turbine is used, and thus an estimate of the sites energy, capital cost and ongoing operating costs can be made. It should be noted the common turbine may not be suited to installation at all sites but is used for evaluation purposes.</p> <p>Non-commercial</p> <p>A range of subjective criteria have been established to quantify other aspects of the project and how these will impact on its development. Each criteria is given a score (0-10) based on the respective merits. Criteria include;</p> <ul style="list-style-type: none"> Planning process Planning studies Land Flora and Fauna Natural Amenity Houses/Community Airspace Connection Site Access Project Synergies <p>Using this system the alternative projects throughout the portfolio are able to be ranked and subsequent development efforts focussed on the better sites.</p>	
157.	S019	The draft EIS acknowledges “the variability and complexity of the terrain and roughness” at the proposed wind farm site (p.17). The term ‘complex terrain’ is a serious concern for the wind industry. It means there is already ambient turbulence from forests, hills, cliffs or thermal effects. The wind profile is not a simple increase of wind with height: there are separation flows and greatly increased turbulence. The wind industry has long established that relatively flat,	<p>As part of the development of the project site a model is developed for the wind farm which allows the site generation to be determined. This model includes detailed topographic information that predicts impacts on the wind farm due to terrain and turbulence issues.</p> <p>This allows these impacts to be predicted and included in evaluation of the overall project financial viability. Thus, the impact on the wind farm from higher turbulence can be directly</p>	

No.	Submission	Issue	Response	Section Amendment
		cleared land provides a better location for turbines than rugged and topographically complex sites like the Mount Emerald plateau (numerous sources are available, see for example AUSWEA and CSIRO). Our research indicates that most wind farms in Australia are located on relatively flat or rolling, cleared landscapes because they provide a superior wind source - and don't threaten matters of National Environmental Significance.	included in financial assessments and project decisions.	
158.	S019	Another stipulation in the Guidelines is that the EIS explains “the consequences of not proceeding with the proposal or components of the proposal”. There has been no attempt to address this issue and it should be addressed in the final EIS, along with the issues raised above. We strongly believe the consequences of not proceeding with this flawed proposal will be the future environmental, social and economic well being of our region.	The environmental, social and economic aspects of the proposal are identified and discussed throughout the EIS documentation.	
Tully Millstream				
159.	S004	You mention development of energy generation projects, yet you make no mention of Hydro Electric Generation, and especially the nearby Tully Millstream as an alternative. You also fail to mention that a major reason in selection of this site is that it is solely owned by your partner in the MEWF proposal, John Morris and Jim Noli (Port Bajool P/L).	The proposed Tully Millstream hydro-electric project was originally mooted in the 1980's and involved the construction of three dams and would flood 4,300 ha of land including 1,300 ha of the wet tropics region. The project was originally costed at \$400 million, and was sized at 500MW, by 1996 this had increased to \$700 million, however in the Far North Queensland Regional Plan 2009-2031 it is noted “The scheme is currently not in the government’s forward electricity generation strategy”.	
160.	S006	The Tully Millstream hydro electricity proposal is a far cheaper and productive renewable energy prospect than this IWT when considered comprehensively. Most importantly hydro electricity is a proven technology but NOT wind energy. Just think for a moment, would anyone really think that fickle and inherently weak wind energy could remotely compare to the tremendous energy of water consistently gushing down great heights to drive essentially similar electric turbines? Yet that is what the wind industry tricksters want to have us all believing in this wind hoax.	The electricity generation capabilities of hydroelectricity are well proven and well understood throughout the world. There is no reason why the inclusion of both projects into the network could not be done, and in fact this would provide for an even better overall outcome for the region in terms of electricity supply. The synergies between wind and hydro generation, as well as other renewable generation types, would provide a real alternative to the fossil fuel based electricity systems currently used throughout the country. The additional generation from hydro and wind would complement the existing generation sources in Far North Queensland (wind, hydro, biomass) and could potentially see the region as a leader in renewable generation in the country.	
Alternative Wind Energy Projects				
161.	S006	Alternative to the Proposal subtopic 6.1 Site Location claims that the Atherton Tablelands has "some of the best wind resources in the country" is rubbish. Please do not give credence to the map done by Windlab Systems which is decidedly under pro-wind lobby control. The best wind speeds are found in the southern regions of Australia [15]. Mountain ranges confer limited wind speed advantage.	As can be seen in Figure 6.1 the higher wind speeds (orange/red) shown in the western and southern parts of Australia are comparable to the Atherton Tablelands.	
162.	S013	Seimens, the largest manufacturer of wind turbines states that “Due to higher, more consistent wind speeds at sea, offshore wind turbines can generate substantially more energy than their onshore counterparts. Offshore wind power plants may reach capacity factors in the range of 50%. Even considering planning constraints such as shipping lanes, fishing, and bird migration, the world has abundant space for offshore projects.”	In a similar way to onshore wind farms; wind speeds and directions at locations for offshore wind farms can vary considerably. Typically offshore wind farms are more expensive to construct and operate than locations onshore, with costs increasing depending on water depth.	
163.	S016	This is a project in the wrong place. We are not opponents of wind energy, we are opposing your application on location and the associated problems it may cause. There should be a minimum buffer zone around residences and we are surprised it is not a requirement of State Government Planning. Another location, merely a few kilometres further west, would face little objection.	The primary aspect of a viable energy project is access to a fuel source. The more energy available in the fuel source the better the energy project will be. Just as a solar project needs high levels of light over long periods or a hydro project needs large volumes of water and tall height differences, a viable wind farm needs strong and consistent wind speeds. The energy in the wind is related to the wind speed cubed, thus for every one metre per second	Volume 1 Section 6.1

No.	Submission	Issue	Response	Section Amendment
164.	S019	A proper analysis of alternative sites should be included in the final EIS. These features are not exclusive to the Mount Emerald plateau. Modelling commissioned by the Queensland Government in 2012 found coastal areas between Townsville and Princess Charlotte Bay and inland to about Georgetown have potential as a wind energy source. This includes large areas with significantly fewer environmental and socio-economic impacts than the Mount Emerald proposal. The project partners wish to proceed solely with this site because they own it, and because there are Government-mandated financial incentives to operate wind farms (the Renewable Energy Target).	<p>increase in speed the available fuel source improves by around 40-50%. The better the wind speed the more energy available in the wind and the higher the generation will be.</p> <p>Another key aspect of a viable energy project is the ability to be able to transport the energy created to where it is needed. To do this the project needs to be connected to the electricity network. While large coal or gas fired power stations are able to absorb costs associated with a long distance of transmission line for connection, renewable energy projects do not have the scaled needed to accept this. As such, close proximity to the existing electricity network is considered a key factor in determining overall viability.</p>	
165.	S019	There are large areas of Far North Queensland that have already been cleared and would be less likely to have impacts on matters of National Environmental Significance. Recent research into the level of land transformation caused by wind farms found that tilled landscapes had lower average land transformation, while facilities in forested landscapes generally had the highest land transformation. Flat topographies had the lowest land transformation, while facilities on mesas had the largest. The research concluded there are opportunities to optimize wind energy production while minimizing land cover change (Diffendorfer, 2014). Alternative sites should be considered and submitted as part of the finalised EIS.	<p>Figure 6.2 highlights the area of North Queensland being considered for a wind farm and shows the estimated wind speeds and proximity to the electricity grid. This figure identifies the area stretching from Mareeba through to Herberton as a preferred target for wind farm projects.</p> <p>Many other considerations go into determining whether a project can proceed, such as;</p> <ul style="list-style-type: none">• Planning process• Planning studies• Land• Flora and Fauna• Natural Amenity• Houses/Community• Airspace• Connection• Site Access• Project Synergies	
166.	S019	Other feasible and prudent alternatives already exist in our region. Two wind farms which were determined to have minimal environmental and social impacts have been already been approved. The \$20 million High Roads wind farm was approved by the Tablelands Regional Council in 2011. The Etheridge Shire Council approved a \$230 million wind farm near Forsayth in 2012. It is not clear why a third wind farm approval is required, when the supply of available wind farm sites already exceeds demand.		
167.	S019	On a larger scale, numerous wind farms throughout Australia have already been approved and await construction. Existing and committed wind projects would deliver about 15,000 GWh to Australian grids. We question whether additional wind farms are required, and at what cost to the Australian people, our economy and the environment.	<p>Development activities are undertaken to investigate these aspects of the project and how they will affect its viability. To undertake a detailed assessment of each of these considerations for all potential alternatives is not practical, and only a high level of assessment is undertaken at the early stage before focussing on a particular site.</p> <p>In the end the overall project financial viability is the key determination in whether it will proceed. This assessment cannot be made until the each main aspect of the project is understood.</p> <ul style="list-style-type: none">• environment and approvals• equipment supply and contracting• electrical connection• land tenure• power sales	
<u>Other Alternatives</u>				
168.	S019	It is erroneous for the proponents to present only non-fossil fuel sources as “feasible alternatives” to the wind farm. The recently released North and Northwest Queensland Sustainable Resource Feasibility Studies (2014) has identified that coordinated development of a nationally connected coal-fired baseload power station is likely to be commercially viable, and would deliver \$836 million in benefits to the wider economy.	<p>A coal-fired base-load power station is not considered a viable alternative at the project site as a viable fuel source does not exist.</p> <p>The addition of the wind farm into the electricity system is not considered to prevent the inclusion of a coal-fired power station in North Queensland, as other parts of the Australian network are able to accommodate a varying range of generation sources without difficulty.</p>	

No.	Submission	Issue	Response	Section Amendment
<u>Modifications to the Proposal</u>				
169.	S019	The proponents do not address the EIS Guidelines requirement for “economic justification and analysis for the number of turbines to be constructed” or consider the possibility of putting the turbines elsewhere, scaling them back or staging the development. This information gap should be properly addressed in the final EIS. Neither the draft EIS nor the Cummings report provides any justification or explanation for the number of turbines proposed. From our community’s point of view, the proponents have stacked as many turbines as possible onto the plateau, without proper consideration of the environmental and socio-economic impacts. We are surprised the proponents haven’t offered to remove turbines from sensitive sites such as the rocky outcrops favoured as quoll maternal den sites, or remove more turbines from southern areas which are habitat for endangered plant species. We believe the proponent is aware that once works start, it will become apparent that the impacts on matters of National Environmental Significance will be unavoidable and catastrophic. If the project was staged, successive stages would never be approved.	<p>In Section 6.2 it states;</p> <p>“A variety of design options were considered during the conceptual stage of the wind farm development. The overall objective at this time was to identify the layout of the project to maximise electricity generation and deliver significant savings in greenhouse gas emissions whilst being commercially viable and socially and environmentally responsible.”</p> <p>Section 6.2 further outlines how the development of the wind farm layout has occurred.</p> <p>Many of these changes have been undertaken at a considerable loss of overall project generation and hence economic loss, however, were considered appropriate given the community and environmental concerns.</p> <p>The maternal denning habitat preference of Northern Quolls is not at all well understood on the project site, given only a single individual with young was able to be radio-tracked and only for a short period. Therefore it is not possible to make any assessment of the importance of the ridge habitats to the viability of the population.</p>	
170.	S019	The proponents claim their original layout comprised of 100 turbines and the removal of turbines is presented as mitigation. If the 100-turbine option was ever seriously considered, it was not presented to our community and we can find no record in old media reports. The claimed reduction to the current proposal of 63 turbines implies the proponents have been willing to negotiate with the local community and mitigate environmental impacts. In fact, we have been contacted by hundreds of residents who are extremely unhappy with the lack of consultation. We believe the increased turbine size from 2MW to 3.4MW easily counters any mitigation achieved from loss of turbines, increasing the environmental and socio-economic impacts while ensuring minimal financial losses for the proponents.		

7 LANDSCAPE AND VISUAL IMPACT

No.	Submission	Issue	Response	Section Amendment
<u>Visual Significance Assessment</u>				
171.	S004	Your low to medium visual significance is total refuted. The visual impact from the majority of locations with 5km can only be described as HIGH. Your photomontages are of a very amateur standard and need to be completely reworked. Your assumption that “beauty is in the eyes of the beholder” is a very poor attempt to make the visual impact acceptable, and would never pass the “red face test”. A scaled model of the proposed site, showing the turbines, and measurements on visual impact is required. With such an elevated plateau site (300mts) NO mitigation measure would appear likely in making the visual impact a low significance. The increase in total height of plateau will exceeds 30%. A significant impact.	<p>It is recognised the visual and landscape assessments are a subjective issue and what may be appealing to one person may not be to others.</p> <p>The ability of the consultants to act as experts and to provide opinion on the outcomes as an impartial observer is critical to the outcomes of visual assessment.</p> <p>Experience and reputation is a key aspect in determining the credentials of the people undertaking this work.</p> <p>In the beginning of the Landscape and Visual Impact Assessment report undertaken by Greenbean Designs (Appendix 6) the credentials of the consultant are outlined.</p>	
172.	S005	I dispute your comment “overall medium sensitivity to accommodate change” This is an uninformed subjective comment designed to give the wrong impression. Local opinion puts this as “extremely high sensitivity to accommodation change”.	<p>During the development of the wind farm project additional visual imaging and montages have been used to provide an indication of what the wind farm will look like. This work was provided by consultants Truescape.</p>	
173.	S005	as a very close resident, I find it impossible to comprehend your quoted assumptions on visual significance. This needs to be re-assessed and justified. My quantified assumption is “very high” for majority of residence, and the remainder small minority, in the “medium to high” significance.	<p>Truescape has over 16 years’ experience working in the 3D Photo and Video Simulation industry. Truescape has completed a wide range of different visualisation projects from Photo Simulations for simple projects to full computer generated 3D video simulations for complex projects.</p>	

No.	Submission	Issue	Response	Section Amendment
174.	S005	<p>LCA 5 Settlement</p> <p>You have deliberately avoided accessing the area 1-5km from the site. As you are aware, this is the most impacted area. Your Overall Sensitivity Rating has no credibility. This 1-5km area has a high level of sensitivity, and a fair and professional assessment would result in a score closer to 30 on your score chart.</p>	<p>Truescape’s client base spans many industries, from Landscape Architecture and Engineering firms through to major New Zealand and Australian and US corporates.</p> <p>Truescape adopts a team approach for project completion as each type and phase of a project calls for a different mix of specialised skill sets. This expertise spans many disciplines including photography, engineering, architecture, surveying, landscape architecture, 3D computer modelling, evidence preparation and presenting evidence as expert witnesses. All members of our staff have either formal qualifications or have undergone professional training and have direct experience working in each these specialised areas.</p> <p>Truescape simulations have been produced as evidence in forums such as the New Zealand Environment and High Courts, Australia’s Victorian Civil and Administrative Tribunal and the Supreme Court. Members of Truescape’s staff have presented evidence as expert witnesses in these Courts, where our work has been subjected to cross-examination and accepted as evidence.</p>	
175.	S005	<p>View Location Matrix.</p> <p>Your view location matrix assumptions are totally refuted. The Extent of Visibility, Degree of Visibility and Visual Significance are all subjective. There has been no consultation with impacted residence. Such a false and misguided report cannot be accepted. We must have a scaled model of the project, showing all residence within 5km, and then measurements to gauge impact.</p>		
176.	S005	<p>Summary of Residential Visual Significance</p> <p>Your subjective assumption that 0 of 11 residential view locations have been determined to have a high visual significance, is false, false and false again. This borders on being either a lie or a misguided report.</p> <p>You even admit that this is possibly an incorrect rating in your report. For Residential visual significance (beyond 2km) you have not considered those on elevated landscape. Obviously the impact is greater here and needs to be accessed accordingly.</p>		
177.	S019	<p>The wind industry’s representation of the landscape and visual impacts of wind turbines has been contentious for some time. A study of Environmental Impact Assessments on wind farms in the UK and Germany published last year highlights some of the problems (Jones and Fischer, 2013). Forty per cent of the assessors interviewed found that visual and noise impacts were under-represented by the proponents, and it was suggested there was “a deliberate underplaying of the impacts and an overstatement of the benefits”. Wind farm assessors commented that visual representations were done using a wide angled camera lens “which reduced the appearance of the wind turbines in the landscape.” The authors also noted that: “outdated methods of assessment were used which had not been updated to take into account the fact that modern wind turbines are far bigger than they were when the guidelines were created.” This could be a direct reference to the outdated 2002 Scottish research relied upon by Homewood.</p>		
<u>Obstacle Lighting</u>				
178.	S004	<p>the proposed Hazard Lighting will only make the area look like Luna Park, and faraway from the quite peaceful rural community we live in.</p>	<p>Night time lighting is discussed in Section 11 of Appendix 6, and includes various actual images depicting lighting in operation.</p>	
179.	S005	<p>“night time obstacle lighting”. This should be determined whether it is a requirement before finalizing the EIS. We cannot guess whether it is a requirement or not. Once determined, if then can be assessed. Go back to the drawing board and determine whether “night time obstacle lighting” is a requirement.</p>		
180.	S005	<p>Night Time Lighting</p> <p>We live in a quite rural environment where the brightest lights at night are the Southern Cross and the Milky Way. We do not want to be subjected to a Luna Park situation of lights on wind turbines.</p>		
181.	S019	<p>The assessment states the Mount Emerald proposal will not require night lighting, which is</p>		

No.	Submission	Issue	Response	Section Amendment
		contradicted elsewhere the draft EIS which states hazard lighting turbines will be installed to define the extremities of the site. In their reply to the Council's Information Request, the proponents categorically state the wind farm will not require night time obstacle lighting (April 2014). The proponents have previously told residents any lights would be shielded from view as they were for aerial purposes only. Yet Homewood states that site investigations in Victoria have generally concluded night lighting could be visible for many kilometres. Homewood fails to mention the lights will flash and his images of night lighting fail to capture the dynamic flashing that annoys many residents around wind farms. While he admits night obstacle lighting will be visible from a number of residents surrounding the wind farm, he does not provide a map or information about which turbines would have lights and which residences would be impacted. Those of us who have built our homes to enjoy the plateau landscape are insulted by his proposed mitigation - that we use internal lighting or close our curtains to obscure the red flashing lights.		
<u>Photomontages</u>				
182.	S005	<p>Photomontages</p> <p>I dispute and totally disagree with the 13 viewed locations. These are not representative views and were taken to hide the most impacted residence. A photomontage is totally unacceptable for such significantly impacted residences. A scaled model, showing every residence within 5 km, and the Visual Impact that they would be impacted to, is the only acceptable true indication.</p>	<p>The justification for the selection of photomontage locations is outlines in Section 10 of Appendix 6.</p> <p>The validity and use of a scaled model is questionable. Modern computer generated imaging allows the simulation of the observer at the actual viewpoint rather than viewing a scaled model from above. How this can be of assistance in understanding the actual view from a residence is difficult to see.</p>	
183.	S005	<p>On Site Access Tracks.</p> <p>This has not been covered to any acceptable level. The Visual Impact will be significant, as demonstrated by the existing track. We need a measurement on the amount of track to be constructed, the measurement of the tracks visible from various locations, and then an accurate assessment of this visual impact. Your assumptions that the existing track is only "partially visible from public roads and a small number of residential dwellings," is not true, is subjective, and needs to be more actually measured.</p>	<p>It is noted the wind farm is located on a rough plateau elevated some 300m above the surrounding landscape. The location of the on-site access tracks on this plateau would see them predominantly hidden from view due to the simple geometry of the viewpoint and local topography.</p> <p>Figures included in Section 7.4 of Appendix 6 show how the ground based tracks would be shielded from view.</p>	
184.	S005	<p>Panorama Photographs</p> <p>You have referred to the effect on cloud etc. on the visual impact, yet, in the majority of your panorama photographs, they were taken under cloudy conditions. These photos need to be taken under clear sky's to give a clear and fairer image. You are obviously attempting to conceal the true image by your current photos. There are no panorama photographs taken from the Channel road area, which is the most impacted. Once again, this seems to be a deliberate attempt to conceal the real image. Photos taken along the Channel Road must be included.</p>	<p>No attempt has been made to conceal views by using cloud cover. Photographs were taken under what is considered typical conditions.</p> <p>While no panorama photographs were taken from Channel Road, of the 13 locations selected for Photomontages 4 were located on Channel Road.</p>	
185.	S005	<p>Figure 35 – Figure 44</p> <p>You have failed to identify the location of Channel Road, the most seriously impacted zone. Admittedly you have one image location on Channel road, but why don't you identify it, when you identify every other location.</p> <p>This is the most significantly impacted location and you appear to be hiding or ignoring it, and using photomontages from far greater distances. More photomontages along Channel Road must be included in any EIS.</p>	<p>Figure 16 of Appendix 6 shows that of the 13 locations selected for photomontages 4 were located on Channel Road.</p> <p>All photomontages are represented by Figures 17 – 44 of Appendix 6.</p> <p>Those depicting views from Channel Road are shown in Figures 29 – 34 and 37 – 38.</p>	
186.	S005	<p>Local Roads and Highways.</p> <p>This is a totally inaccurate assumption that the wind turbines will have no significant visual affect. Even from the Kennedy Highway, the existing electrical towers are clearly visible. Your</p>	<p>Wherever possible the existing transmission towers and/or the monitoring mast have been identified in photomontages shown in Figures 17 – 44 of Appendix 6.</p> <p>Transmission towers are specifically noted in Figures 29, 31, 37, and 39.</p>	

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		<p>failure to mention this, and the fact they are clearly visible, although only 40mts in height. Your wind turbines will be three times higher at 130mt in height. This will increase the height of the Mt. Emerald plateau from 300mt above current land forms, to 430mt in height. An increase of over 30%.</p> <p>In none of your panorama photos or photomontage are the existing wind measurement towers or electrical towers shown, yet they are clearly visible from the Kennedy Highway for at least 20km duration. This visual significance is even greater from Hansen road, Channel Road and Springmount Road. This viewshed can only be described as Very High Visual Significance.</p>	Monitoring mast is specifically noted in Figures 17, 19, 29, 31, 37, 39 and 41.	
187.	S019	The proponents refer to photomontages which were used at public open days in 2011 and 2012. This style of photo-simulations have been widely condemned for inaccurately representing the impact of turbines because they lead to objects at large distances appearing to be smaller in a photograph than in real life (Macdonald, 2007). They reduce the visual effect by making the turbines look three to four times further away from the actual viewpoint in terms of the public's interpretation of the images, appearing up to several kilometres further back from the 'virtual viewpoint'. As 3.4 megawatt turbines are now being proposed for the plateau and these structures are extremely large and alien to our rural landscape, a realistic impression of distance and scale is vitally important for our community to properly understand the visual impact and make an informed judgement. In the case of wind turbines, these images are our only means of assessing the visual impact. Yet the proponents have misrepresented the predicted impacts in their public consultation documents. We repeat our position that if the proponent is found to have provided misleading information, then planning permission should be automatically refused. Three-dimensional flyover graphics should be developed so that our community understands the landscape and visual impacts of the proposal.	<p>Images and montages used during public consultation were prepared using the 3MW class turbines proposed for the site.</p> <p>During consultation attendees were able to experience imaging designed to show the exact field of view they would see from specific locations in the surrounding district.</p> <p>In additional during the latter consultation attendees were able to be shown the view from any location in the surrounding district through the use of 3D modelling and flyover graphics.</p>	
188.	S019	There is professional consensus outside the wind farm industry that single frame images printed full size at A3 or A4, taken within the range of a 70mm to 80mm telephoto lens provides the viewer with a realistic impression of scale and distance in a medium to long range landscape situation when viewed at a normal reading distance. This approach has not been adopted by Homewood. Even if images are taken with a 50mm lens – as in Homewood's case - and then combined to make up an angle of view of 90 degrees, it has the characteristics of an ultra-wide angle lens. Representations of the visual impacts should be reproduced as a single frame as described above in the final EIS.	<p>As noted in Section 10.2 of Appendix 6 photomontages have been prepared in accordance with guidelines set out in;</p> <ul style="list-style-type: none"> Scottish Natural Heritage (2006) Visual preparation of windfarms British Landscape Institute Advice Note 01/11 (March 2011) Photography and photomontage in landscape and visual impact assessment. <p>For each of the photomontages shown in Figures 17 – 44 of Appendix 6, a single frame photo depiction is included.</p>	
<u>Landscape Assessment</u>				
189.	S005	<p>Summary</p> <p>This view shed has a high sensitivity to accommodation change. It is not reasonably typical of landscape types found in surrounding areas. This is an elevated 300mt plateau of over 2,000HA covering some 20km North to South. Certainly a unique landscape on the Tablelands, which is impossible to accommodate this scale of change.</p>	<p>It is recognised the visual and landscape assessments are a subjective issue and what may be appealing to one person may not be to others.</p> <p>The ability of the consultants to act as experts and to provide opinion on the outcomes as an impartial observer is critical to the outcomes of visual assessment.</p>	
190.	S006	Landscape and Visual Impact cannot conceal the fact that these wind turbines would protrude prominently as disgusting, ugly, unnatural and totally alienating industrial structures that simply do not blend at all into the mountain ranges for vistas from afar all around. It is pathetic to suggest windbreaks could hide these monstrous repulsive gigantic misfits.	<p>Experience and reputation is a key aspect in determining the credentials of the people undertaking this work.</p> <p>In the beginning of the Landscape and Visual Impact Assessment report undertaken by Greenbean Designs (Appendix 6) the credentials of the consultant are outlined.</p>	
191.	S019	The proponents engaged landscape architect Andrew Homewood to undertake a Landscape and Visual Impact Assessment in 2013. This approach of getting a sole practitioner is may be easy and cheap, but it is fundamentally flawed. While Homewood may be formally trained, he is unfamiliar with our area. The draft National Wind Farm Guidelines (2010) state that an assessment of landscape character and significance requires direct input from local communities	<p>During the development of the wind farm project additional visual imaging and montages have been used to provide an indication of what the wind farm will look like. This work was provided by consultants Truescape.</p> <p>Truescape has over 16 years' experience working in the 3D Photo and Video Simulation industry. Truescape has completed a wide range of different visualisation projects from Photo Simulations</p>	

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		to understand how they value the landscape: “Local communities will provide the main source of information regarding the significance of the landscape in the area.” To understand the visual and landscape impacts, you need to ask us, the people who live here. The proponents claim they sought views about wind farms through public open days, through surveys and individual stakeholder meetings. As previously mentioned, information at these open days was inaccurate and misleading. It is one of the reasons most residents deeply distrust the proponents. We don’t believe any effort has been made by the proponents to seek out our community’s views on the proposal’s visual and landscape impacts. We wish to view the detail of this consultation, and it should be provided as part of the finalised EIS. Our survey of residents within 5km of the proposed wind turbines shows the true depth of concern people have about the visual impacts. The draft National Wind Farm Guidelines ask: “Will the local presence of wind turbines combine to become the strongest characterising influence such that a new or more general landscape character area would be formed?” For those of us who will be forced to live under the shadow of the Mount Emerald wind farm, we have no doubt the proposal will drastically and permanently change our landscape. For contentious projects such as the Mount Emerald proposal, the national Guidelines suggest appointing a peer reviewer to review the methodology. We strongly urge the appointment of an external expert to undertake the community consultation and independent analysis currently missing from the visual and landscape assessment.	for simple projects to full computer generated 3D video simulations for complex projects. Truescape’s client base spans many industries, from Landscape Architecture and Engineering firms through to major New Zealand and Australian and US corporates. Truescape adopts a team approach for project completion as each type and phase of a project calls for a different mix of specialised skill sets. This expertise spans many disciplines including photography, engineering, architecture, surveying, landscape architecture, 3D computer modelling, evidence preparation and presenting evidence as expert witnesses. All members of our staff have either formal qualifications or have undergone professional training and have direct experience working in each these specialised areas. Truescape simulations have been produced as evidence in forums such as the New Zealand Environment and High Courts, Australia’s Victorian Civil and Administrative Tribunal and the Supreme Court. Members of Truescape’s staff have presented evidence as expert witnesses in these Courts, where their work has been subjected to cross-examination and accepted as evidence.	
192.	S019	The draft EIS states: “The regional landscape value of the site, which forms the vegetated hillslopes background to this part of the Tablelands, is recognized” ... “Inevitably, the turbines will have a strong visual presence within and external to the site, given the structures will be situated along a series of ridgelines, which form part of the Great Dividing Range between the natural landmarks of Walsh Bluff and Mount Emerald, at a range of elevations between 700 to 1000m ASL.” Yet the draft EIS declares the Mount Emerald wind farm has been designed “as far as practical” to ensure that existing landscape values and significant natural features are not compromised (4.2.5.1). The draft National Wind Farm Guidelines state: “It is imperative to note that mitigation measures are very limited for wind farm development and therefore general location and site selection is of utmost importance.” The reality is the existing landscape values will be severely impacted and there is nothing that can be done to make the turbines smaller or the regional landscape less impacted. The draft EIS suggests “a number of feasible and direct mitigation strategies may be employed to reduce the potential level of visual significance” yet the mitigation measures offered – such as landscaping around residences - are ineffectual and an insult to our intelligence.		
<u>Zone of Visual Influence (ZVI)</u>				
193.	S005	ZVI Summary Your assumption that “the majority of views generally occur within private property” totally disregards the impacted residence that live in these areas. This assumption needs to be corrected. You make very little reference to the viewshed of the 2-5km zone, where an elevated landform occurs. This is certainly the most impacted zones that need to be reflected in the summary.	Viewshed mapping is included in Figures 11 – 13 of Appendix 6; ZVI Diagram. The preparation of the ZVI Diagrams is a geometric assessment based on calculations incorporating a digital terrain model as outlined in Section 7 of Appendix 6.	
194.	S005	Distance Effect. As previously mentioned, this proposal is on a 300mt elevated plateau which makes the viewshed far more prominent from all distances. Your comparison with the rolling hills/plains around the Capital Wind Farm in NSW, are yet another attempt to distort the true picture.		
195.	S005	Distance Effect. Once again the elevated 300mt plateau must be considered when determining the level of visibility. Therefore the distance 0-5km would be a HIGH Level visibility, and the 5-10km would		

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		be MODERATE to HIGH.		
196.	S005	<p>Number of Viewers.</p> <p>Your figures are wrong and need correction. There are 5,000+ people living and working within 5km of the proposal. Additionally the major highway passes within 5km of the site for a distance of 20+km. The proposal is clearly visible for this stretch of road. You have not included these figures. Why Not?</p>	<p>The “Relative number of people” column of Table 16, Appendix 6 gives an indication to the number of viewers.</p> <p>Accordingly HIGH values have been provided for town location U01 – U04 where the majority of the people are living.</p>	
197.	S005	<p>Future Residential Dwellings</p> <p>You have generalized and glossed over current panorama views that many new homes have taken advantage of. You not only wish to take these panoramic views away, but also destroy any future home sites. Section 8.5 demonstrates how selfish and inconsiderate you are to all other neighboring landowners. There can be no reasonable mitigation, nor should it be the responsibility of the impacted residence to have such mitigation.</p>	<p>With any form of Future Development it is practical for the development to be conscious of the existing uses and structures of the surrounding area.</p>	
198.	S016	<p>We live at Rangeview which is called that simply because of the 'view of the ranges' and am situated within 5km of the proposed wind farm.</p> <p>There are around 450 residences in this area alone. It is a rural residential subdivision of mostly 1 & 2 acre blocks, very quiet with only local traffic. Your EIS states that of the 14 residential view locations within 5km of the site, 5 will experience low to medium visual significance, while the remaining 9 nil or very low. Secondly, of the 11 residential view locations within 2km of the site, 5 will experience medium to high visual significance, 2 medium and 3 nil to low.</p> <p>This is blatantly misleading. Have you only counted streets? Where are these view locations? What of the other 425 residences? We have photographic evidence from you that we will see 46 turbines. That is significant, certainly not low to medium.</p>	<p>We were unable to find where the EIS stated the number of “14 residential view locations within 5km of the site.....”</p> <p>Figure 15 of Appendix 6 shows the locations and groupings of the various View Locations.</p> <p>While locations within 2km of a turbine are specifically noted, residences outside of this distance are grouped into respective viewsheds i.e. L01 – L10 and towns U01 – U04.</p>	
199.	S019	<p>Homewood’s assessment establishes a viewshed – “an area of land surrounding and beyond the project area which may be potentially affected by the wind farm” of only 10km.....Our communities need to see a viewshed map to understand the visual impacts of the proposal and it should be included in the final EIS in order for the Minister to make an informed decision.</p>	<p>Viewshed mapping is included in Figures 11 – 13 of Appendix 6; ZVI Diagram.</p> <p>The preparation of the ZVI Diagrams is a geometric assessment based on calculations incorporating a digital terrain model as outlined in Section 7 of Appendix 6.</p> <p>Similar mapping has been included in visual reporting and assessments throughout the project.</p>	
200.	S019	<p>The turbines would be constructed over 24 square kilometres along the Mount Emerald plateau which rises 300-400 metres above the surrounding landscape. The wind turbines will be visible for over 30km and will impact a far greater number of people. As well as surrounding residents, the proposal will be visible to thousands of cars that travel along the regional road network every day.</p>	<p>These figures provide an indication of the number of turbines visible from the surrounding district.</p>	
201.	S005	<p>Substation</p> <p>How can an EIS be approved when you are yet to locate the important infrastructure of a Substation? How will it visually impact neighboring residence? We need details and answers before approval of the EIS.</p>	<p>Figure 1.2 shows the location of the Contractor Yard and Site Compound-Substation.</p> <p>It is noted the wind farm is located on a rough plateau elevated some 300m above the surrounding landscape. The location of the substation on this plateau would see it predominantly hidden from view due to the simple geometry of the viewpoint and local topography.</p> <p>Figures included in Section 7.4 of Appendix 6 show how the ground based tracks would be shielded from view.</p>	
<u>Mitigation</u>				
202.	S016	<p>Furthermore, what is your obligation to minimise the visual impact of the road infrastructure, to build and service the turbines?</p>	<p>It is noted the wind farm is located on a rough plateau elevated some 300m above the surrounding landscape. The location of the on-site access tracks on this plateau would see them</p>	

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			<p>predominantly hidden from view due to the simple geometry of the viewpoint and local topography.</p> <p>Figures included in Section 7.4 of Appendix 6 show how the ground based tracks would be shielded from view.</p>	
<u>Cumulative Impacts</u>				
203.	S006	It is a sick joke to make this out to be a tourist attraction --- this is a highly negative crippling impact to the regional tourism industry. What sort of tourist delights in an industrial setting with sickening and menacing looking gigantic blades swirling overhead when coming in anticipation of the many scenic, quiet rural natural beauty of Far North Queensland? Where no majestic birds are anywhere to be seen for they have all been long ago butchered by wind turbines? Probably only wind industry executives with greedy thoughts of ill-gotten money gouged out of this heartless criminal exploitation.	It is recognised the visual attraction is a subjective issue and what may be appealing to one person may not be to others, similarly what may constitute a tourist attraction to some may also not appeal to others.	
204.	S019	The proponents claim there are no cumulative visual impacts because there are no other wind farms in the immediate vicinity. The draft National Wind Farm Guidelines (2010) state that the cumulative impacts of dynamic viewpoints need to be considered. In the case of the Mount Emerald wind farm, visitors driving along the Kennedy Highway will have views dominated by strings of turbines. The same tourists will also see the turbines from different viewpoints as they visit popular tourist centres of Atherton, Tolga, Kairi and Lake Tinaroo.		

8 NOISE ASSESSMENT

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205.	S002	What is a “noise descriptor?”	<p>Environmental noise is inherently variable. To deal with this variation, there is a range of different ways to describe noise such as averages or referring to the level of sound that is exceeded for a period of time. These different methods of describing sound are referred to as noise descriptors or noise metrics.</p> <p>The equivalent noise level L_{Aeq} (the A-weighted equivalent noise level) and background noise level L_{A90} (the A-weighted noise level exceeded 90% of the time) are two common examples of noise descriptors. Further general information about the description of sound is provided in Appendix 7B – Appendix A.</p>	Volume 3 Appendix 7B Appendix A
206.	S002	The local council’s acoustic expert has given advice that the project should not receive approval.	The assessment has demonstrated that the proposed Mt Emerald Wind Farm can viably operate within the limits defined in the relevant and only wind farm noise standard referred to in the current Mareeba Shire Council Planning Scheme Wind Farm Code (subsequently referred to as the Mareeba Shire Wind Farm Code). This assessment was based on consideration of a range of potential turbine options using well-established noise prediction and assessment methodologies that have been used to plan wind farms throughout Australia and internationally.	
207.	S002	This EIS was supposed to be in a clear and concise format that could be easily understood by the average citizen. This Noise Assessment, as presented, fails these basic criteria.	An assessment of operational noise from a proposed wind farm requires careful consideration of a range of detailed information including planning policy, noise standards, turbine supplier data and noise prediction methodologies. The MDA Noise Impact Assessment (Volume 3 Appendix 7) has been documented to provide a complete account of all relevant input information and processes for the purposes of transparency.	
208.	S018/S020	In view of the number of times the Noise Mapping Australia document 090815ND02 dated 16 March 2012 is mentioned throughout the draft EIS, it should be an appendix to the EIS. It is used	The Noise Mapping Australia document was referenced as a source of background noise data. In the time since the MDA Noise Impact Assessment (Volume 3 Appendix 7) report was prepared,	Volume 3 Appendix 7B

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		to support some of the comments in the EIS. Clearly identify this gap in the information presented if it is not intended to be supplied as part of the EIS.	the background noise data measured by Noise Mapping Australia has been provided to MDA. This background data has been subsequently analysed by MDA and the results of this analysis are presented in Appendix 7B Section 4.0.	
209.	S022	Based on peoples experiences across the globe who are impacted by industrial wind turbine developments one can only imagine this will be an acoustic nightmare.	<p>The noise standards used to plan and develop wind farms around the world vary widely, in terms of both the methods used and the level of protection provided to neighbouring communities. A common theme of the most stringent policies is that noise limits are set at levels generally intended to provide a reasonable level of amenity protection for the majority of people.</p> <p>Genuine complaints from operational wind farm noise can and do occur for a variety of reasons. This may be due to factors such as defective turbines, the absence of robust compliance requirements in some jurisdictions around the world, or non-compliance with operating limits. Even at wind farm sites in jurisdictions with stringent noise limits, there is a residual possibility that a compliant wind farm may attract complaints from some individuals; this is true of any type of new development (i.e. not just wind farms) that produces audible sound. An important fact that influences the likelihood of complaints is the complexities of individual reactions to sound.</p> <p>Individual attitudes and reactions to sound are highly variable, and will depend on a complex set of acoustic and non-acoustic factors. These include the level and character of the sound in question, the time of day the sound occurs, the regularity of the sound, the environment in which the sound is heard, the individuals hearing acuity, and an individual's personal opinion and perception of the sound source or development in question.</p> <p>Due to the complexity and range of potential responses to sound, it is not possible to define limits that will guarantee an audible sound will be acceptable to all individuals; this will always be a matter of personal judgement for each individual. Noise policies are therefore normally designed to limit noise from new development to levels that will provide a reasonable level of protection for the majority of people. This is not unique to wind farms; the same principle applies to the development of other types of industry and infrastructure.</p>	
<u>Noise Limits</u>				
210.	S002	Remember, we live in North Queensland, where we sleep with our window open for much of the year. Using your NZS6808:2010 example, we are looking at a noise limit of 25-30 dBA. Why do you state that a direct comparison with Queensland acoustic quality objective is not possible?	There is no ratified state policy in Queensland that is specific to the assessment of noise from an operational wind farm. NZS 6808:2010 is the only standard that is specifically related to wind farm noise and referred to in the Mareeba Shire Wind Farm Code.	Volume 3 Appendix 7B
211.	S002	I note that the W.H.O. recommended noise levels are 30dBA inside bedrooms, and there is no justification to deliberately discriminate against rural residence living near wind turbines. This limit is also currently in the Queensland Noise Policy.	<p>Further general information about the application of NZS 6808:2010 to the Mt Emerald Wind Farm is provided in Appendix 7B Section 3.1.</p> <p>For reference though, the approach of NZS 6808:2010 and its application to areas zoned for rural activities such as agriculture is generally consistent with current policies in both South Australia and Victoria (i.e. 40dB outdoor base limit, or background +5dB, whichever is greater).</p> <p>When referring to different decibel values, it is important to define the location where the value applies, the way that the noise is being described and where the decibel values. In particular, it is important to note whether the value is an outdoor or indoor noise level, whether the value relates to an average level or some other measure, and the time period the value relates to. Refer to definition of noise descriptor and the additional information provided in Appendix 7B – Appendix A.</p> <p>NZS 6808:2010 refers to an <u>outdoor</u> noise limit of 40dB $L_{A90,10\text{minute}}$ at all times on the basis of achieving an <u>indoor</u> night-time target of 30dB $L_{Aeq, 8\text{hour}}$ as per night-time the World Health Organization <i>Guidelines for Community Noise</i> 1999. The Environment Protection (Noise) Policy 2008 (EPP 2008) refers to both outdoor and indoor acoustic quality objectives, but for the night-time the objective only defines <u>indoor</u> values ranging from 30-40dB depending on the way the noise is measured over a 1-hour period.</p>	

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			<p>The above identifies some important differences in the decibel values of the various standards. A key difference is that NZS 6808:2010 refers to a complex analysis of 10-minute lower noise levels, while the WHO refers to an average over 8 hours and the EPP 2008 refers to averages and upper noise levels over 1 hour periods. The relationship between these different types of values is complex and will depend on the specifics of each environment being considered. Accordingly, a discussion of the equivalency or otherwise of these values can only be indicative. It is for this reason that it is not possible to conduct a direct comparison with the Queensland acoustic quality objective.</p> <p>Further discussion of the relationship between NZS 6808:2010 and the EPP 2008 is provided in Appendix 7B Section 3.2.</p>	
212.	S002	The MEWF is proposing higher levels of noise than would be allowed for any other power station in rural Queensland – and even higher than any development in rural Queensland.	<p>Throughout Australia, operational noise levels from planned wind farm developments are assessed using policies and limits specifically defined for the unique nature and characteristics of wind farms.</p> <p>Other types of power station are assessed using policies and limits applicable to general industry. It is therefore true that in Queensland, as is the case in some other jurisdictions in Australia, a power station may be required to be designed to a lower limit value than would apply to a wind farm. This would be dependent on background conditions in the area and the specifics of the development that is proposed. However, there are other forms of development which would be allowed to be designed to significantly higher limits than apply to wind farm noise levels; specifically, transport infrastructure such as new roads and railway.</p> <p>In relation to the differences between limits that could apply to general industry and a wind farm, it is noted that the EPP 2008 prescribes limits that are applicable to general industry that may produce noise at a receiver location at all times, 24 hours a day and 7 days a week. In contrast, a receiver in the vicinity of a wind farm will only experience wind turbine noise some of the time. When wind conditions are still, the wind turbines do not operate and therefore do not produce noise at receiver locations. In windy conditions, the likelihood of hearing noise from the wind turbines will depend on the wind direction and wind speed.</p> <p>In addition to the above, noise policies generally define limits on account of the ability to control the source of noise in question. Transportation noise is clearly very distinct from general industry noise or an operational wind farm, but provides a good example of a type of noise for which the limits are set much higher in order to still provide amenity protection, but not prevent new development. In relation to a power station or other type of general industry, conventional types of industrial mitigation measures can be used to significantly reduce noise levels without compromising the viability or energy yield of the project. In contrast, all forms of noise control for a wind farm (layout or noise management modes of operation) have a direct influence on the viability and energy yield of a project.</p> <p>Further information concerning policy and general related considerations is provided in Appendix 7B Section 3.0.</p>	Volume 3 Appendix 7B
213.	S002	The proposed development does not comply with the State's Wind Farm Code, which is under development, and does not comply with Queensland Noise Regulations.	<p>The Draft Wind Farm State Code and Draft Wind Farm State Code Planning Guideline were released by the Department of State Development, Infrastructure and Planning (DSDIP) for public consultation from 22 April 2014 to 13 May 2014. At the time of preparing this report, these consultation documents remain in draft form.</p> <p>The Draft Wind Farm State Code Planning Guideline proposes how the draft code would apply to the development approval process and notes:</p> <p><i>The Code does not have a retrospective effect. A wind farm proposal that is already under assessment will continue to be subject to that assessment process.'</i></p> <p>In addition, DSDIP is now the relevant authority responsible for deciding the Development Application for the project. DSDIP have advised the proponent that given the timing of the</p>	

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			application and the release of Draft Wind Farm State Code and Draft Wind Farm State Code Planning Guideline, the draft guidelines would not be applicable to the assessment of the Mt Emerald Wind Farm project.	
214.	S002	You do not comply with the Noise Criteria as stated in 2.1.1 (wind Farm Code), 2.1.2 (Overall Outcomes) and 2.1.3 (Specific Outcomes) of your Noise Impact Assessment, Appendix 7.	See response to item number 210-211.	
215.	S002	Your Noise Limit (4.4) assessment of 40dBA, is totally rejected. What gives you the right to set a compliance level higher than any other development in rural Queensland and higher than the Queensland Noise Policy?	See response to item number 210-212.	
216.	S006	Noise Guidelines should not use the New Zealand Standard 6808:2010 which permits audible noise that is above the WHO recommended levels of 30 dBA inside bedrooms to be exceeded [21]. Why are rural folks used to quiet settings be forced to accept noise levels higher than those in most typical busy urban areas? The introduction of background noise level factor merely obfuscates noise regulation requirement that should simply not permit unacceptable IWT signal noise discharge. The statement in NZS6808:2010 contains this unacceptable loose loophole "this Standard does not set limits that provide absolute protection for residents from audible wind farm sound." For this reason too, it cannot be relied upon as it does not hold wind developers rightly accountable. Furthermore, the impulsive nature of the noise generated by IWT is a peculiar harmful sound signature that is very different form say, road traffic [22].	<p>See response to item number 210-212.</p> <p>There is no ratified state policy in Queensland that is specific to the assessment of noise from an operational wind farm. NZS 6808:2010 is the only standard that is specifically related to wind farm noise and referred to in the Mareeba Shire Wind Farm Code.</p> <p>The submission correctly notes that NZS 6808:2010 does not set limits that provide absolute protection for residents from audible wind farm sound. This statement is included in NZS 6808:2010 in recognition that the standard does not require the sound of a wind farm to be inaudible and that attitudes to any inaudible are highly subjective and will vary between individuals. This is true of all policies which permit audible noise from new development, and therefore true of all industry and infrastructure noise policies in Australia. This point is specifically evident in the objective of the Queensland <i>Environmental Protection Act 1994</i> (the Act) which recognises the need to protect the environment while at the same timing allowing for development.</p> <p>In relation to noise character, the noise of a modern upwind rotor turbine is not generally regarded as impulsive. At a limited number of sites in limited conditions, an effect described as atypical amplitude modulation has been identified, however based on the available information about its limited occurrence, this is not a common characteristic of a modern wind farm. Further discussion of this effect is provided in Appendix 7B Section 5.3.</p> <p>In terms of differences between wind farm noise and road traffic, it is noted that wind farms are required to achieve noise limits that are much lower than is applied to new road developments. This is due to the differences in reactions to sounds from different sources and the practical limitations of controlling road traffic noise. For reference purposes, in contrast to the 40dB limit referenced in the assessment of the Mt Emerald Wind Farm, the Queensland Department of Transport and Main Roads' code of practice defines limits ranging from 58-68dB. These decibel values relate to noise measured in different ways over different time periods, but demonstrate the significantly higher noise levels permitted for road development.</p>	Volume 3 Appendix 7B
217.	S006	EIS 8.3 Existing Noise Environment is yet again a totally misleading and irrelevant handling of the noise issue as it does nothing to address the infra-sounds and low-frequency noise. The surrounding rural setting of this site is as it should be regarded quiet rural primary agriculture as a norm especially at nights and therefore it is nonsense to refer to background noise as an issue and push the noise limit any higher than what is typical of rural Australia, where the rustling of leaves is the only background soothing sound to be expected once in a while but otherwise perfectly quiet and still. So quiet, you could hear a pin drop in your bedroom. Try that for background noise standard. IWT noise is typically loudest at nights [21].	<p>An account of existing conditions is a requirement when conducting an environmental impact assessment.</p> <p>The available noise measurement data from the NMA surveys confirmed that background noise levels are low and therefore insufficient to warrant the adoption of increased noise limits related to background noise levels. It is for this reason that the assessment has been based on the lowest applicable base limit that applies under New Zealand standard referred to in the Mareeba Shire Wind Farm Code.</p>	
218.	S010	Why does the EIS use New Zealand noise limit standards, rather than those we have in Queensland, for a project that is proposed for North Queensland? Since when did North Queensland become a part of New Zealand? Queensland 's Draft Wind Farm State Code have	See response to item number 210-211.	

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		different limits to New Zealand codes.		
219.	S011	The draft EIS should use the Queensland Draft Wind Farm State Code noise limits (currently 35dB or background noise level plus 5dB, whichever is higher).	See response to item number 213.	
220.	S012	Why does the EIS use New Zealand noise limit standards?	See response to item number 210-211.	
221.	S017	The proponent has focussed on the New Zealand noise standard instead of Queensland's Environmental Protection (Noise) Policy 2008, which is a statutory requirement for any development. Council's expert acoustician advised the council against approving the project because it could not comply with Queensland's noise regulations (his review was of the first noise impact assessment, which had lower noise levels than the second one, submitted with the draft EIS). The New Zealand noise standard has not standing under any statutory requirements in Queensland.	See response to item number 210-212.	
222.	S017	uncertainties revolve around the ability of tropical homes and farmhouses of lightweight construction to keep out the turbine noise. This has also not been studied by the proponent. Under these circumstances, demonstrate in the EIS how the requirements of Queensland's noise regulations will be achieved in practice, particularly in relation to the night time indoor maximum requirement of 30dBA.	<p>Sound insulation characteristics of dwellings vary across Australia. It is correct that lighter weight constructions can potentially result in lower overall sound insulation than a masonry construction. However, this is dependent on the influence of other key facade elements. Importantly, if there are low sound insulation elements present, such as thin single glazing or an open window, the sound entering via these paths will tend to dominate the overall internal sound level, with limited secondary influence from elements such as the walls and roof.</p> <p>A key consideration here is that NZS 6808:2010, in common with all other wind farm noise policies applied throughout Australia, defines limits on the basis of the outdoor to indoor sound reduction of a partially open window. This means that relatively low sound insulation values of 10-15dB are already assumed in the assessment. The dominance of sound that enters via the open window generally means that the sound entering via other elements such as the walls and roof is a limited secondary influence.</p> <p>Weather conditions in north Queensland may potentially result in windows being regularly opened widely and more frequently than in other areas in Australia. This could in turn result in lower outdoor to indoor differences than the 10-15dB assumed for a partially open window. This will depend on the orientation of the dwelling and the extent the windows are open. However, the Queensland EPP 2008 provides acoustic quality objectives for indoor and outdoor noise levels which are applicable throughout Queensland and does not differentiate between dwelling types or window openings of different sizes. Specifically, the EPP 2008 objectives indicate an assumed outdoor to indoor sound difference of 15-20dB; a higher level of sound insulation than the 10-15dB assumed in NZS 6808:2010 and other policies used to assess wind farm noise in Australia.</p>	
223.	S018/S020	Remove all reference to the New Zealand Standard 6808:2010 Acoustics – Wind farm noise (NZS6808:2010) as it is not applicable to this project. It is mandatory for the project to be considered under Queensland's Environmental Protection (Noise) Policy 2008 (EPP Noise).	See response to item number 210-211.	
224.	S018/S020	As shown by the tables below from Queensland's Noise Measurement Manual, a 5dB increase in noise level would result in a clearly noticeable deterioration of the acoustic environment and would result in complaints. Advise what level of noise will be acceptable to the community and protect health and wellbeing, as required by EPP Noise.	<p>The current Queensland Noise Measurement Manual published in August 2013 provides indicative advice about the subjective impressions of different changes in noise level and the estimated community response according to the amount that the noise criterion is exceeded. It is important to note that these are indicative values only; individual reactions to sound are complex and highly subject. See response to item 209 and a discussion of the effects of environmental noise in Appendix 7B Section 3.3.</p> <p>In relation to perceived changes, the New Zealand Standard NZS 6808:2010 referenced in the Mareeba Shire Wind Farm Code, along with general noise policies in Queensland and all other wind farm policies applied throughout Australia, does not require the sound of a wind farm to be inaudible. It is expected that the proposed Mt Emerald Wind Farm would be audible on some occasions and the change in noise could be clearly perceptible. This will depend on many factors</p>	Volume 3 Appendix 7B

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			including wind speed, wind direction and background sound levels. In relation to the Noise Measurement Manual's advice about estimated community response, the guidance solely relates to situations where the noise exceeds the criterion. In this respect, the assessment has demonstrated that the proposed Mt Emerald Wind Farm is predicted to comply with the criterion at all applicable assessment locations. It is expected that achieving and demonstrating compliance with the criterion would be a condition of consent attached to any approval for the wind farm.	
225.	S018/S020	The noise levels proposed by the proponent (40dB) are higher than would be permitted anywhere else in rural Queensland for an industrial noise source at night time. By comparison, rurally located Tarong, Millmerran and Kogan Creek Power Stations have permitted noise levels of between 31 and 33dB LAeq. The turbines will make more noise at night due to higher wind speeds, when the background noise levels at residences will be at their lowest. What valid reason is there for allowing industrial noise from a wind farm at 40dBA, or even 35dBA, especially in such quiet rural areas?	See response to item number 210-212.	
226.	S018/S020	Both the National Health and Medical Research Council and Queensland Health have recommended a precautionary approach regarding wind turbines and health. Best practice in Australia is 35dB(A) and 2km setbacks, as adopted in Victoria and New South Wales. High Road Wind Farm (a Ratch development) was permitted by Council with a noise base level of 35dB(A) in June 2011. Ratch adopted a 35dB(A) limit and 2km setbacks for non-involved residences in its application for the Collector Wind Farm in NSW. The 40dB(A) level, as proposed for the Mt Emerald development, is a higher nighttime noise level than would normally be allowed for any other industry in quiet rural Queensland. Industrial and night time noise have been recognized by the World Health Organisation as special noise characteristics known to induce annoyance. Under these circumstances, justify the high proposed noise level and describe how 40dB(A) is a precautionary approach when 35dB(A) is considered best practice.	The latest National Health and Medical Research Council (NHMRC) findings on wind turbines and noise are documented in their consultation paper which was published in 2014 titled draft <i>Information Paper: Evidence on Wind Farms and Human Health</i> . This latest NHMRC document states: <i>There is no reliable or consistent evidence that proximity to wind farms or wind farm noise directly causes health effects.</i> The complete summary text of the review findings of this NHMRC document is reproduced in Appendix 7B Section 3.3. In terms of current ratified wind farm policies for wind farms in other Australian states, Victoria has formally adopted NZS 6808:2010 for all new wind farm applications, and the South Australian Environment Protection Agency published its own updated policy in 2009. In both states, the applicable current policies in Victoria establish a minimum limit of 40dB for areas zoned for rural activities such as agriculture. Victoria also specifies a requirement for written consent of all residents within 2km of a proposed turbine. A lower value of 35dB is adopted in NSW on the basis of their continued reference to the superseded South Australian 2003 wind farm guidelines (a draft policy prepared in NSW in 2011 also refers to 35dB). See responses to items 210-212 for information concerning the application of NZS 6808:2010 and its relationship with WHO guidance and the EPP 2008. Further information on policy and the effects of environmental noise is also provided in Appendix 7B Section 3.0.	Volume 3 Appendix 7B Volume 2 Section 19.5.1
227.	S019	The proponents have also failed to mention that other industrial uses must meet the Queensland Government's noise guidelines – the same requirements the proponents seek to avoid. For instance, under the Environmental Protection Act, 1994 air conditioners and refrigeration plants are allowed no more than 3dBA above background at night and pumps are not allowed to make any audible noise at night. In contrast, the proponents believe 40dBA is an acceptable noise level, which is 10 or more decibels above background noise levels, interfering with environmental values under the State Planning Policy (Noise).	See response to item number 210-212.	
<u>Noise Modelling</u>				
228.	S002	It is impossible to accurately predict the likely turbine noise, when there are three options listed, but no understandable noise emission from any of them. There are lots of interesting figures and details, but at the end of the day, all I want to know is what noise will be heard where I live	Noise predictions have been prepared using measured noise emission data for the types of turbines proposed. The emission data is based on an international standard test methodology (IEC 61400-11 Wind turbines - Part 11: <i>Acoustic noise measurement techniques</i>). This emission data	

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		and work, and how it will impact me.	<p>has then been used in conjunction with information about the terrain profile of the area to calculate noise levels at distant receptor locations. These calculations have been made using the prediction method set out in international standards (ISO 9613 <i>Acoustics - Attenuation of sound during propagation outdoors</i>), with dedicated adjustments applied for wind farms based on validation studies conducted in Australia and internationally.</p> <p>The overall approach adopted for the calculations is consistent with general practice adopted internationally and is consistent with the UK Institute of Acoustics' advice about good practice for the assessment of wind farm noise.</p>	
229.	S004	There is no confirmed turbine type in the EIS, and yet we are expected to take the developers word that the noise would be acceptable, no matter what turbine type. The noise models, as presented, exceed Queensland legislation, but we wonder how a model can be presented when the actual turbine is not identified. Unfortunately for the potentially effected residence, any mitigation is highly unlikely once the turbines are operational.	<p>The actual turbine selection would not be determined until the project planning application has been completed, and would be the subject of a commercial tendering process for the supply of turbines from a range of manufacturers. It is therefore necessary to consider a turbine type which can be considered representative of the size, power rating and noise emissions of turbines which may be considered for this site.</p> <p>Accordingly, at this phase in the project, the purpose of the noise study is to demonstrate that the proposed development could be viably constructed with a range of commercially available products. The normal method of demonstrating the viability of the site is to predict the noise levels for one or several turbine types that are indicative of the range of the assessment. The purpose of the assessment is not to consider every possible turbine on the market, nor is this a practical objective. The candidate turbines considered in the assessment report are representative of the normal range of emission levels achieved by commercial scale variable speed and variable pitch wind turbines. The assessment therefore demonstrates that the proposed wind farm layout can be viably constructed with commercially available turbine options for the site.</p> <p>Any planning consent for the project would be expected to include detailed noise compliance requirements that the operator must adhere to. It will therefore be necessary for any final turbine selection complies with these requirements. In the event that a turbine does not comply with the requirement, it would be the responsibility of the operator to implement measures to reduce the noise accordingly.</p>	Volume 1 Section 8.1.1
230.	S006	Audible noise pollution levels produced would be far above what is normal for this rural community and therefore a transgression of the regulation clause [12]. It is also unacceptable to have these noise monitoring investigations done by the wind developer's choice of acousticians.	See response to item number 210-212.	
231.	S006	It is of no use to rely on acousticians under the control of wind developers to provide an objective understanding of noise generated by IWT. Noise characteristics data of various wind turbines provided by wind turbine manufacturers are only of relative value and should not be relied upon to project actual noise generation in actuality.	<p>The noise assessment has been prepared using the noise standard (NZS 68008:2010) identified in the Mareeba Shire Wind Farm Code. This noise standard establishes detailed objective processes and limits, consistent with wind farm policies applied in other jurisdictions throughout Australia.</p> <p>All relevant input information and their sources have been fully disclosed in the noise assessment report, along with details of how accepted international standards have been applied to this data to provide noise forecasts. Consistent with the reporting requirements of the Australian Association of Acoustic Consultants, all relevant assessment data has been provided or described to a level of detail that is more than sufficient to enable the results to be independently verified if required.</p> <p>See response to item 229 concerning the range of candidate turbines considered in the noise assessment.</p>	
232.	S010	If you were living within two kilometres of the project, wouldn't you want the EIS study to provide thorough information about the noise factor? This study makes a number of assumptions in order to compensate for the unavailability of data on both background noise and tonality of wind turbine models. In our opinion this should be reviewed by an independent	The noise impact assessment provides information for all receiver locations in the vicinity of the proposed wind farm, including all receiver locations out to distances of more than 3km from the nearest proposed turbine.	Volume 3 Appendix 7B

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		noise expert.		
233.	S010	The EIS should be required to provide a tonal audibility test for whichever wind turbine model is selected, and conduct valid background noise baseline data study	<p>In recognition of the character of the area surrounding the development site, the assessment has been made on the basis of the lowest possible range of background noise conditions. Specifically, the assessment allows for the effect of background noise levels being regularly below 35dB, even at higher wind speeds. In practice, background noise levels may be higher at some locations around the wind farm, particularly at high winds speeds.</p> <p>Notwithstanding the above, the background noise data measured by Noise Mapping Australia has been provided to MDA. This background data has been subsequently analysed by MDA and the results of this analysis are presented in Appendix 7B Section 4.</p> <p>The available data concerning tonality for the candidate turbines has been provided in the MDA Noise Impact Assessment. Tonality should not be a feature of the audible noise of a modern correctly functioning wind farm. Accordingly, any planning consent for the project would be expected to include stringent requirements specifically related to the control of tonal noise emissions. It will therefore be necessary for any final turbine selection to comply with these requirements.</p>	
234.	S011	I believe the information provided is insufficient due to the fact that a specific turbine model has not been nominated for assessment – rather, a selection of possible choices of turbine models has been given.	See response to item 229 concerning the range of candidate turbines considered in the noise assessment.	
235.	S011	A tonal audibility (annoyance factor) assessment is not yet conclusive. A tonal audibility test should be done for the selected wind turbine model. A valid background noise baseline data study should also be conducted. It appears that the study has made a number of assumptions to compensate for the unavailability of data in relation to background noise baseline data and tonality of turbine models. These should be reviewed by an additional noise expert.	<p>See response to item 232-233 concerning tonality and the consideration of background noise levels in the assessment.</p> <p>See response to item 231 regarding noise experts.</p>	
236.	S012	Tonal Audibility Testing needs to be carried out to a greater detail on the chosen turbine model		
237.	S012	The gaps in the EIS highlight a need to conduct a valid background noise baseline data study and ascertain which noise standards need to be used – then re-interpret the data from the noise impact assessment. This needs to be carried out by an independent expert reviewer.		
238.	S016	Your EIS claim that the turbines are 'unlikely to result in noise nuisance' is untrue. If you have not selected the model of turbine or country of manufacture, how can you make this assertion. If media reports are correct and you are planning to begin construction early in 2015, we are sure you do know your suppliers, but are withholding this information.	<p>See response to item 209 regarding nuisance and item 229 regarding turbine selection.</p> <p>In relation to the times of operation, a receiver in the vicinity of a wind farm will only experience wind turbine noise some of the time. When wind conditions are still, the wind turbines do not operate and therefore do not produce noise at receiver locations. In windy conditions, the likelihood of hearing noise from the wind turbines will depend on the wind direction and wind speed.</p>	
239.	S016	As stated above, there is very little noise in this area, mainly local traffic which is day time anyway. Night noise is barely audible. The constant 24/7 of working turbines is very likely to result in noise nuisance and to claim otherwise is misleading.		
240.	S017	provide background noise monitoring data for sensitive receptors as required by Section 5.14 of the EIS Guidelines.	The background noise data measured by Noise Mapping Australia has been provided to MDA. This background data has been subsequently analysed by MDA and the results of this analysis are presented in Appendix 7B Section 4.0.	Volume 3 Appendix 7B
241.	S018/S020	Revise the noise impact assessment predictions, addressing the shortcomings of the noise prediction method ISO9613 (as discussed below) and provide worst case scenario noise predictions, an Objective of the EIS Guidelines (Section 4.1). Provide confidence level on all revised predictions of noise impacts as required by Section 5.10(c) of the EIS Guidelines.	<p>The ISO 9613 prediction method has been used to present typical worst case noise levels associated with operation of the wind farm. Specifically, the predictions assume that all turbines are operating simultaneously producing their maximum sound emissions, and that each residence is simultaneously downwind of every turbine associated with the project. In practice, this is unlikely to occur in the majority of instances and actual noise levels would be lower than predicted in the assessment.</p> <p>The use of ISO 9613 for predicting operational wind farm noise is common practice throughout the world. The use of the standard is supported by MDA's own validation and compliance work.</p>	Volume 3 Appendix 7B

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			<p>Further, the use of this standard is specifically supported by a number of key publications including:</p> <ul style="list-style-type: none"> The UK Institute of Acoustics document <i>A Good Practice Guide to the application of ESTU-R-97 for the Assessment and Rating of Wind Turbine Noise</i>, May 2013 A comprehensive 1998 study part funded by the European Commission titled <i>Development of a wind farm noise propagation prediction model - Final Report</i> 1998 The joint agreement between practitioners in the field of wind farm noise assessment, including consultants routinely employed on behalf of both developers and community opposition groups, published in the UK Institute of Acoustics journal dated March/April 2009 published 2009 NZS 6808:2010 – the standard used to assess the proposed Mt Emerald Wind Farm. <p>In addition to the above, the use of ISO 9613 is also cited in:</p> <ul style="list-style-type: none"> South Australian EPA 2009 wind farm noise guidelines, AS4959:2010 <i>Acoustics – Measurement, prediction and assessment of noise from wind turbine generators</i> <p>Full details to support the use of ISO 9613 are provided in Appendix E of the MDA Noise Impact Assessment (Volume 3 Appendix 7).</p>	
242.	S018/S020	Provide evidence that with these close turbine separation distances there will be no additional increase in noise levels (infrasound and audible low frequency noise, modulated and otherwise) at residences, having particular regard to the elevation of the site and the complex terrain. Alternatively, provide details of what additional noise levels can be expected at residences.	<p>Wind farm noise policies in Australia, including NZS 6808:2010, do not require the sound of a wind farm to be inaudible and do allow an increase in noise levels. This is true of all policies which permit audible noise from new development, and therefore true of all industry and infrastructure noise policies in Australia.</p> <p>Section 5 of the MDA Noise Impact Assessment provides the predicted operational noise levels at all sensitive receptor locations around the project, including receivers at distances beyond 3km from the nearest proposed turbine location.</p> <p>In terms of existing conditions, the noise data measured by Noise Mapping Australia has been provided to MDA. This background data has been subsequently analysed by MDA and the results of this analysis are presented in Appendix 7B.</p> <p>Further information concerning low frequency sound and infrasound is available in Section 5.5.2 and Appendix G of the MDA Noise Impact Assessment (Volume 3 Appendix 7).</p>	Volume 3 Appendix 7B
243.	S018/S020	ISO9613 has been used as the prediction method for A-weighted sound predictions and Marshall Day states it is “the most robust and widely used international method for the prediction of wind farm noise”, including several references to support this statement. Whilst these references validate the use of ISO9613 within a very restricted scope (up to 30m height, up to 1000m, wind speed up to 8m/sec), the conditions existing at the Mt Emerald site are well outside the scope of these validated parameters. Therefore, provide evidence (studies) that provide support for the reliability of ISO9613 under the conditions existing at and around the Mt Emerald site: noise source height of over 300m, distance to receptors of over 1500m, wind speeds often above 8 metres per second, complex terrain with steep concave slopes down to many receptor locations. None of these conditions are accounted for in the prediction method and it provides no guidance as to accuracy under these circumstances. The Marshall Day report should have advised the stakeholders of these obvious shortcomings and the unsuitability of the prediction method. The community has been misled and the Minister can have no confidence that the noise predictions presented will be accurate in practice.	<p>Full details to support the use of ISO 9613 are provided in Appendix E of the MDA Noise Impact Assessment (Volume 3 Appendix 7).</p> <p>The supporting references (see response to item 241 for an abbreviated summary of supporting material) are specifically provided to support the use of the standard for source heights above 30m and beyond 1000m, including measurement studies of actual operating wind farms. It should also be noted that the source heights are specified in the standard according to their height above ground level at the position of the source, not relative to the ground height of the receiver location. The calculations then account for the variations in the height of the propagating sound waves according to changes in terrain profile.</p> <p>Other key points in relation to the predictions in the assessment:</p> <ul style="list-style-type: none"> The ISO 9613 method has been calculated with specific adjustments applied to account for the effect of sound propagation across valleys and the limited screening provided by terrain features. These adjustments have been applied in accordance with the studies referenced in the MDA Noise Impact Assessment, accounting for the terrain profile from each turbine to each receiver 	Volume 3 Appendix 7B

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			<ul style="list-style-type: none"> Atmospheric conditions which enhance the propagation of sound to a receiver represent relatively stable conditions with respect to noise. This means that when a wind is present which results in enhanced sound propagation, the sound propagation remains relatively stable as the wind speed increases i.e. for a constant sound emission level, the level of sound reaching a distance downwind receiver location does not continue to increase with increasing wind speed (or more specifically, steeper sound speed profiles). 	
244.	S018/S020	Provide evidence that the following conditions will not increase noise levels (infrasound, audible low frequency, A-weighted, tonal, amplitude modulation) received at residences, or, alternatively provide details of additional (worst case day/night) noise impacts which can be expected at residences: Atmospheric (meteorological) variations: Temperature inversions Wind shear, vertical and horizontal, revised as per (4) below Complex terrain and ambient turbulence Wake and turbulence effects, including effects propagated by multiple turbines Drainage flow winds and other wind effects Synchronicity effects of turbines in phase due to turbine placement and wind direction (as identified by Van den Berg – a single turbine operating at high speed into a stable atmosphere can give rise to fluctuation increases in turbine sound power level of approximately 5 dB; two or more turbines may increase the sound power level by 9dB; in-phase beats caused by the interaction of several turbines increases the pulse height by 3 to 5 dB).	<p>See responses to items 242-243, in addition to further discussion of atmospheric effects in Appendix 7B Section 5.0.</p> <p>In terms of the submission comments concerning Van den Berg and the potential for increased turbine sound power levels in stable atmospheres and high winds, this is an effect specifically related to noise assessments based on wind speeds measured at 10m heights and turbine sound power levels related to wind speeds at 10m heights. Based on these factors, the effect reported Van den Berg was primarily related to the wind speed at the hub of the turbine being underestimated, due to the limitations of 10m height wind speed measurements and conditions of increased wind shear. This was of particular importance to and older fixed or two-speed stall regulated turbines for which the sound emissions continued to increase with increasing wind speed (due to deeper stall conditions of the blades as the wind speed increased).</p> <p>The factors referred to above do not apply to the Mt Emerald wind farm assessment on the basis that:</p> <ul style="list-style-type: none"> All assessments have been made on the basis of data referenced to hub-height wind speeds. Modern wind turbine designs that now almost exclusively utilise variable speed and variable pitch blades which provide the mechanism for regulating both the power and sound emissions of each turbine, meaning that the turbine sound power levels do not continue to increase significantly once the rated power of the turbine has been achieved. <p>The phenomenon of ‘beating’ referred to in submission relates to synchronous sound sources for which the emissions combine on an alternating coherent and coherent basis. This type of effect can be observed for some types of closely spaced industrial plant that are controlled to operate at nearly identical speeds, however the effect is not applicable to the operation of a wind farm. The source to receiver distances for each turbine vary significantly, Further, the wind speeds and resulting turbine rotational speeds and sound emissions will vary significantly across a wind farm site, as supported by the studies presented in Appendix E of the MDA Noise Impact Assessment (Volume 3 Appendix 7).</p> <p>Notwithstanding the above, a sound characteristic referred to as atypical amplitude modulation has been identified as an occasional feature at some international sites. This effect is addressed in the NZS 6808:2010 compliance assessment requirements. Further information on this specific point is provided in Appendix 7B Section 5.3.</p>	Volume 3 Appendix 7B
245.	S018/S020	The noise impact assessment assumes that maximum noise levels will be generated when the turbines are operating at wind speed of rated power. Provide evidence that at wind speeds above rated power there will be no additional noise (A-weighted, audible low frequency, infrasound) at residences.	<p>Section 3.1.2 of the MDA Noise Impact Assessment (Volume 3 Appendix 7) provides sound power level information for the three candidate turbines at different wind speeds. This data indicates sound power levels at and above rated power (note the data is available in both 10m height and hub-height reference wind speeds). Specifically, the data demonstrates that the emissions of the turbine reach a maximum level and then remain relatively constant with increasing wind speed. This is a common characteristic of modern wind turbine designs that now almost exclusively utilise variable speed and variable pitch blades which provide the mechanism for regulating both the power and sound emissions of each turbine. This is very distinct from older types of turbines whose emissions continued to increase with increasing wind speed, owing to the fixed speeds and blade pitch of older turbine designs.</p>	Volume 3 Appendix 7B
246.	S018/S020	Wind shear is the term used to describe the change in wind speed with height above the ground	Wind shear is an important factor to account for when assessing the operational noise of a wind farm,	Volume 3 Appendix 7B

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		level. Page 1 of the Wind Resource and Energy Yield Assessment provides wind shear figures based on wind speeds at Tower 9530 at heights of 81 and 50.2 metres, a difference in height of 30 metres; and at Tower 9531 at heights of 49.6 and 29.9m, a difference in height of 20 metres. However the turbine blades are over 100m in diameter, with the blade rotation heights ranging from 30m height to 130m height. Provide corrected wind shear figures (showing calculations) to reflect the actual wind shear which will occur in practice. Show corrected figures for both day and night (worst case) in order to assist with assessment of acoustic impact at residences.	<p>specifically when considering background noise levels and changes to noise limits with increasing wind speeds.</p> <p>In recognition of the character of the area surrounding the development site, the MDA Noise Impact Assessment was undertaken on the basis of the lowest possible range of background noise conditions. Specifically, the assessment allows for the effect of background noise levels being regularly below 35dB, even at higher wind speeds. In practice, background noise levels may be higher at some locations around the wind farm, particularly at high winds speeds.</p> <p>Accordingly, the assessment has been made on the basis of the lowest applicable limit which does not vary with wind speed; increased limits at higher wind speeds have not been applied. As a result, variations in wind shear and wind speed will not influence the outcome of the compliance assessment.</p>	
247.	S018/S020	Provide turbine manufacturers specifications showing that the candidate turbines can operate both at worst case wind shear identified in (4) above and at the close turbine spacings identified by the Energy Yield Assessment. There is no point in gaining approval for a turbine layout which is not possible in practice, as only micro-siting of turbines is normally permitted after approval. If not these candidate turbines, which turbine will be suitable for such extreme conditions?	This is an operational reliability query not related to operational noise associated with the wind farm.	
248.	S018/S020	Provide information on the existing acoustic environment, which is a preliminary requirement for setting appropriate noise goals to protect environmental values. Section 5.10(b)(xii) requires that the EIS contains “baseline conditions based on monitoring results”.	The background noise data measured by Noise Mapping Australia has been provided to MDA. This background data has been subsequently analysed by MDA and the results of this analysis are presented in Appendix 7B Section 4.0.	Volume 3 Appendix 7B
249.	S018/S020	Because the correlation was poor, has the proponent simply decided to abandon any assessment of noise impacts in relation to the existing acoustic environment? Examination of the data analysis provided in the Noise Mapping Australia report dated 16 March 2012 referred to above (but also not included with this draft EIS and no longer available on the Ratch website) reveals background noise levels at sensitive receptors below 20dBA LA90. Is it reasonable to set a noise limit without first having regard to the existing acoustic environment?	<p>The background noise data measured by Noise Mapping Australia has been provided to MDA. This background data has been subsequently analysed by MDA and the results of this analysis are presented in Appendix 7B Section 4.0.</p> <p>The data does exhibit a poor correlation indicating a weak relationship between background noise levels and wind speeds at the survey locations. This is believed to be attributable the receiver locations at relatively sheltered from prevailing wind conditions in the area when compared to the reference mast position used to represent wind speeds for the proposed turbine locations.</p>	Volume 1 Section 8.3
250.	S018/S020	Provide an assessment of the community reaction to the project operating at 40dBA, including at night, having regard to Tables 5 & 6 below and the low background noise levels experienced at residences at night (some under 20dBA LA90). The Noise Impact Assessment provides no assessment of the noise impact and neglects to advise the community that the turbine noise will be clearly noticeable when it is only 5dB above normal background noise levels. Provide details of under what circumstances the turbines will be audible – provide details in the EIS.	<p>In recognition of the character of the area surrounding the development site, the MDA Noise Impact Assessment was undertaken on the basis of the lowest possible range of background noise conditions. Specifically, the assessment allows for the effect of background noise levels being regularly below 35dB, even at higher wind speeds. In practice, background noise levels may be higher at some locations around the wind farm, particularly at high winds speeds.</p> <p>The standards applied to the assessment of wind farm noise in Australia, including NZS 6808:2010, recognise the need to restrict wind farm noise levels to an acceptable margin above background. However, these types of standards also specify minimum limit values on the basis that it is not necessary to continue to maintain this margin above the background noise level in instances when both the background and source noise levels are low. In the case of NZS 6808:2010, the value of 35dB is chosen as the background value below which it is not necessary to continue to adhere to a margin of 5dB above background. Accordingly, a minimum limit value is defined as 40dB is applied. This approach and base limit is consistent with the approach that has been applied to significant wind farm developments in other jurisdictions in Australia. Specifically, it is consistent with current policies applied to wind farm development in Victoria and South Australia in areas primarily zoned for rural agricultural activities.</p> <p>See responses to items 210-212 in addition to further information on policy and the effects of environmental noise in Appendix 7B Section 3.0.</p>	
251.	S018/S020	It is noted there has been no assessment of amplitude modulated or impulsive noise as required by Section 5.10(b)(ii) of the EIS Guidelines. Modulated and impulsive noise have been recognized by the World Health Organisation as special noise characteristics known to induce annoyance. Provide details of possible impacts and the extent to which this omission may influence the conclusions of the assessment.	The noise of a modern upwind rotor turbine is not generally regarded as impulsive. At a limited number of sites in limited conditions, an effect described as “atypical amplitude modulation” has been identified, however based on the available information about its limited occurrence, this is not a common characteristic of a modern wind farm. Further discussion of this effect is provided in this report in Appendix 7B Section 5.3.	Volume 3 Appendix 7B

No.	Submission	Issue	Response	Section Amendment
252.	S018/S020	The TLPI requires assessment of audible and inaudible noise. “Noise” under the Environmental Protection Act 1994 is defined as being both audible and inaudible noise. Provide evidence that operation of one or more turbines will not enhance indoor noise levels by way of structure-borne noise.	Information relating to low-frequency sound, infrasound, and ground-borne vibration has been provided in Appendix 7B Section 5.5.2 and Appendix G of the MDA Noise Impact Assessment (Volume 3 Appendix 7).	Volume 3 Appendix 7B
253.	S018/S020	<p>It is noted that 10km is increasingly being acknowledged as the “acoustic impact zone” for large wind turbines, such as those proposed for Mt Emerald. We note that the Marshall Day Acoustics Noise Impact Assessment refers to 10km in the context of cumulative impacts from other wind developments in Section 5.6 as follows: <i>“Separate wind farm developments that are in close proximity to each other have the potential to impact on the same receiver. It is therefore necessary to assess any potential cumulative noise impact on receivers, where such circumstances exist. We understand that there are no other wind farm developments currently planned or operating within 10km of the proposed MEWF. On this basis, cumulative impacts of noise from more than one operating wind farm are not considered further.”</i></p> <p>From this it is clear that acoustic impacts can extend to 10km. The only Australian document considered worthy of review by the NHMRC Reference Committee documented the adverse impacts on residents up to 10km from a large scale wind farm development in South Australia. Provide details in the EIS of what resident surveys have been conducted out to 10km from large scale turbine developments and what impacts have been reported. These potential impacts, whether direct or indirect, need to be considered in the EIS.</p>	<p>The statement reproduced in the submission from the MDA Noise Impact Submission was not included as a definition of the area of potential effects. The 10km referred to in the MDA Noise Impact Assessment (Volume 3 Appendix 7) solely relates to the statement of proximity of other wind farms in the area. The assessment has demonstrated compliance with the applicable criterion at the nearest sensitive receptor locations. Operational noise levels at more distant locations will be lower and therefore also comply with the applicable criterion.</p> <p>The latest National Health and Medical Research Council (NHMRC) findings on wind turbines and noise are documented in their consultation paper which was published in 2014 titled <i>draft Information Paper: Evidence on Wind Farms and Human Health</i>. This latest NHMRC document states:</p> <p><i>There is no reliable or consistent evidence that proximity to wind farms or wind farm noise directly causes health effects.</i></p> <p>The complete summary text of the review findings of this NHMRC document is reproduced in Appendix 7B Section 3.3.</p>	<p>Volume 3 Appendix 7B</p> <p>Volume 2 Section 19.5.1</p>
254.	S018/S020	The building attenuation figures provided in the NIA are calculated or assumed and do not actually relate to residences around the wind farm site. Acoustic testing by Les Huson has revealed attenuation of only 1-3dB(A) in lightweight Queensland residences, not the 10-20dB(A) assumed in the EIS. Accurate attenuation figures are critical to the assessment of indoor noise impacts at residences. Provide attenuation figures (dBZ, dBG, dBA) for dwellings most likely to be impacted by the wind turbine development and reassess the noise impact in the EIS.	See response to item number 222.	
255.	S018/S020	As noise propagation from turbines is affected by external factors such as topography and meteorological effects, provide evidence that the use of active noise control functions at the turbines, across all wind speeds, will reduce noise (infrasound, audible low frequency, tonal, amplitude modulated and A-weighted) experienced at/in residences and to what degree. This assessment is required by Section 5.11(b)(ii) of the EIS Guidelines.	<p>Full details of the prediction method and supporting references for the use of ISO 9613 are provided in Appendix 7B Section 5.1 and Appendix E of the MDA Noise Impact Assessment (Volume 3 Appendix 7).</p> <p>Further advice is also available in the response to item 241.</p> <p>Key points of confirmation are:</p> <ul style="list-style-type: none"> the predictions have been made accounting for a 3-dimensional model of the terrain around the site the modelling includes specific adjustments to account for the presence of valleys the modelling assumes typical worst case conditions, based on all turbines operating simultaneously at the their maximum sound emission levels and each dwelling being simultaneously downwind of every turbine associated with the proposed Mt Emerald Wind Farm. <p>Information concerning other considerations (e.g. low frequency, infrasound and amplitude modulation) is provided in Section 5.5 of the MDA Noise Impact Assessment (Volume 3 Appendix 7), supported by further information provided in Appendix 7B Section 5.0.</p>	Volume 3 Appendix 7B
256.	S019	Relevant impacts to be considered include noise impacts, with a requirement to provide baseline conditions based on monitoring results, but this has not been provided. The noise prediction methods have not been validated for conditions existing at the project site (over 1km to sensitive receptors), nor has propagation of noise to residences due to meteorological effects (such as turbulence, wind shear and wake effects from multiple turbines) been considered. The	<p>The information referred to in the submission is provided in the MDA Noise Impact Assessment (Volume 3 Appendix 7).</p> <p>See responses to items 241 and 255, supported by further information provided in Appendix 7B Section 5.0.</p>	Volume 3 Appendix 7B

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		council's noise expert advised that the noise predictions could be inaccurate by up to 10 decibels (10 decibels is a perceived doubling of the noise level). These shortcomings in the draft EIS need to be addressed.		
257.	S022	Can the community surrounding the proposed Mt Emerald Wind Farm have confidence in the noise predictions presented as to their accuracy?	See response to items 255.	
258.	S022	What guarantees are there that the noise and vibration will have no impact on this community?	See response to item 209. The above relates to audible noise levels. Vibration associated with the operation of a wind farm would be well below perception thresholds. Related information is provided in Section 5.5.2 of the MDA Noise Impact Assessment (Volume 3 Appendix 7).	
<u>Cumulative Impacts</u>				
259.	S011	I also note that the cumulative assessment only considers noise from other wind farms. This assessment should consider any other sources of noise which impact the identified receivers.	Wind farm noise policies applied throughout Australia, including NZS 6808:2010 referenced in the Mareeba Shire Wind Farm Code, specifically apply solely to the contribution of operational wind farm noise to the environment. It is for this reason that the cumulative operational noise assessment is concerned with the proximity of any other existing or proposed wind farms in the surrounding area.	
<u>Low Frequency Noise</u>				
260.	S002	Low frequency noise (e.g. boom, boom music) will travel many kms, with most residence hearing turbine noise when they live 5-10km away.	Low frequency noise of any type of source will travel further than higher frequency sounds, owing to the reduced effect of atmospheric absorption and screening on low frequency sounds. The MDA Noise Impact Assessment (Volume 3 Appendix 7) provides information specific to low frequency sound in Section 5.5.2 and Appendix G. It should be further noted that Low frequency noise can generally not be heard by humans. The hearing threshold for low frequency noise is much higher than those levels produced by wind farms, regardless of distance.	
261.	S018/S020	No attempt has been made to predict indoor noise levels according to the 50dBZ criteria of the Queensland draft Guideline – Low Frequency Noise Assessment. It is noted that the Noise Mapping Australia report mentioned in (8) above did provide such assessment. Provide evidence that the 63 turbine layout will meet this requirement of the LFN guideline. If this information will not or cannot be provided, discuss the extent to which this omission may influence the conclusions of the environmental assessment.	The Queensland EPA Ecoaccess draft document <i>Guideline: Assessment of low frequency noise</i> (draft LFN Guideline) is referenced and considered in the MDA noise impact assessment (Volume 3 Appendix 7) in Appendix C and Appendix G. The MDA Noise Impact Assessment considers audible and 'inaudible' sound separately on the basis of NZS 6808:2010 and the draft LFN Guideline. In relation to audible low frequency noise, Section 5.5 of NZS 6808:2010 states: <i>Claims have been made that low frequency sound and vibration from wind turbines have caused illness and other adverse physiological effects among a very few people worldwide living near wind farms. The paucity of evidence does not justify at this stage, any attempt to set a precautionary limit more stringent than those recommended in 5.2 and 5.3.</i> The assertions of NZS 6808:2010 are supported by the latest National Health and Medical Research Council (NHMRC) findings on wind turbines and noise that is documented in their consultation paper which was published in 2014 titled <i>draft Information Paper: Evidence on Wind Farms and Human Health</i> . This latest NHMRC document states: <i>There is no reliable or consistent evidence that proximity to wind farms or wind farm noise directly causes health effects.</i> The complete summary text of the review findings of this NHMRC document is reproduced in	Volume 3 Appendix 7B Volume 2 Section 19.5.1

No.	Submission	Issue	Response	Section Amendment
			<p>Appendix 7B Section 3.3. Further information concerning low frequency sound is provided in Section 5.5.2 of the MDA Noise Impact Assessment (Volume 3 Appendix 7).</p> <p>In relation to ‘inaudible’ sound, reference has been made to the G-weighted assessment method presented in the draft LFN Guideline, included predicted internal noise levels. This information is available in Appendix G of the MDA Noise Impact Assessment (Volume 3 Appendix 7).</p>	
262.	S018/S020	Tonal audibility levels discussed in the Noise Impact Assessment refer only to the sound power level of a turbine under IEC61400-11 (ie at the turbine). The IEC61400-11 Standard does not provide any detailed methods of analysis or assessment. It does state, however: It should be noted that certain aspects of infrasound, low frequency noise, impulsivity and amplitude modulation are not fully understood at present. Thus it may prove that measurement positions farther away from the wind turbine than those specified may be preferable for the determination of these characteristics. Provide details of what tonal noise will be experienced inside and outside residences from multiple turbines, especially having regard to meteorological and site variables raised in section (2) above.	<p>The available data concerning tonality for the candidate turbines has been provided in the MDA Noise Impact Assessment (Volume 3 Appendix 7).</p> <p>IEC 61400-11 emission data is an essential reference in controlling the emissions of an operational wind farm. However compliance requirements in Australia are ultimately focused on evaluating the level and character of noise that occurs at surrounding receiver locations. In this respect, tonality should not be a feature of the audible noise of a modern correctly functioning wind farm. Accordingly, any planning consent for the project would be expected to include stringent requirements specifically related to the control of tonal noise emissions, and these requirements will apply at the location of surrounding houses. It will therefore be necessary for any final turbine selection to comply with these requirements.</p>	
263.	S018/S020	Low frequency tones discussed at NIA appendix G4 (page 58) refers only to the sound power level of a turbine. Provide details of what audible low frequency tonal noise will be experienced inside and outside residences, especially having regard to meteorological and site variables raised in section (2) above. Both low frequency and tonal noise have been recognized by the World Health Organisation as special noise characteristics known to induce annoyance.	See response to item 261-262.	
Construction Noise				
264.	S006	Impact Assessment - Construction and Decommissioning falsely declares that noise nuisance would not be a serious problem for all residences within 5 km and gives a ludicrous explanation that dominant E/SE local wind direction could somehow blow this problem away. All that thumping, blasting, jack-hammering and massive earthworks plus heavy vehicle transportation ceaseless rumbling along the normally quiet rural roads would drive the residents nearby to maddening desperation and push some to the brink of nervous breakdown. Totally unacceptable to allow this level of vulgar noise pollution for many months even if only in daytime.	<p>See assessment provided in Section 6.1 and Section 6.2 of Appendix 7B.</p> <p>The assessment has demonstrated that predicted noise levels associated with on-site activities and construction traffic are within related criteria applicable in Queensland.</p> <p>It is understood that blasting is not preferred as part of the construction of the proposed Mt Emerald Wind Farm. Should it be required it would be conducted in accordance with the relevant standards and guidelines.</p> <p>See response 90-92.</p>	Volume 3 Appendix 7B Volume 1 Section 8.4
265.	S006	Mitigating Measures - Construction and Decommissioning cannot mitigate enough the overwhelming degree of noise generated and compensate residents for the harm and distress caused.	Aggregate material for the site is proposed to be sourced from offsite quarries and site excavation work is to be carried using mechanised plant.	
266.	S010	No mention is made of blasting in the noise assessment , which we would certainly expect to impact on the many human residents in the area as well.		
267.	S011	In relation to the noise and vibration impact of blasting during construction, I note that vibration is considered “not likely to impact surrounding residences” (Volume 1 page 78). However this has not been studied. There is no mention of the effect of blasting in the Noise Assessment.		
268.	S016	Furthermore, construction noise nuisance was not adequately considered. To state that no blasting will be required to remove rock is ludicrous.		
269.	S017	provide construction noise modelling, including noise and vibration impact of blasting during construction of turbine pads.		

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270.	S018/S020	It is noted the Noise Impact Assessment contains no assessment of the impacts on residents/residences of drilling and blasting (include also “hydraulic rock breaking”) during construction as required by Section 5.10(b)(ix) of the EIS Guidelines. Provide details of possible impacts.		
<u>Compliance</u>				
271.	S006	Impact Assessment - Operation is an exercise in pure fantasy of noise predictions based on modelling that bases itself in wind industry manipulated analysis and own pronouncements of supposed noise generation of various wind turbines. Nothing claimed here can even be remotely trusted. For actual real world assessments look at the documented factual evidence of people all over the world reporting persistently of intolerably high audible noise emissions from IWT including of course the far more dangerous, higher decibel and harmful infra-sounds and low-frequency impulsive noise that is totally ignored [23].	<p>All relevant input information and their sources have been fully disclosed in the MDA Noise Impact Assessment, along with details of how accepted international standards have been applied to this data to provide noise forecasts. Consistent with the reporting requirements of the Australian Association of Acoustic Consultants, all relevant assessment data has been provided or described to a level of detail that is more than sufficient to enable the results to be independently verified if required.</p> <p>In terms of community response to the sound of operational wind farms, see response to item 5. Refer also to the latest National Health and Medical Research Council (NHMRC) findings on wind turbines and noise that is documented in their consultation paper which was published in 2014 titled <i>draft Information Paper: Evidence on Wind Farms and Human Health</i>. This latest NHMRC document states:</p> <p><i>There is no reliable or consistent evidence that proximity to wind farms or wind farm noise directly causes health effects.</i></p>	Volume 2 Section 19.5.1
272.	S006	Mitigating Measures - Operation wants us to believe that a difference in wind turbine models is the magic answer to IWT noise. This is highly deceptive and pretends to offer a solution where none exists. And just what is this "active noise control function of turbines"? Shutting it down completely is the answer. It is an insult to residents to be asked to follow "acoustic treatment of receiver dwellings", as who likes to be told something like shut all your windows tight if you don't want the noise?	Any planning consent for the project would be expected to include detailed noise compliance requirements that the operator must adhere to. Specifically, these compliance requirements would apply to the level and character of noise occurring at surrounding dwelling locations. It will therefore be necessary for any final turbine selection complies with these requirements. In the event that a turbine does not comply with the requirement, it would be the responsibility of the owner/operator to implement measures to reduce the noise accordingly. The form of measure needed to reduce the noise could include active control measures or shutting down turbines, depending on the circumstances for which the mitigation is required. In terms of active noise control, this is a mechanism to alter the pitch and rotational speed of the turbines. These types of measures result in reduced power generation by the turbine, but can provide effective and significant noise reductions when required.	
273.	S002	I am unable to find in your EIS where you refer to Compliance of the correct Noise Limit. Is there a continual noise monitoring system that impacted residence can view on line, and in a real time? Better still, what happens when there is Non-Compliance? Is there a procedural policy document, where the wind turbines are required to be shut, down to suit local social issues?	<p>Section 6.0 of the MDA Noise Impact Assessment (Volume 3 Appendix 7) provides information about operational noise compliance and notes that Item 6.3(h) of the Mareeba Shire Wind Farm Code requires the operation of the wind farm to be controlled and monitored by a site specific management plan which is to include turbine noise.</p> <p>Methods for monitoring noise at an operational wind farm are provided in NZS6808:2010. These methods could be incorporated into the proposed Mt Emerald Wind Farm operational management plan to facilitate the measurement of operational noise as may be required.</p> <p>The specific form and extent of compliance monitoring that is included in the final operational management plan would be defined by the conditions attached to the consent for the project.</p> <p>These conditions, in conjunction with the operational management plan, would also outline the steps and procedures that would apply in the event that the compliance monitoring indicates noise levels above the NZS 6808:2010 limits.</p>	
274.	S018/S020	It is clear that noise levels at residences post construction will be significantly more than is indicated in the proponent’s noise predictions. A much more conservative approach is required. Further discussion on the suitability of ISO9613-2 below will give an indication of the possible additional noise impacts.	The use of ISO 9613 for the prediction of operational noise levels is supported by extensive validation work and key international publications including advice from the UK Institute of Acoustics good practice guide on wind farm noise assessment.	

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			See response to item 241 for further information.	
275.	S018/S020	Noise mitigation strategies are limited to the use of active noise control functions of the turbines, rectifying manufacturing defects and acoustic treatment of receiver dwellings. As required by Section 5.11(b)(iv) of the EIS Guidelines, provide the cost of these mitigation measures. If the costs are unknown, this needs to be clearly stated in the EIS.	See response to item 272. The conditions attached to the consent for the project would be expected to include a requirement to demonstrate compliance with the external noise criteria at surrounding sensitive receptor locations. In the event of a non-compliance, it would be the responsibility of the operator of the Mt Emerald Wind Farm to implement mitigation measures that enable compliance to be achieved.	
276.	S018/S020	Failing the success of active noise control and rectifying manufacturing defects in reducing noise levels at homes, the only noise mitigation strategy remaining is the acoustic treatment of resident dwellings. The success of acoustic treatment relies on the resident living inside their home with doors and windows shut. Provide details of the acceptability or otherwise to the community of hermetically sealing their homes to keep out industrial noise, particularly having regard to tropical outdoor lifestyles. This is an unreasonable mitigation measure and further measures must be provided. What else will residents be asked to endure? In any event, provide evidence to show the success of acoustic treatment in reducing noise indoors, particularly in relation audible low frequency noise and structure-borne noise caused by wind turbines. Section 5.11 requires specific and detailed descriptions of proposed measures and information must be substantiated based on best available practices. Section 5.11(b)(ii) also requires the assessment of the predicted effectiveness of this mitigation measure.	The noise predictions in the MDA Noise Impact Assessment (Volume 3 Appendix 7) demonstrate compliance with the applicable operational noise criteria is expected to be achieved without the need for noise management strategies (i.e. active noise control functions related to varying the pitch of the blades and speed for rotation of the blades) or turbine shut downs. These measures are however available to the operator if required. In referring to ‘active noise control’ associated with operational wind turbines, it is important to note that this relates to active variation in blade pitch angles and turbine rotational speed. It is not related to other forms of active noise control referred to in other industries which are based on the principles of noise cancelling systems. The active noise control systems utilised for variable speed turbines are a key basis for the reduced noise emissions of modern wind turbine designs, and provide the opportunity to significantly reduce noise emissions when required. In the unlikely event that additional measures are required to reduce noise levels at the exterior of neighbouring sensitive receivers, other options include selective turbine shut down strategies if and when required.	
277.	S018/S020	Securing compliance with noise limit controls at wind farms, in the event of a breach, is not as straightforward as with most other forms of noise generating development. Windy Hill Wind Farm noise complaint took 2 years to investigate and there is still uncertainty around compliance due to the omission of amplitude modulation from the compliance assessment. As the noise prediction method has not been validated, and does not account for the impact of meteorological conditions, it is very likely there will be noise exceedances which cannot be successfully addressed by the proposed noise mitigation strategies. For these reasons, provide more reliable and robust mitigation strategies in the EMP, eg turning off turbines.	The specific form and extent of compliance monitoring that is included in the final operational management plan would be defined by the conditions attached to the consent for the project. Predicted noise levels in the MDA Noise Impact Assessment (Volume 3 Appendix 7) account for typical worst case meteorological conditions by assuming that all turbines are operating simultaneously at their maximum emission level and that each receiver is simultaneously downwind of every turbine associated with the proposal. The use of ISO 9613 for the prediction of operational noise levels is supported by extensive validation work and key international publications including advice from the UK Institute of Acoustics good practice guide on wind farm noise assessment. See response to item 241 for further information.	Volume 1 Section 8.7
278.	S018/S020	The Preliminary EMP for Noise (5.6) only provides for noise monitoring within three months of commencement. Given the strong likelihood that the noise predictions will be exceeded in practice, provide for ongoing regular noise monitoring, eg annually, or when there is a reasonable complaint. The Policy for 5.6 Noise should contain mention of Operational impacts, including during the commissioning phase and refer to EPP Noise. The Performance Indicators should refer to the protection of Environmental Values, as required by EPP Noise.	See response to item 273.	
279.	S018/S020	Due to the difficulty in measuring wind turbine noise in the presence of other noises in the environment, a robust method of noise monitoring should be provided. Provide a commitment in the Noise Management Plan to turning turbines on and off during noise testing, and the provision of wind speed, wind direction and power generation data. This must be part of the Minister’s approval conditions.	See response to item 273. The submission correctly notes that measurement of operational noise from wind farm is complicated by the difficulties of measuring in the presence of other sources. Compliance measurement methodologies will need to be robust to address these issues. Depending on the specifics of each site in question, this can involve a range of measurement techniques which may include on-off testing when required in some instances.	
280.	S019	As Tableland residents and Council are well aware from the Windy Hill Wind Farm, predicted noise levels often fail the ‘real life’ test and there are no reliable noise mitigation measures after construction apart from turning turbines off, which has proven extremely difficult to achieve		

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		here and in wind farms elsewhere in Australia. In southern states, local Councils have repeatedly found that noise permit conditions for wind farms are not enforceable. Non-compliance can be very difficult to prove when you don't control the turbines, and wind speed and turbine information is not made available by wind farm companies. The proponents have not even adhered to minimum setback distances of at least 2km as required in other states. The Preliminary Environmental Management Plan must provide for automatic and immediate shutdowns of offending turbines when noise breaches occur.		

9 TRAFFIC AND TRANSPORT

No.	Submission	Issue	Response	Section Amendment
281.	S023	Ultimately, a traffic management plan will be appreciated detailing the strategies Ratch is to put in place to reduce the impact of its slow moving traffic.	<p>The following management and mitigation measures will be implemented to reduce the impact of slow moving traffic on the local and wider road network during the construction and decommissioning phases as noted in Volume 1 Section 9.4 and 9.5:</p> <ul style="list-style-type: none"> Assessment of the condition of existing pavements to ascertain the need and extent of pavement upgrade or construction works required. Road and intersection conditions will be established by the use of field surveys and regular site inspections. When required, rehabilitation of the pavement and/or edges of seal, shoulders and verges will be carried out. At the completion of the works the access roads will be in the same or superior condition than at the commencement of the works. Procedures will be established to monitor traffic impacts on public and internal access tracks during construction, including noise, dust and travel times, and to implement modified work methods to reduce such impacts where possible No oversize or large trucks associated with the construction would operate on the Kennedy Highway during the school bus hours. Regular road dilapidation surveys will be completed during construction. <p>The mitigation measures incorporated for the construction phase of the development should adequately cover any future operations requirements. A procedure will be established to ensure the ongoing maintenance of access roads during the operation phase</p> <p>Following the engagement of an EPC Contractor/Turbine Supplier, the Contractor will be required to complete a Traffic Management Plan as required under Transport and Main Roads Specifications, MRTS02 Provision for Traffic.</p>	
<u>Public Roads - Repairs</u>				
282.	S006	Resource Requirements does not highlight the damage to public roads that would inevitably result from the transportation of these gargantuan construction materials and heavy machinery. There is no assurance that the dusts and other harmful airborne particulate pollutants generated could be adequately managed so as not to endanger nearby residences.	<p>A number of mitigation procedures will be implemented to assess any damage to public roads as per Volume 1 Section 9.4:</p> <ul style="list-style-type: none"> Assessment of the condition of existing pavements to ascertain the need and extent of pavement upgrade or construction works required. Road and intersection conditions will be established by the use of field surveys and regular site inspections. When required, rehabilitation of the pavement and/or edges of seal, shoulders and verges will be carried out. At the completion of the works the access roads will be in the same or superior condition than at the commencement of the works. Regular road dilapidation surveys will be completed during construction 	<u>Volume 2 Section 12.2.2</u>
283.	S017	Will the proponent commit to repair all damage to roads, both local and state? The project site is classified as "primary production" by the local council and there would be no increase in general rates as a result of the construction of the wind farm which would help offset increased council costs.		
284.	S006	The assurance that there would be "safe and efficient functioning of the surrounding road network" arising from this extremely damaging transportation haulage for this gigantic industrial		

No.	Submission	Issue	Response	Section Amendment
		project is an empty promise. RACL must bear full costs and responsibility for road repairs. Our rural roads must be protected by not allowing this IWT project to proceed.	The costs for any repairs to damage attributable to the wind farm will be borne by the proponent.	
285.	S006	Traffic and Transport makes no reference to the very costly deterioration of road network that would result from the heavy traffic of very damaging massive loads transported. This must be taken into account as another of the many ills that this IWT project inflicts for which RACL must bear full responsibility.	The following mitigation measures are listed in Volume 2 Section 12.2 to reduce erosion and dust emissions during both the construction and operational phases. For access tracks: <ul style="list-style-type: none">Minimisation of the daily vehicle movements on access tracks.Provision of armouring on access tracks (gravel).Employment of a water truck during constructionDust suppression additives.	
286.	S012	Regional road impact and increased repair costs – who covers the ongoing repair bills?		
287.	S019	The Cummings Report and the draft EIS do not appear to address the cost of damage to local road networks. Moyne Council in Victoria estimates that construction of a wind farm caused damages of \$14 million to its local roads, but the wind farm company has offered only \$1 million in compensation. The final EIS should clearly state what arrangements will be put in place to pay for road damage, both for local and state owned roads.	For tower sites: <ul style="list-style-type: none">Use of wind breaks (natural tree-line, erosion fences).Seeding with fast growing non-invasive sterile annual grass species and low growing shrubs.Armouring (hydromulching, gravel).Watering	
288.	S023	How much money and whose responsibility is it to maintain the road system? Moyne Council estimates that the building of the local wind farm caused damages of \$14 million to the local roads. However the wind farm company has only offered \$1 million.	The Preliminary Environmental Management Plan (Appendix 33), Sections 4.6 and 6.6, list performance objectives, management strategies, performance indicators; and procedures for monitoring, reporting, and taking corrective action in the management of Air Emissions during the Construction and Decommissioning phases. The Department of State Development Infrastructure and Planning may impose conditions in the Development Approval, for over dimensional vehicles if they see fit which stipulate payment for accelerated road wear following approval of the EIS. Following approval, conditions of operation may be imposed by the Department of Transport and Main Roads if deemed appropriate to reduce the risk of potentially damaging road infrastructure or the safety of road users. Excess mass and dimension approvals will be required for over dimensional vehicles under the <i>Transport Operations (Road Use Management—Mass, Dimensions and Loading) Regulation 2005</i> . A permit will be required to be issued by the chief executive or commissioner for the safe movement of vehicles which will stipulate the condition of operations.	
<u>Transport Route to Site</u>				
289.	S017	The traffic impact of transporting turbines and associated material to MEWF via Palmerston Highway or inland route and via Atherton Tablelands needs to be assessed.	Wind farm turbines and associated material will be transported from Cairns Port to Mount Emerald Wind Farm via two routes identified in Appendix 8B (Technical Note 2 <i>Traffic Impact Assessment Engineering Responses, 2014</i>). The two identified routes traverse the Palmerston Highway and Kennedy Highway (Cairns - Mareeba) and will be dependent on vehicle configurations. To reduce the impact of transporting turbine components to the public, traffic control as well as minor road works to remove and reinstate existing road furniture may be implemented as required at intersections and townships. These potential locations were also identified. In order to reduce the impact on and ensure the safety of public traffic, the EPC Contractor/Turbine Supplier engaged to transport the wind farm components will be required to meet the following requirements: <ul style="list-style-type: none">Vehicles travelling with a width in excess of 4.6m require a Letter of No Objection issued by a Main Roads permit management office.The Guideline for Excess Dimension, Form No. 4 (available from the Department of Transport and Main Roads Website: www.tmr.qld.gov.au) states that vehicles will require escorts as per the Critical Area Map (refer to Appendix 8B Appendix C). Routes traversed	Volume 1 Section 9.1.2

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			<p>will be both Type A (1 police, 2 escorts) and Type B (3 escorts). Note that additional permits may be required as the vehicle length when transporting wind turbine blades exceed the lengths listed in the Guideline for Excess Dimension.</p> <ul style="list-style-type: none"> Conditions of operation may be imposed by the Department of Transport and Main Roads if deemed appropriate to reduce the risk of potentially damaging road infrastructure or the safety of road users. As per the <i>Transport Operations (Road Use Management—Mass, Dimensions and Loading) Regulation 2005</i>, a permit will be required to be issued by the chief executive or commissioner for the safe movement of vehicles which may stipulate <ul style="list-style-type: none"> (a) the roads on which the vehicle or type of vehicle may be driven; (b) the maximum permissible dimensions of the vehicle together with any load; (c) the maximum permissible mass of the vehicle (d) any permissible or requisite modifications to the vehicle; (e) the times when the vehicle may be driven; (f) signs and warning devices to be displayed on the vehicle; (g) when the vehicle must travel with a pilot vehicle or escort vehicle; (h) requirements for pilot vehicles and pilot vehicle drivers, and escort vehicles and escort vehicle drivers; (i) the maximum speeds at which the vehicle may be driven; (j) other matters relevant to the safe movement of the vehicle 	
290.	S019	<p>The proponents state that “once more detail is known about the exact type of transport vehicles and routing, more detailed swept path analysis would be undertaken along the truck route.” Throughout the draft EIS, the proponents are promising further detailed surveys following the approval of their proposal, in order to establish or refine further mitigation measures. The proponents have had years to work on these details. If the details are not included in the draft EIS, it is because the proponents don’t want the community and local industries to know the true scale of the traffic impacts. Once again, the draft EIS has failed to provide the required detail specified in the Guidelines. These details should be made publicly available and provided in the final EIS in order for the Minister to make an informed decision.</p>	<p>A swept path analysis of the intersections listed in Table 2-2 and Table 2-3 of Appendix 8C were modelled to identify potential works and further investigations which may be required. The swept paths of a 53.0m semitrailer to transport rotor blades and a 19.0m semitrailer to transport smaller components were modelled at the relevant intersections and have been included in this report.</p> <p>Typical requirements at these locations (but not limited to) may include the following as required (Appendix 8C):</p> <ul style="list-style-type: none"> Traffic control Removal and re-erection of road signage Demolish and reinstate kerbs and traffic islands Shoulder widening Confirm clearance to overhead power lines Confirm clearance to railway crossing signals Confirm clearance to signal mast arms <p>Please note that following the engagement of the EPC Contractor/Turbine Supplier to transport equipment additional horizontal geometry checks may be required to confirm the acceptance of specific vehicles.</p>	Volume 1 Section 9.1.3
291.	S023	<p>How to get blades through rural towns? No attention has been paid to the ability to get long loads through the rural towns of Malanda, Kairi, Tolga or Walkamin.</p>	<p>The two identified routes which will be traversed are listed in Appendix 8B (Technical Note 2 <i>Traffic Impact Assessment Engineering Responses, 2014</i>). Vehicle turn movements (swept path analysis) through the intersections in these rural towns have been modelled and are included in this Appendix. Local residents will be made aware of planned vehicle movements prior to commencement via various forms of media and notifications. Mitigation measures which will be</p>	Volume 1 Section 9.1.4

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			<p>implemented when transporting rotor blades through or past the rural towns of Malanda, Atherton, Kairi, Tolga and Walkamin are listed below:</p> <ul style="list-style-type: none"> • Malanda - Vehicles will travel through Malanda via Millaa Millaa - Malanda Road (Patrick Street) and Malanda - Atherton Road (James Street). Over dimensional vehicles will navigate this intersection under traffic control and will be travelling under the required escort for the entirety of the route to minimise disturbance to and ensure the safety of the public while travelling through the town. • Atherton - Atherton will be bypassed as per the vehicle route identified in Appendix 8B Appendix A where vehicles will turn off onto Marks Lane and traverse Tinaroo Falls Dam Road/Kairi Road. • Kairi - Over dimensional vehicles will not be required to travel through the main township of Kairi as they will travel on Tinaroo Falls Dam Rd and Kairi Road. Shoulder widening within the road reserve may be required to successfully complete the turn movement at the intersection of these two roads. Over dimensional vehicles will navigate this intersection under traffic control and will be travelling under the required escort for the entirety of the route to minimise disturbance to and ensure the safety of the public while travelling through the town. • Tolga - Vehicles will bypass Tolga via Lawson Street when travelling from Cairns to the Mount Emerald Wind Farm. When travelling from the Mount Emerald Wind Farm to Cairns it is also suggested that vehicles travel on Lawson Street instead of through Tolga to minimise disturbance to the public and safely traverse the route. Over dimensional vehicles will navigate the Kennedy Highway/Lawson Street and Lawson Street/Kairi Road intersections under traffic control and will be travelling under the required escort for the entirety of the route to minimise disturbance to and ensure the safety of the public while travelling past the township. • Walkamin - Over dimensional vehicles will travel past Walkamin via the Kennedy Highway under escort minimise disturbance and ensure the safety of the public while travelling past the township. As vehicles are not required to turn through any intersections at this location disruption to the public will be minimal. Traffic control will be implemented at the Hansen Road/Kennedy Highway intersection north of Walkamin to ensure the safety of the public and minimise disturbance. 	
292.	S023	There has been no discussion on how many large loads will occupy the road at any one time, causing delays. Will the huge vehicles be travelling in convoy, if so, how many and what length of delays can be expected? Or do they travel singularly causing shorter and more frequent local traffic delays?	<p>A proposed transportation schedule which will detail the number of vehicles travelling and travelling times will be made available following the engagement of the EPC Contractor/Turbine Supplier.</p> <p>The EPC Contractor/Turbine Supplier will be required to follow the permits and requirements for the safe movement of vehicles which may stipulate the times that the vehicles are enabled to traverse the route. The nominated EPC Contractor/Turbine Supplier will be responsible for preparing a Traffic Management Plan (TMP) detailing this information.</p> <p>Local residents will be made aware of planned vehicle movements prior to commencement via various forms of media and notifications.</p>	
<u>Traffic Data</u>				
293.	S017	Traffic data used in draft EIS is over 5 years old and more up to date data is required.	Refer to Response No. 299.	
294.	S017	Averages and assumptions used to predict traffic generation and distribution do not adequately describe the impact in reality, eg number of heavy vehicles per day will change over the construction period. Diluting traffic impacts by averaging does not correctly inform the	Identified routes, which will be traversed to transport turbine components, are listed in Appendix 8B.	Volume 3 Appendix 8B

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		community of potential peak impacts. The local route needs to be clearly identified. Provide details as above and update the Traffic Impact Assessment accordingly.	Updates to the traffic volume data are listed in Response No. 299 and 300-302.	
295.	S019	The Traffic Management Plan is based on outdated road traffic data that bears no resemblance to the state of play in 2014: Howe Farming has expanded and now carries over 130 cars and buses and eight trucks per day; Mount Uncle has entered corporate farming with Costa and expanded to 40 vehicles plus two trucks per day; Lotus Glen Correctional Centre has had a \$450 million upgrade and generates 282 vehicles and six trucks per day; The Sugar Mill has been sold to Thailand interests and has expanded to attract ten cars and 180 trucks per day; four new banana farms have been recently developed on Hansen and Channel Roads attracting another 65 staff vehicles; Dole Australia was sold to Itoshu Japan in 2012 and now processes bananas and pineapples between Hansen and Channel Road with further increases in vehicle, tractor and heavy truck traffic. With these developments, traffic has increased considerably, even developing “rush hours” as workers travel to and from their employment between 6-8am and 3-5pm. The proponents estimate there are 173 vehicles during peak hours, but by counting vehicles in car parks we estimate the figure is closer to 580 vehicles. Local agri-businesses farm more than one property and there are often tractors and other heavy, slow-moving farm equipment on local roads as they move between their farms. These businesses and our community will be impacted by substantial traffic increases and delays due to the wind farm construction.	<p>The figure of 582 vehicles was derived as per Figure 1 of Submission S023.</p> <p>Figure 1 includes traffic counts from a variety of intersections (Hansen/Channel Road, Hansen/Chewko Road, Springmount Road/Kippen Drive, Springmount Road/Chettle Road) and vehicles travelling on Hansen/Springmount Road and Channel Road. This count is also relevant to the peak traffic timeframe of 6:00am - 8:00am and 3:00pm - 7:00pm (total of 6 hours), with Figure 1 even noting the count in Cars/day.</p> <p>The peak hour traffic calculation of 173 vehicles listed in the draft EIS is not comparable to this figure as it is derived from the count on Hansen Road at the Chewko Road intersection, and is a peak estimate for one hour.</p>	
296.	S017	Traffic during operation due to tourist vehicles (100 vpd) is dependent on location of viewing site which has not been provided.	<p>At this time no tourist viewing facilities are considered as part of the wind farm proposal.</p> <p>The Development Application for the project states;</p> <p><i>“No specific visitor information centre or other viewing platforms are proposed as part of this current development application.”</i></p> <p>References to viewing facilities and tourist vehicles have been made in regard to previous wind farm approvals which have included conditions requiring facilities to be built.</p> <p>Should any viewing facilities be required they would be subject to their own development application and supporting studies and assessments.</p> <p>Inclusion of an estimate of tourist vehicles has been made on a conservative basis to understand cumulative impacts of the proposal.</p>	
297.	S019	The Traffic Impact Assessment is mainly concerned with the movement of turbine components, and does not adequately detail the finalized route. It does not detail the traffic and road impacts during the 12-month Pre-construction Phase when internal roads (including Kippen Drive) will be substantially upgraded. The draft EIS states that “external sourcing of materials for the road base and the tower foundation will be done in the first six months, so there will be increased activities in the first six months during the construction period.” This intensive use is not separated from the rest of the two-year construction period, and it is not explained when this work will be undertaken and how it will affect local industries and other road users. The use of Annual Average Daily Traffic figures hides the potential impacts of Pre-construction and Construction phases. The Traffic Impact Assessment does not properly explain the routes that will be used by other construction traffic, such as quarry materials. These details should be made publicly available immediately in order for our community to properly understand and comment on the potential noise, dust and traffic impacts on social, economic and environmental matters.	<p>Identified routes, which will be traversed to transport turbine components, are listed in Appendix 8B.</p> <p>As stated in the draft EIS, there will be increased activities in the first six months of the construction period due to external sourcing of materials for the road base and tower foundation. An estimate of the traffic volumes during both the pre-construction and construction phases has been completed based on the assumption that all vehicle movements associated with the completion of roadworks and tower foundations will take place during the six month period of increased activities, and light vehicle movements are consistent across the entire two year construction period. The remaining vehicle movements are assumed to take place during the remainder of the two year construction and wind tower installation period. Table 9.1 (<i>Vehicle Movements expected during 2 year construction and wind tower installation period</i>) from the draft EIS has been amended to contain this additional data.</p> <p>The Draft EIS states that materials will be sourced from operating quarries in the area, with preference given to sources in close proximity of the site to reduce transport costs and traffic impact. These may include but are not limited to the following quarries in the Tablelands Region:</p> <ul style="list-style-type: none"> • Paddy's Green Pit 	Volume 3 Appendix 8B

No.	Submission	Issue	Response	Section Amendment
			<ul style="list-style-type: none"> Tableland Sand Tichum Creek Quarry Walsh River Quarry Wongabel Quarry 	
298.	S023	<p><u>Local Road Users</u></p> <p>The Figure1 below identifies the road users on Hansen, Chewko, Channel, Springmount, Kippin Drive and Chettle Roads.</p> <p>Apart from their school bus disclosure, no mitigating strategies are apparent in the Ratch/SKM reports to allow a total of 582 cars per day between the hours of 6am and 8am and 3pm and 7pm to travel through the identified bottle necks of Hansen, Chewko, Channel and Springmount Roads unhindered. Most of these workers are essentials service workers and need to be at their workplace at a set time each morning. Farmers will object if their staff are held up, arriving late to commence the day, especially as vehicles leave for the paddocks and workers must be on board. This figure is a very conservative estimate and is arrived at by counting the number of cars in the car parks. It does not include the workers who are dropped off and collected in the afternoon. It also does not include the workers travelling through Hansen and Channel Roads going to and from their place of employment.</p> <p>Our figure of 582 is very different to the 173 peak hour vehicles that SKM and Ratch projected for Hansen Road during the construction period. Will they be reviewing their estimates?</p>	<p>The following management and mitigation measures will be implemented to reduce the impact of slow moving traffic on the local and wider road network during the construction and decommissioning phases as noted in Volume 1 Section 9.4:</p> <ul style="list-style-type: none"> Establishment and implementation of procedures to monitor traffic impacts on public and internal access tracks during construction, including noise, dust and travel times, and to implement modified work methods to reduce such impacts where possible No oversize or large trucks associated with the construction would operate on the Kennedy Highway during the school bus hours <p>A comparison of the 582 cars per day derived from Figure 1 (S023) and the 173 vehicle estimate for peak hour at the Chewko/Hansen Road intersection has been completed as a part of response No. 295.</p>	
299.	S023	<p>Ratch/SKM assumptions are based on 6 year old figures that do not in reality reflect the state of play in 2014. Their 3% per annum rise was exceeded by another 5% in 2012 and 2013 and may plateau or continue rising beyond 8% depending on further development in the area.</p>	<p>Estimates for the Hansen Road/Chewko Road and the Kennedy Highway/Hansen Road intersections are based on 2008 and 2010 data, respectively, with the application of a known growth rate (3% per annum).</p> <p>More recent data (count year 2013) for the Kennedy Highway at the Hansen Road intersection has been obtained and has been included in Appendix 8C. The applicable road section is from chainage 0 to chainage 25.49km. The data details the following observed growth rates:</p> <p>1 Year Growth Rate (2012 – 2013): -1.92%</p> <p>5 Year Growth Rate (2008 – 2013): 1.82%</p> <p>10 Year Growth Rate (2003 – 2013): 2.36%</p> <p>This data shows that the assumed growth rate of 3% per annum is a conservative estimate and has been applied to the more recent data obtained (2013) to calculate the design/construction year traffic volumes as shown below:</p> <p>Road: Kennedy Highway</p> <p>Location: Hansen Road Intersection</p> <p>Count Year: 2013</p> <p>AADT (vpd): 5324</p> <p>Peak Hour (vph): 638</p> <p>Heavy Vehicles (%): 11.9</p> <p>Construction Year AADT (2016): 5818</p> <p>Construction Year Peak Hour (vph, 2016): 698</p> <p>Previous Design Year AADT (2022): 6947</p>	Volume 1 Section 9.2.1

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			<p>Previous Design Year Peak Hour (vph, 2022): 834</p> <p>Current Design Year AADT (2026): 7818</p> <p>Current Design Year Peak Hour (vph, 2026): 938</p> <p>Note that design year traffic volumes have been calculated by applying a growth rate of 3% per annum and peak hour has been assumed to be 12% of AADT volume. The assumed construction year is 2016.</p>	
300.	S023	Below the first column of Designer Year, 7,398, in the same column of construction period, we have an Increased AADT, 5,749. An optical illusion to impress that there will be 1,649 vehicles LESS per day during construction. SKM should be held to task for trying to manipulate the results with the mock year of 2022. We can discount their projections.	<p>The figures referenced in the draft EIS state that 7,398 vehicles per day is the AADT volume for the design year (2022) for the Kennedy Highway at the Hansen Road intersection. This is based on a 3% increase per year from the count year (2008) figure of 4,891 vehicles per day. The construction year AADT volume of 5,749 is for the construction year (2012). It is based on a 3% increase per year from the count year (2008) to an AADT of 5,670 vehicles per day in 2012. 79 average trips-per-day is then added to reach a total of 5,749 vpd. The two figures 7,398 vpd and 5,749 vehicles per day do not match as they are from different design/construction years (2012 and 2022).</p> <p>Heavy vehicle volumes were not listed for Hansen Road at the Chewko Road intersection in the draft EIS as existing data of the volume of heavy vehicles is not known and it was thus not suitable to estimate an increase in the volume of heavy vehicles. More recent traffic data has been obtained for the Kennedy Highway at the Hansen Road intersection (2013 count year) where the heavy vehicle volume has been estimated at 11.9%. A volume of 52 heavy vehicle trips per day for the two year construction period can be estimated from the data provided in the Vehicle Movements table under Appendix 8C. This represents an increase of approximately 0.9% heavy vehicle usage (12.8% total) in the assumed construction year of 2016.</p>	<p>Volume 3 Appendix 8C</p> <p>Volume 1 Section 9.2.1</p>
301.	S023	At first glance across the tables it appears that with 7,398 vehicles per day pre construction, then down to 5, 7 49 vehicles per day during construction there will be no impact. The data also indicates that there is NO heavy traffic on Hansen Road both pre-construction and during construction, while stating that there is 5.9% heavy traffic on Kennedy Highway, both pre and during construction. Surely the amount of heavy traffic on Hansen Road will rise dramatically during construction.		
302.	S023	<p>In Table 9.3, the number of heavy vehicles has remained the same (5.9%) as the PreConstruction Table (5.9%). Yet the Wind Farm figures estimate:</p> <p>14,261 concrete truck trips, 577 flat tray trucks, 2 elevated platform trucks, 513 Semi/low loaders, 90 water takers, 78 Over length/oversize trucks, 3,607 4WD vehicles, 4,580 Bus/coach 30 seaters, 21 pieces of earth moving equipment on low loaders, 4 cranes and 20 44t cranes, moving along our local roads during construction, = 23,753 vehicle movements.</p> <p>While still purporting NO increase in heavy vehicle movement i.e. for pre-construction and also during construction, heavy vehicle traffic remains the same at 5.9% on Kennedy highway but still no heavy traffic uses Hansen Road. Is Ratch Australia going to rectify their vehicle figures?</p>		
303.	S023	The data for Kennedy Highway, collated in 2012, in Table 9.3 is an estimation of vpd, and is not based on an actual count. It also has not taken into account the increase in corporate farming; the prison expansion and the enlarged sugar mill (Refer to Figure 1).	The traffic data for the Kennedy Highway included in the draft EIS was calculated in 2012 based on a traffic count completed in 2008. Design and construction traffic volumes were calculated from the figure obtained during the count year through the application of a known growth rate of 3% per annum. These traffic volume figures have been estimated based on more current data from a traffic count performed in 2013 and are listed in Response No. 299.	Volume 1 Section 9.2.1
304.	S023	<p><u>Buses</u></p> <p>Ratch Australia states that approximately 4,580 bus movements will occur to deliver workers on site, from local towns or a camp. They have neglected to outline where the accommodation will be sourced from, which roads will be used and how buses will impact on the local farm worker buses delivering workers to the farms each morning.</p>	<p>The estimated number of bus movements (4,580) is based on the number of workers expected to be on site. An assessment of the calculation of the maximum number of workers and staff vehicles was completed in Appendix 8B (Technical Note 2 <i>Traffic Impact Assessment Engineering Responses, 2014</i>).</p> <p>Workers are expected to be transported from pick up and drop off points at nearby townships; however the exact location of accommodation etc. will not be known until employees have been engaged. The draft EIS states that procedures will be established to monitor traffic impacts on public and internal access tracks during construction, including noise, dust and travel times, and modified work methods to reduce such impacts will be implemented where possible</p>	<p>Volume 3 Appendix 8B</p> <p>Volume 1 Section 9.2.1</p>
<u>Hansen Road/Springmount Road</u>				
305.	S019	Hansen Road is described as the preferred route for wind farm construction traffic, but residents predict that heavy traffic and delays will lead to increased use of minor roads such as Channel Road and Morganbury Road. This places greater pressure on these narrow, dangerous roads and	Measures will be implemented to reduce the impact of slow moving traffic on the local road network during the construction and decommissioning phases as noted in Volume 1 Section 9.4	Volume 3 Appendix 8C

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		the residents who live beside them.	and 9.5.	
306.	S023	This road has been upgraded to take the Sugar Mill trucks and the Waste Facility trucks. It is also the main entrance to Lotus Glen Correctional Centre with not only staff utilising it but also the many delivery trucks and prisoner transport vehicles. At peak times during the day it can also be a very busy road. Most years, see a roll-over of at least one of the sugar cane trucks.	In addition to this, to reduce the impact on and ensure the safety of public traffic on the local road network, the EPC Contractor/Turbine Supplier engaged to transport the wind farm components will be required to meet the requirements listed under Response No. 289. The EPC Contractor/Turbine Supplier will be required to complete a Traffic Management Plan which as per <i>Transport and Main Roads Specifications, MRTS02 Provision for Traffic</i> shall:	
307.	S023	Delays on Hansen Road. There is no indication in the traffic reports of expected delays on Hansen Road. This busy road services many important industries which contribute millions of dollars to the local economy each year.	<ul style="list-style-type: none"> describe traffic arrangements which provide for any necessary sequencing of the work under the Contract while minimising disruption and confusion to road users, local traffic, public transport, emergency vehicles, pedestrians and cyclists where required, describe how the construction work area shall be physically and visually isolated from road users provide details of how local access to communities and adjacent private properties and businesses will be maintained provide details of arrangements to be made for detouring traffic provide details of all road closures and/or restrictions required to undertake the work under the Contract Provide details for timely notification and engagement of the community (business owners, road users and other stakeholders) in advance of alterations to existing traffic conditions. <p>A proposed transportation schedule which will detail the number of vehicles travelling and travelling times will be made available following the engagement of the EPC Contractor/Turbine Supplier. Local residents will be made aware of planned vehicle movements prior to commencement via various forms of media and notifications by the Community Liaison Team.</p>	
<u>Channel Road</u>				
308.	S023	<u>Channel Road</u> Walkamin Enterprises on Channel Road has 5 people movers, which take workers to their places of employment departing from 5.30 am each morning. Some vehicles make multiple trips while others return after the day's work is finished. Transporting up to 70 workers from Channel Road and their second accommodation on Chewko Road, means the timetable is tight and begs the question, how can we be guaranteed through passage to meet our deadlines?	Measures will be implemented to reduce the impact of slow moving traffic on the local road network during the construction and decommissioning phases as noted in Volume 1 Section 9.4 and 9.5. In addition to this, to reduce the impact on and ensure the safety of public traffic on the local road network, the EPC Contractor/Turbine Supplier engaged to transport the wind farm components will be required to meet the requirements listed under Response No. 289.	Volume 3 Appendix 8C
309.	S023	<u>Channel Road</u> If Hansen Road is choked with traffic, it will force more road users to bypass that journey and detour along Channel Road, placing locals at even more risk of accident. How will this situation be avoided, or could Channel Road become a NO THROUGH ROAD?	The EPC Contractor/Turbine Supplier will be required to complete a Traffic Management Plan which as per <i>Transport and Main Roads Specifications, MRTS02 Provision for Traffic</i> shall:	
310.	S023	Refer to The Tablelander on Facebook to view the numerous accidents that have occurred on these narrow country roads. We do not need any more traffic on these roads and to suggest tourists utilize Channel Road and stop to view any turbines, is committing the local residents to a highly dangerous situation.	<ul style="list-style-type: none"> describe traffic arrangements which provide for any necessary sequencing of the work under the Contract while minimising disruption and confusion to road users, local traffic, public transport, emergency vehicles, pedestrians and cyclists where required, describe how the construction work area shall be physically and visually isolated from road users provide details of how local access to communities and adjacent private properties and businesses will be maintained 	
311.	S023	<u>Prison Build</u> During the upgrade and expansion to LGCC a meeting was held with the residents of Channel Road after the continuous concrete trucks made living on this road unbearable. The contractors then enforced that all workers, concrete trucks, delivery trucks and anyone else involved in the	<ul style="list-style-type: none"> provide details of arrangements to be made for detouring traffic provide details of all road closures and/or restrictions required to undertake the work under the Contract 	

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		prison build was to use Hansen Road due to safety and noise impacts. Should any vehicle involved in the build be seen using Channel Road the driver would lose either their position or their contract. Would Ratch offer the same protection?	<ul style="list-style-type: none"> Provide details for timely notification and engagement of the community (business owners, road users and other stakeholders) in advance of alterations to existing traffic conditions. <p>A proposed transportation schedule which will detail the number of vehicles travelling and travelling times will be made available following the engagement of the EPC Contractor/Turbine Supplier. Local residents will be made aware of planned vehicle movements prior to commencement via various forms of media and notifications by the Community Liaison Team.</p>	
<u>Kippen Drive</u>				
312.	S023	<u>Kippen Drive</u> <p>This road is currently a dirt track, with plans for its expansion. Recent sales of properties along this road came with gag clauses that state the purchasers cannot speak out about the proposal. However for years these residents will be subjected to noise, constant traffic and intrusion in to their current peaceful, rural lives. As the property driveways join Kippen Drive, gaining access to their properties at all times may well be hampered by construction traffic. We look forward to Ratch's solution to the unfortunate plight of these residents.</p>	<p>Measures will be implemented to reduce the impact of slow moving traffic on the local road network during the construction and decommissioning phases as noted in Volume 1 Section 9.4 and 9.5.</p> <p>In addition to this, to reduce the impact on and ensure the safety of public traffic on the local road network, the EPC Contractor/Turbine Supplier engaged to transport the wind farm components will be required to meet the requirements listed under Response No. 289.</p> <p>The EPC Contractor/Turbine Supplier will be required to complete a Traffic Management Plan which as per <i>Transport and Main Roads Specifications, MRTS02 Provision for Traffic</i> shall:</p> <ul style="list-style-type: none"> describe traffic arrangements which provide for any necessary sequencing of the work under the Contract while minimising disruption and confusion to road users, local traffic, public transport, emergency vehicles, pedestrians and cyclists where required, describe how the construction work area shall be physically and visually isolated from road users provide details of how local access to communities and adjacent private properties and businesses will be maintained provide details of arrangements to be made for detouring traffic provide details of all road closures and/or restrictions required to undertake the work under the Contract Provide details for timely notification and engagement of the community (business owners, road users and other stakeholders) in advance of alterations to existing traffic conditions. <p>A proposed transportation schedule which will detail the number of vehicles travelling and travelling times will be made available following the engagement of the EPC Contractor/Turbine Supplier. Local residents will be made aware of planned vehicle movements prior to commencement via various forms of media and notifications by the Community Liaison Team.</p>	Volume 3 Appendix 8C
313.	S023	<u>Kippen Drive</u> <p>The development application refers to work times between 6am and 6pm, 6 days a week and sometimes on Sundays, meaning that these residents will be severely impacted. The Martin's farm (right hand driveway) next to Kippen Drive is an organic farm of some 300+ acres, and although the developers have been asked what road surface will be on Kippen Drive, they have to date not given an answer. Should Kippen Drive remain a dirt road, the dust will cause a loss of plant quality for the organic farm and thus loss of his business.</p>	<p>At this time no tourist viewing facilities are considered as part of the wind farm proposal.</p> <p>The Development Application for the project states;</p> <p><i>"No specific visitor information centre or other viewing platforms are proposed as part of this current development application."</i></p> <p>References to viewing facilities and tourist vehicles have been made in regard to previous wind farm approvals which have included conditions requiring facilities to be built.</p> <p>Should any viewing facilities be required they would be subject to their own development application and supporting studies and assessments.</p> <p>Inclusion of an estimate of tourist vehicles has been made on a conservative basis to understand</p>	
314.	S023	<u>Viewing Platform</u> <p>In their (Ratch) original Development Application, mention was made of a viewing platform on Channel Road. When this was challenged I was told that it was a mistake and the viewing platform was to be positioned on Kippen Drive. Kippen Drive is close to the base of the mountains and each side of the road is privately owned land, having recently been subdivided and sold by Port Bajool. The owners of these properties have had "Gag Clauses" included in their contracts, preventing them from speaking out about the development.</p> <p>It is interesting that a viewing platform is mooted for a road which has no space for a traffic stop/turnaround or viewing platform. Also by Ratch Australia's own admission and viewable on their own map developed by Green Bean Design, that from Kippen Drive, 0-15 turbines only may be seen. Figure 11 . ZVI Diagram 1 Tip of blade is included.</p>		

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		In this Figure Kippen Drive is represented by the blue area to the north of the turbines. What point is a viewing platform which does not have a view of turbines? We believe that Ratch has not been honest in this statement, and is trying to quell the concerns of Channel Road residents. We ask, where is the viewing platform going to be? They have not answered this.	cumulative impacts of the proposal.	
<u>Mitigation</u>				
315.	S019	The proponents consider putting up a few signs and withholding traffic during school bus hours is sufficient to mitigate the impacts of substantially increased traffic volumes. We contend that further mitigation measures are necessary. Due to high volumes of work traffic between 6-9am, and 3-8pm, wind farm construction traffic should avoid these times to insure the least amount of disruption to our community's daily schedules.	Measures will be implemented to reduce the impact of slow moving traffic on the local road network during the construction and decommissioning phases as noted in Volume 1 Section 9.4 and 9.5. In addition to this, to reduce the impact on and ensure the safety of public traffic on the local road network, the EPC Contractor/Turbine Supplier engaged to transport the wind farm components will be required to meet the requirements listed under Response No. 289.	Volume 3 Appendix 8C Volume 1 Section 9.2.1
316.	S019	The proponents are proposing to upgrade only the Springmount Road and Kippin Drive intersection as otherwise the heavy transport required to move the turbine components will not be able to negotiate the corner. The only other hard mitigation measures proposed are road signs and some minor vegetation clearing. In other words, other road users and nearby residents will have to put up with the threats to their safety and the inconvenience of up to 168 additional vehicles per hour (1400 vehicles a day) using Springmount Road. The draft EIS has not adequately addressed the standard of roadworks required to ensure a safe and suitable transport route during and after construction. These details should be made available to our community and included in the final EIS.	The EPC Contractor/Turbine Supplier will be required to complete a Traffic Management Plan which as per <i>Transport and Main Roads Specifications, MRTS02 Provision for Traffic</i> shall: <ul style="list-style-type: none"> describe traffic arrangements which provide for any necessary sequencing of the work under the Contract while minimising disruption and confusion to road users, local traffic, public transport, emergency vehicles, pedestrians and cyclists where required, describe how the construction work area shall be physically and visually isolated from road users provide details of how local access to communities and adjacent private properties and businesses will be maintained provide details of arrangements to be made for detouring traffic provide details of all road closures and/or restrictions required to undertake the work under the Contract Provide details for timely notification and engagement of the community (business owners, road users and other stakeholders) in advance of alterations to existing traffic conditions. A proposed transportation schedule which will detail the number of vehicles travelling and travelling times will be made available following the engagement of the EPC Contractor/Turbine Supplier. Local residents will be made aware of planned vehicle movements prior to commencement via various forms of media and notifications by the Community Liaison Team. Table 9.1 states that an average of 79 additional vehicle movements per day will be experienced, rather than 168 additional vehicles per hour/1400 additional vehicles per day.	
317.	S023	<u>School Buses</u> The report states that there will be no oversize or large trucks associated with the construction on Kennedy Highway during school bus hours between 7.30 - 9.00 am and 3.00 pm and 4.30 pm. The hours are actually 7.00 am to 9.00 am and 2.00pm and 4.00 pm. No school buses travel on Hansen Road and only one travels the length of Channel road. Walkamin Primary School does not have a bus now and parents must either drive or walk their children to this school.	The draft EIS report was issued in 2012 prior to the change in school bus and school zone operating hours. No oversize or large trucks associated with the construction will operate on the Kennedy Highway during school bus/zone hours	<u>Volume 1 Section 9.4</u>
<u>Transport Times</u>				
318.	S023	Our 2014 figures highlight the fact that due to high volumes of work traffic between 6am and 9am, and 3pm and 8pm, these times have to be avoided by Ratch traffic to insure least amount of disruption to daily schedules. Accordingly, the less congested times are between 9am and	Measures will be implemented to reduce the impact of slow moving traffic on the local road network during the construction and decommissioning phases as noted in Volume 1 Section 9.4	Volume 3 Appendix 8C

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		3pm, and 8pm and 6am.	and 9.5.	
319.	S023	9am to 3pm Ratch traffic will be competing with, heavy delivery and pick up vehicles, Sugar Mill transports, fuel delivery trucks and waste management semitrailers, heavy farm vehicles and prison escorts.	In addition to this, to reduce the impact on and ensure the safety of public traffic on the local road network, the EPC Contractor/Turbine Supplier engaged to transport the wind farm components will be required to meet the requirements listed under Response No. 289.	
320.	S023	The 8pm to 6am time slot is the most contentious interval for the local residents as it impinges on their "Quiet Time". In this rural setting there is next to NO noise at night. Please advise what hours will be utilised to transport wind farm material to the construction site?	The EPC Contractor/Turbine Supplier will be required to complete a Traffic Management Plan which as per <i>Transport and Main Roads Specifications, MRTS02 Provision for Traffic</i> shall: <ul style="list-style-type: none"> describe traffic arrangements which provide for any necessary sequencing of the work under the Contract while minimising disruption and confusion to road users, local traffic, public transport, emergency vehicles, pedestrians and cyclists where required, describe how the construction work area shall be physically and visually isolated from road users provide details of how local access to communities and adjacent private properties and businesses will be maintained provide details of arrangements to be made for detouring traffic provide details of all road closures and/or restrictions required to undertake the work under the Contract Provide details for timely notification and engagement of the community (business owners, road users and other stakeholders) in advance of alterations to existing traffic conditions. A proposed transportation schedule which will detail the number of vehicles travelling and travelling times will be made available following the engagement of the EPC Contractor/Turbine Supplier. Local residents will be made aware of planned vehicle movements prior to commencement via various forms of media and notifications by the Community Liaison Team.	
321.	S023	Lolly Pop men or traffic control/lights. Where will these be and how will they interfere with the morning and afternoon traffic		
322.	S023	Transport times for huge loads. At what time of the day or night will large loads be transported? If it is during the day time, severe disruption to local traffic will be experienced. If it is during the night time, the prison and sugar mill will experience disruptions. Adding insult to injury, night time transfers will awaken residents who live next to Hansen Road, the western end of Channel Road and Kippen Drive, due to the noise and lights from the large loads and escort vehicles, as night time in this locality is noise free.		
323.	S023	There are no street lights or flashing lights in this neighbourhood at night. Any such bright and flashing lights will negatively impact on the quality of life at night in this dark and serene environment.		
<u>Emergency Vehicles</u>				
324.	S023	Officers and Dog Squad members regularly travel Springmount and Hansen Roads between the main centre and the prison farm. They must not be impeded as some calls may be for emergencies. Trips to Mareeba Airport for prisoner transport also may occur during day time and Polair flights transferring prisoners south may leave at 3.00 am. Many prisoner medical appointments travel to Mareeba and Cairns. All of the above are essential and any delay may be life threatening.	Following the engagement of an EPC Contractor/Turbine Supplier to transport wind farm turbine components, the Contractor will be responsible for developing a Traffic Management Plan. Under the <i>Transport and Main Roads Specifications, MRTS02 Provision for Traffic</i> , the Traffic Management Plan will be describe traffic arrangements which will minimise the disruption and confusion to road users, local traffic, public transport, emergency vehicles, pedestrians, and cyclists. As a part of this requirement emergency services will be notified of procedures to ensure that there are minimal delays in emergency situations.	Volume 3 Appendix 8C
325.	S023	<u>Police, Fire and Ambulance</u> As Kennedy Highway has NO alternative route, all emergency vehicles must use the highway. What plans are in place for an emergency vehicle to pass a turbine section which is slow moving and utilising the entire road space? The same applies to the Palmerston Range although this range does have a few overtaking lanes. Not so, on Kennedy highway between Tolga and the Hansen Road intersection.		
326.	S023	<u>Dangerous Goods</u> Nowhere in the traffic plan, is there mention for the transport of dangerous goods. This may refer to explosives, chemicals or fuel necessary for the construction phase. What safety plans are in place for these transports?	Requirement for transportation of dangerous goods will be known following engagement of EPC Contractor/Turbine Supplier. The Contractor will be responsible for abiding by the <i>Transport Operations (Road Use Management - Dangerous Goods) Regulation 2008</i> to ensure the safe transport of dangerous goods by road (if required).	Volume 3 Appendix 8C

10 COMMUNITY CONSULTATION

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<u>Consultation Performance</u>				
327.	S004	Despite our repeated personnel request, no consultation with the proponent has occurred. We have pointed out that we are the closest property that has a raised elevation, therefore exposing us to greater noise.	Consultation activities are outlined in Section 10 of the EIS documentation. The range of tools and activities used to inform and communicate with the public is outlined. These methods were implemented to provide a reasonable basis for all members of the community to be informed on the proposal. While it is recognised some members of the community may have adverse attitudes towards the project, personal opinions and preferences should not be seen as a lack of consultation.	
328.	S004	The community consultation has been far from satisfactory, and has been only undertaken by the proponent to such a low standard to satisfy their obligations. They have no real desire to work with or negotiate with the impacted residence. At the community meetings, no public questions were excepted and no public address presented. Private little conversations with “friends” were the order of the day.	Reasonable approaches for information on the project have been addressed by the proponent and engagement is outlined further in Appendix 9.	
329.	S005	Perception. Your consultative activities were very poor and designed to prevent the public being informed and asking questions as a group. Total unacceptable. Your dedicated project web site failed to keep up to date, and the individual stakeholder meeting was not inclusive enough and very selective. Your comments are condescending when describing impacted residence real fears and concerns.	Knowledge and examples provided within the submissions would indicate the consultation process has occurred. Where possible modifications to the project as a consequence of consultation activities have been made and are outlined in Section 6.2.	
330.	S006	Community Consultation fails to convey the actual community feelings and sentiments which are indisputable overwhelmingly against this project. Requests to the Mareeba Shire Council for more public feedback to this project was also rejected. Has underhanded pressure been applied to hush public anger? RACL has ignored the need for proper community consultation in their rush to push this project with scant regard to community concerns.		
331.	S010	No evidence is provided in the EIS that there has been a public consultation process. There is no information tabled on public information releases, and no information provided on a proposal to establish a Community Consultative Committee. The lack of demonstrated evidence of public consultation suggests that the developers of the proposed windfarm are either not required to inform the public about the impact of their development, or disregard the people who will be affected by it or that the approval for the project is a foregone conclusion.		
332.	S016	Your public consultation was very poor and residents within the 5km zone were not surveyed or consulted.		
333.	S019	views of the local community Ratch’s provision of a 10km viewshed map and comments by Marshall Day Acoustics in relation to 10km being the area considered for cumulative acoustic impacts, indicates community consultation and community survey should have been focussed on this area. As required by Section 5.8(d) provide a statement mentioning communities that may be affected and describing their views.		
334.	S019	As Ratch has not done any mail outs to the potentially affected community, there are still absent landowners within 10km of the project area who have no knowledge of the project whatsoever. This should have been done and has not been done. Community consultation has clearly been inadequate under section 5.8 of the EIS Guidelines.		
335.	S019	It has become obvious to us over the past three years that the proponents have attempted to minimize any opposition to their proposal by withholding information and incorrectly presenting data. Our community is absolutely shocked by the way we have been treated and the very poor		

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		standard of community consultation undertaken by Port Bajool and RACL. Throughout the planning process, they have tried to keep details as vague and non-specific as possible and have avoided any meaningful stakeholder engagement. We have been treated worse than Third World citizens. Their actions contravene international conventions such as the World Bank's Free Prior Informed Consent (FPIC) provisions which refer to the rights of local communities to participate in decision making about issues impacting them. We believe their transgressions are so severe they have contravened our human rights. We refer you to the comments made by Sustainable Solutions Global in Attachment 1. We were forced to pay these consultants to provide a basic level of public consultation for the draft EIS. There are no other words to describe it other than "appalling".		
336.	S019	After the first community consultation in March 2011, the number of turbines increased from 74 to 75. When the second Noise Impact Assessment (Appendix 7) was released with the draft EIS residents discovered that the turbine capacity had increased from 2.0-2.3 megawatt to 3.0-3.4 megawatt. There was no consultation with the community on this substantial change to the project and, despite a decrease in number of turbines to 63, this has resulted in an increase in proposed noise levels at more residences (due to the bigger size of the turbines).		
337.	S022	There are many papers, reports & data prepared and compiled by qualified professionals and many hundreds of complaints from residents in communities impacted by industrial wind turbine developments. We are sure that RATCH Australia are well aware of these impacts and complaints yet they press on with proposing industrial wind turbine developments in Australia regardless.		
338.	S024	What is community engagement? Being genuinely available to meet and talk to the community. This has not happened to the effected communities, and the use of advertisements is the only point of information received.		
339.	S024	The local community feels that we have genuinely been treated with contempt. One example is describing us as an area of "predominately grazing and horticultural pursuits." Even the CEO of Ratch admitted that he was unaware of the extent of farming and its financial contribution to this area. When the Town Planner from RPS, Ratch's consultant, not councils, (David Finney) was invited to meet with us, he declined the appointment on numerous occasions and did state that he had driven down our road once. How can individuals "know" an area if they do not make to effort to find out about the mechanics of a community?		
340.	S024	Engagement of the project feasibility stage. It's crucial that everyone involved in the development team focuses on building trust and constructive relationships within the community. With years of hearing the lies from John Morris, that the wind farm would not be seen and we wouldn't hear it, all trust or belief in honesty had flown out the window. I was originally told by Ratch that I wouldn't receive any flicker. Now they agree I will. Years of misappropriated comments such as these, mean that the local community does not or ever will believe anything they say.		
341.	S024	Construction Phase. Developers should acknowledge the negative impacts that construction generates and provide as much information as possible, both when requested and proactively.		
342.	S024	I reiterate that community consultation has been conducted from a distance, with no one from Ratch or Port Bajool being available within the areas surrounding the industrial wind farm since the last community meeting, on September 2012. They have never had a presence in the local communities.		
343.	S024	The residents of Rangeview have never had an opportunity to discuss concerns with Ratch from		

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		their location. The two Open Days have been held at Mareeba, where John Morris has paid to be a gold member of the Chamber of Commerce. Why do they not hold information sessions in Tolga and Walkamin where many locals will be negatively impacted? Is it safer to talk to Mareeba residents, 30 kilometres away, who will not be impacted?		
344.	S004	There is no mention of consultation with the nearby Lotus Glen Prison. Why Not?		
Community Consultation Committee				
345.	S004	The proposed Community Consultation Committee is mentioned in the EIS but no public release of details has occurred. Its independence must be questioned.	The proponent has proposed the establishment of a Community Consultation Committee to allow the transfer of information and views.	
346.	S006	The Community Consultative Committee proposed would not be acceptable to represent the community because of it's shameless pro-wind industry bias. The proper watch group for the community would be drawn from individuals who are living in proximity of the site project who understand and oppose this project. This watch group would be created, in the event of the horrid decision to allow commencement of this terribly destructive scandalous wind project, by the coalition of community members who are currently working to expose the lies about this IWT project. As mentioned before, this watch group would be empowered with full authority to directly challenge RACL over any and every related IWT issue.	Volume 1 Section 10.4 , Volume 2 Section 24.1.2 and the Statement of Commitments Section 14 outline the commitment to establish a Community Consultation Committee. The Community Consultation Committee would also be responsible for allocation of a nominated Community Benefit Fund of up to \$200,000 per year for the operational duration of the project. uses for the funds, but these could include projects such as: <ul style="list-style-type: none">Sponsorship of local sporting or social clubs;Sponsorship of local festivals or fetes;Grants for sporting, musical or educational equipment for locals schools and colleges;Grants for equipment for local emergency services organisations;Funding for scholarships for local children to attend school, college or university;Grants to support local apprenticeships or traineeships;Provision of community education such as first aid courses, sustainable farming techniques or other appropriate subjects;Grants for appropriate community projects.	
347.	S024	The community fund of \$20,000 per year to the local community has been earmarked for Mareeba, but does not include the seriously impacted locals surrounding the development. We say, what about the possibility that farms in the immediate vicinity may have to shut their doors, with a potential loss of over \$300 million turnover to the local community (not Thailand or Port Douglas) and the \$40 million plus, paid annually in wages to farm workers here. This money moves around the local community and supports the Tablelands.		
348.	S024	RACL have proposed a Community Consultative Committee for the project and the possible chair has already been identified. We say, not one affected person from the immediate locality has been invited on to this committee, and are they purchased individuals from unaffected Mareeba? Ratch has been obvious in their avoidance of the real communities that will be negatively impacted, namely, Tolga, Tandara, Walkamin, Springmount and Oaky Creek.	The proponent will be seeking nominees from across the community to form the Committee as soon as approval for the project is received. Informal discussions have been held with an independent candidate to chair such a committee however, no decisions have been made in relation to this position or any remaining positions or roles. It is intended to obtain representatives on the Committee from various sections of the community.	
349.	S024	Ratch attempted to offer Tolga Primary School a substantial sum of money over three years. This was rejected by the parents immediately. Ratch, when asked, was unaware that there was also a primary school at Walkamin.	Ratch Australia and our operational partners have a long history of involvement and support of local communities at our operational sites. Ratch Australia has recently committed funding of \$10,000 per year for five years to two State Primary Schools in the region surrounding the Collinsville Power Station. The funding will go towards the purchase of educational resources for each school.	
Survey				
350.	S005	Public Consultation and Survey These were a farce and failed to address the real fears and concerns of those most impacted. The Community survey in March 2012 was also a farce. I am yet to find a resident within 10km that was interviewed. I have spoken to only two people to be “interviewed,” and they were located 20-30km from the proposed site. This survey has no credibility. I request a survey of all residence within 5km of the site. This would be a truer reflection, or are you afraid of what the impacted residence really feel. I am sure it would differ from your	The proponents engaged AUSPOLL to undertake a survey of various aspects of the proposal in March 2012 to identify community attitudes to the proposal. The results of this survey are included as Appendix 9 Appendix C. It should be noted AUSPOLL are a reputable organisation with many years’ experience in undertaking work of this nature in an unbiased and professional manner. The validity of Tablelands Wind Turbine Action's 2014 survey, is questionable and was actually	

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		suspect survey. Where is your Community consultation?	deemed a ‘non-conforming petition’ when presented to Queensland Parliament as it did not meet the definition of an appropriate document and/or process.	
351.	S005	Australian Quantitative Research You have referred to research and findings by wind Farm Developers. No credibility, surely this is like putting a wolf in charge of a sheep flock. Where is the independent research?		
352.	S019	The proponents claim their survey showed general support for the wind farm proposal. While 86 per cent of surveyed respondents said they knew little or nothing about the Mount Emerald proposal, 76 per cent said they supported it. Nearly a third of the 400 respondents lived over 20km from the site, and only 17 were under 5km from the site. Due to this lack of regard for residents who will be impacted by the wind farm, we recently sent a survey to 700 properties within 5km of the proposal. We are still receiving surveys, but our initial results show that over 90 per cent oppose the wind farm. Their main reasons are decline in property values, visual impacts, noise impacts, health impacts and environmental damage. At a presentation of the draft EIS assessment undertaken by Sustainable Solutions Global earlier this month, over 100 people attended and it was standing room only. Why are we doing the proponents’ job for them and consulting our community? The draft EIS has failed to report strong local opposition to the wind farm proposal and we call on the proponents to undertake open and honest consultation with affected residents.		
353.	S021	A survey conducted by your company was of 400 people in a phone survey only 17 people were interviewed within the 5km impacted zone and 124 people in excess of 20km from the site. That must be how you arrived at the conclusion that it is a popular proposal. The proposal is in the Mareeba Shire and we have done a survey of residents within the 5km zone and not one person was in favour of the proposal. The Mareeba Chamber of Commerce held a Priority Forum recently in Mareeba and, although it is a \$500m project, it never got a mention. Does that tell you something?		
354.	S022	We believe Ratch Australia is also very well aware of the community opposition to developments and yet they press on regardless. Attached is a survey from the Collector area, where RATCH Australia has a proposed / approved project.		
355.	S023	Over 90% of responding residents within a 5 kilometre radius of the proposal object to the industrial wind farm, (Tablelands Wind Turbine Action's 2014 survey). Traffic delays will severely increase tensions and anger. How will this be addressed?		
356.	S024	The Tablelands Wind Turbine Action survey sent to 700 property owners within 5 kms of the proposal speaks for itself when over 90% of respondents state that they object to the wind farm. The survey will be finalised shortly.		
<u>Personal Accounts</u>				
357.	S013	Through 2010 to mid 2012 your “partners” Port Bajool stated that “yeah a few wind turbines, way over the back of the mountain, you won’t see them or hear them, nothing to worry about”. Well why would a reasonable person worry? I have come to learn that this was the stock standard line used on many residents on both sides of the mountain. It was not until the 2nd of September 2012 that our family learned the truthful facts of exactly what was being proposed up to 79 industrial wind turbines across the top of the Herberton Range known as Mt Emerald and Walsh’s Bluff. This factual information was being presented at the time and cost of residents in the area, not RATCH, Transfield or Port Bajool, who would have preferred everyone keep living the lie of a few wind turbines over the back, out of sight, out of mind, not the truth of blaring in your face, environmental vandalism in midst of rural residential areas	Consultation activities are outlined in Section 10 of the EIS documentation. The range of tools and activities used to inform and communicate with the public is outlined. These methods were implemented to provide a reasonable basis for all members of the community to be informed on the proposal. While it is recognised some members of the community may have adverse attitudes towards the project, personal opinions and preferences should not be seen as a lack of consultation. Reasonable approaches for information on the project have been addressed by the proponent and engagement is outlined further in Appendix 9. Knowledge and examples provided within the submissions would indicate the consultation	

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358.	S013	In September 2012 Geoff Dutton told me in front of the media and many local residents at the Mareeba Heritage Centre day (where none of your RATCH experts could answer the locals questions) that he would personally visit me to talk about my concerns with the project. I waited and a few weeks later Geoff Dutton dropped into a café down the road from my residents. I do not work there, I had no notice of him coming, no message, no phone number to contact him, nothing. Fortunately the girl on the front counter knew who I was and contacted me. I have a job and do not sit around in Cafes waiting for the pretense that Geoff Dutton might show up. Furthermore it is complete superciliousness to act in such a manner. How's that for community consultation? Good tactic when you are avoiding the truth - I hope you have recorded all of these anecdotal notes in your EIS.	process has occurred. Where possible modifications to the project as a consequence of consultation activities have been made and are outlined in Section 6.2.	
359.	S019	We lost hope years ago that the proponents were interested in our views and would even acknowledge our concerns. Many of us believe their consultation was simply a way of “ticking a box”. Many of us voted with our feet because we didn’t want our involvement to give credibility or legitimacy to the process. This is an example of what has happened: they proposed a ridiculous turbine layout and when we objected, they were able to say they had moved a few turbines because they listened to us. The proponents engaged with us not to address our concerns, but to find ways of overcoming local opposition. Another example of their lack of regard for proper consultation is the statement in the draft EIS that a Community Consultative Committee will be formed and “a possible Chair has been approached and potential members identified”. Appointments to these positions should not be up to the proponent, they should be made independently. An open and accountable process should be clearly articulated in the final EIS.		
360.	S019	Some of us asked the proponents to undertake background noise monitoring at our homes, but requests were refused and we had to pay for our own testing.		
361.	S019	In addition, provide details of residents’ letters to the editor of local papers from 2011 to date.		
362.	S019	We have heard many accounts from sensitive receptors who were personally told by the proponents that they wouldn’t be affected by the wind farm. Then information became publicly available and they discovered the very serious noise and visual impacts they were facing. Residents have consistently asked RACL and Port Bajool for more information, but the information has not been forthcoming. We received complaints that Port Bajool representatives have shown up on doorsteps along Channel Road to hand out generic leaflets hiding behind their grandchildren/nephews so that residents have to control their anger and frustration. The only time we get to hear more information is an ad in the local newspaper. It’s hard not to be cynical about the sympathetic reception received by project partners Port Bajool and Mount Emerald Wind Farm Pty Ltd from the sponsorship and advertising they have invested in the Mareeba Chamber of Commerce, Mareeba Shire Council, Advance Cairns, Tourism Tropical North Queensland, local political campaigns and the media. We don’t consider these financial incentives are illegal, but we do believe they influence outcomes. We fully expect some of these same groups will be submitting letters of support for the draft EIS.		
363.	S019	The proponents claim positive social and economic benefits for the Mareeba community, 15 km from the wind farm site. The proponents have been major sponsors of the Mareeba Chamber of Commerce and the Chamber has refused multiple requests from affected residents to explain their concerns. The result is that affected residents are avoiding shopping in Mareeba if possible, preferring instead to take their business to Atherton in the neighbouring shire. The wind farm proposal has truly divided our community.		
364.	S019	Unfortunately, some of our most impacted residents feel they are unable to speak out about the proposal because they signed contracts with joint venture partners Port Bajool stating they		

No.	Submission	Issue	Response	Section Amendment
		<p>wouldn't object to the wind farm.</p> <p><u>No Objection to Wind Farm</u></p> <p>The Vendor discloses that certain feasibility studies and a development application or procedure have been or may be made in respect to the development of Lot 7 SP235244 for construction of wind electricity power generation (by means of a connected group of wind turbine generators, together with associated electrical infrastructure and connection equipment). The Purchaser must not object to any application or procedure made or initiated by or on behalf of the vendor or a third party in respect of any use or development of Lot 7 SP235244. The Purchaser acknowledges that the Purchaser will not be materially prejudiced by the development or use of Lot 7 SP 235244 as a "wind farm" for the generation of power.</p> <p>Prospective buyers were told by Port Bajool they would not see or hear the wind farm because "sound travels upwards". You can imagine the shock these people received when they discovered the scale and potential impacts of the proposal. These same people are now terrified to speak out against the wind farm proposal in case they are sued by Port Bajool. This has greatly limited the capacity of these residents to provide open input as part of the community consultation process.</p>		
365.	S024	It was in 2007 my partner and I first heard about the proposed wind farm. John Morris and Jim Noli arrived (with permission) to my property on Channel Road, via helicopter, to try to sell me the 100 acres of land adjoining the back of my property. It was during those discussions that mention was made that there MAY be a small wind farm built on the plateau, but we would neither hear nor see them. These are 43 story high structures. This was the beginning of our exposure to their behaviour and it got worse.		
366.	S024	I draw your attention to the fact that I was NOT one of the various neighbouring landowners who were involved in a discussion on the general project concept in May 2009. In fact I cannot find anyone who was. Is this just another box ticked by Ratch and Port Bajool?		
367.	S024	We attended the Public Open Day in Mareeba, March 2011 to ask a lot of questions. At the time, none of my questions were answered. At this meeting we asked why no information had been made available, to which John Morris stated, they had done a letter box drop. We don't have letter boxes at our rural properties and none had been received in our mail boxes at the post offices. To date, Walkamin Post Office, the closest to the development, has not received a single piece of information from the developers of this project.		
368.	S024	Shortly after this meeting, Terry Johannesen made an appointment to visit Jack and me at home, to which we agreed . Standing outside one of my accommodation houses, I told him, "if you are going to buy me I will show you everything but if you are not going to buy me I will show you the view." He turned to me and said, "Jenny we have to buy you because you are going to be so severely impacted." I proceeded to show him through my accommodation houses and the farm.		
369.	S024	Nothing more was heard until the next community day again at Mareeba on September 2012, when we attended with about 60 other protesters. Jack approached Terry and asked him the question, "Are you going to buy us?" He replied, "No you are too expensive." Damage done! Corporate behaviour such as this falsely raises expectations, only then to destroy all faith. I now know that I will be severely impacted, but Ratch is going to do nothing about it.		
370.	S024	At the second community meeting, angry questions were raised to which Ratch responded with a series of cleverly worded advertisements in the paper. To date all we have heard is that the impacts from the project can be effectively mitigated. I was also told personally by Kim Forde that mitigating measures were in place and that everything would be okay. We (the locals) have not seen any hard evidence of one single mitigating measure to reduce impacts. Not one local is		

No.	Submission	Issue	Response	Section Amendment
		hosting a turbine, as the land belongs to Port Bajool, the community has a united front on their objection to the proposal.		
371.	S024	The second newsletter was delivered to properties on Channel Road, personally by Jim Noli, hiding behind two young boys. This fact did not deter the majority of property owners telling him exactly what they thought of the wind farm and where he could go, often using words which are unrepeatable here. To date no other newsletters have been hand delivered or posted.		
372.	S024	More recently blatant lies have been printed in newspaper articles, the latest round discussing the "gag clauses" that buyers of Port Bajool properties had to sign, stating that they may not object to the wind farm. John Morris hotly contests that they are other than what they really are, a "gag clause."		
373.	S019	The proponents' disregard for our community is highlighted in the Preliminary Environmental Management Plan. One of the frequently used performance indicators is "Complaints Register – recorded and closed out". How about an effort to record zero complaints, respond to complaints or minimise complaints?		

11 CULTURAL HERITAGE

No.	Submission	Issue	Response	Section Amendment
374.	S004	One paragraph to cover 2,000HA of native vegetation. This seems like an inadequate study, especially with no supporting documentation. This is a very poor attempt to cover our cultural heritage on this site. There must be further information on this subject.	<p>Volume 1, Section 11 provides an overview of a Cultural Heritage Inspection undertaken by Converge Heritage + Community on behalf of the project.</p> <p>Further details of the outcomes of the Cultural Heritage Inspection are provided in Appendix 10 of the EIS documentation. Additional information in relation to the non-Indigenous values of the project area is included as Appendix 10B.</p> <p>The Cultural Heritage Inspection and Assessment noted that no sites or places of non-Indigenous cultural heritage significance were identified in the assessment. It was also identified that under the Aboriginal Cultural Heritage Act 2003 (ACHA) Duty of Care Guidelines the project area could best be described as falling within category 5. The assessments recommended:</p> <ul style="list-style-type: none"> in relation to Aboriginal Cultural Heritage "that a process be adopted whereby consultation with the appropriate Aboriginal Party(ies) for the area be initiated. It is expected that consultation would result in a cultural heritage survey and CHMP or agreement pursuant to section 23(3)(a) (iii) of the Act..." In relation to non-Indigenous cultural heritage that the procedure for the discovery of a non-indigenous item of potential cultural heritage significance is set out at the end of the report. It is the intention of the project to adopt this recommendation through the life of the project. <p>On the 8th January 2011, the project made public notice of the intention to develop a Cultural Heritage Management Plan (CHMP) pursuant to Part 7 of the ACHA.</p> <p>A Cultural Heritage Management Plan (CHMP) has been developed and agreed between the Project Sponsor; Mt Emerald Wind Farm Pty Ltd, John Wason, and the Bar-Barrum Aboriginal Corporation RNTBC. Aboriginal Cultural Heritage will be managed in accordance with the terms of this CHMP.</p> <p>The process for managing Aboriginal Cultural Heritage within the project area has been set out in the CHMP. Amongst other things this provides for an Aboriginal cultural heritage survey of the</p>	<p>Volume 3 Appendix 10B</p> <p><u>Volume 1 Section 11</u></p>
375.	S010	A Cultural Heritage impact Assessment should be included in the final EIS.		
376.	S017	As per the Aboriginal Cultural Heritage Act 2003, Cultural Heritage investigations should be undertaken PRIOR to any further site disturbance.		
377.	S017	As required under State legislation, undertake a Cultural Heritage Impact Assessment for inclusion in the final EIS.		
378.	S017	Describe as per Section 5.1(g) of the EIS Guidelines the expected, likely and potential impacts of the proposal on cultural heritage during construction, operational and post-operational phases.		
379.	S017	Provide details of studies indicating the cultural heritage significance of bats and Northern Quolls, for example.		
380.	S017	Describe as per Section 5.5(j)(iv) of the EIS Guidelines how the works are to be undertaken and design parameters for all aspects of the structures or elements of the proposal, including a summary of the design aspects that will be employed to minimise impacts on cultural and heritage values.		
381.	S017	Provide a Cultural Heritage Management Plan for inclusion in the Environmental Management Plans.		
382.	S019	We understand the proponents have spoken to Traditional Owner groups about potential employment opportunities, but have they properly explained the implications of rock blasting, hydrological changes, and construction damage to culturally and spiritually significant		

No.	Submission	Issue	Response	Section Amendment
		waterways?	area prior to ground disturbing activities.	

12 ENVIRONMENTAL ASSESSMENT

No.	Submission	Issue	Response	Section Amendment

12.1 Climate

No.	Submission	Issue	Response	Section Amendment
383.	S019	The draft EIS provides a summary of possible climate change impacts on the region, and notes the potential cumulative impacts on the wind farm site such as increased bushfire frequency, increase in runoff turbidity and loss of montane heath vegetation due to track clearing. However, the proponents have not mentioned the significance of the Mount Emerald plateau in terms of future climate change adaptation for matters of National Environmental Significance.	Unfortunately there is a paucity of bioclimatic modelling for the majority of threatened fauna and flora species known of predicted to occur on the Mt Emerald plateau to enable an informed assessment of the climatic refugial value of the project site.	Volume 2 Section 14.5 Volume 2 Section 19.4
384.	S019	Climate change could have a significant impact on the Northern Quoll. Modelling suggests the climate and habitat envelope occupied by quolls may reduce by up to 50 per cent with an increase of one degree celsius (Queensland's Threatened Animals, 2012). The effects of climate change can cause climate zones shift latitudinally or altitudinally, possibly causing more habitat fragmentation or causing previously suitable habitat to be no longer appropriate (Jones et al., 2003). These changes could also extend the ranges and preferred habitats of introduced species that are threats to quolls such as foxes (Long & Nelson, 2004). The impacts of climate change on matters of National Environmental Significance and the importance of retaining high altitude refugial sites such as Mount Emerald should be adequately assessed by the EIS.	<p>In fact, Curtis <i>et al</i> (2012) make no such claim for Northern Quolls, rather the modelling referred to was for the Spotted-tailed Quoll (<i>Dasyurus maculatus gracilis</i>), which are currently largely restricted to large montane rainforest blocks such as the Mt Lewis, Lamb Range and Mt Windsor area. No modelling examining the impacts of climate change has been published for Northern Quolls. It is unlikely Northern Quolls will show the same sensitivity to increased temperatures as <i>D. m. gracilis</i>, given that Northern Quolls occupy a wider altitudinal and latitudinal range and aren't almost entirely restricted to cool, upland rainforest habitats which are predicted to be highly vulnerable to increased temperatures. Northern Quolls may well be affected by climate change through predicted increased fire intensity and frequency and changes in rainfall seasonality.</p> <p>The impacts of climate change, particularly warming and associated increase in the lower cloud heights are a particular concern for the areas of the site that experience significant cloud stripping. Given the maximum altitude on the site is just over 1000 m a.s.l, climate change is likely to result in a significant reduction in the area exposed to cloud stripping which has the potential to significantly reduce the area of occupancy of several species of threatened plants including <i>Homoranthus porteri</i>. The importance of high altitude areas of largely undisturbed native vegetation as a refuge for tropical fauna and flora species should not be understated. Recent research has high-lighted the vulnerability of Cape York tropical savanna bird species to the combined impacts of climate change and increasing fire frequency (Reside, 2011; Reside et al., 2012).</p> <p>However, any discussion of the likely catastrophic impacts of climate change on the world and the region's biodiversity should acknowledge the urgent need to reduce anthropogenic greenhouse gas emissions through the adoption of clean energy source including wind energy.</p>	Volume 2 Section 15.4.7.

12.2 Air Quality

No.	Submission	Issue	Response	Section Amendment

12.3 Soils and Landforms

No.	Submission	Issue	Response	Section Amendment
385.	S006	Environmental Assessment attempts to downplay the enormous potential for serious soil erosion and massive landslide collapse that would result from this gigantic earthworks implied. All the digging, trenching, blasting, vibration and loosening of the mountain range foundations and other ground upheaval activities leads to an unacceptable high risk dangerous destabilization of the mountain range.	The potential downstream risks associated with soil erosion are well recognised by the project team. Detailed preconstruction erosion and sediment control planning underpinned by the proposed additional detailed geotechnical investigations across the site will significantly minimise such risks. The management of such risks in the Wet Tropics is well understood and codified within numerous regulatory guidelines. Compliance of the proposed detailed erosion and sediment control plans will be assessed by local state and federal agencies. Such planning typically occurs in the preconstruction design phase of such projects when it can be informed by detailed engineering design. Similarly the potential risks associated with geotechnical failures and slippages in such landscapes throughout the wet tropics are well understood. As is typical for large civil projects, this will be addressed during the detailed design and local government earthworks approvals phase.	Volume 2 Section 12.3
386.	S012	Turbine footing – testing only went to a depth of 6m. Why? What happens if you find you need to go deeper? Surely this should be investigated prior to the release of an EIS? Especially in this highly important catchment area	<p>As noted in Volume 3 Appendix 11;</p> <p>The scope of work for the investigation comprised ten (10) boreholes to a depth of 10m or 6m of solid rock coring, followed by laboratory testing, engineering analysis and reporting.</p> <p>The aim of the investigation was to identify materials, material properties and groundwater conditions to enable a geotechnical assessment and advice to be provided on the following;</p> <ul style="list-style-type: none"> • general geotechnical description of the site • provide descriptions of the soil and rock types encountered and comments on water table depth if encountered • provide engineering design parameters for the soil and rock types encountered • advice on footing design options • advice on bearing capacities • provision of advice on any other geotechnical issues or hazards that come to light during the investigation which may impact on the design or construction <p>The depth of testing was considered to be adequate to allow the above assessment to be completed.</p> <p>As noted in 2.11.1.2 further geotechnical investigations will be undertaken as part of the final turbine engineering assessment.</p>	
387.	S019	What is involved in sub-surface geotechnical investigations and why are they included as a potential visual impact?	Sub-surface investigations involve the geotechnical drilling into the ground to understand the properties of the materials encountered. Investigations are noted within the visual assessment as a potential visual impact during the pre-construction and construction stage along with other construction activities.	

12.4 Waste Minimisation and Management

No.	Submission	Issue	Response	Section Amendment

12.5 Water

No.	Submission	Issue	Response	Section Amendment
<u>Pollution</u>				
388.	S006	Site Access yet again is a deceptive attempt to minimise the ecological damage involved. There are watercourses, tributaries and pools found all along the landscape site and all these are subjected to inevitable pollution from spillage of lubricant oils and coolant oozing out from IWT and cleaning toxic fluids used during regular maintenance. The Granite Creek tributaries and the Channel waterways which are for human consumption are at serious risk of toxic pollution [5].	Appendix 31 Preliminary EMP details preventative measures.	
389.	S006	Polluted water discharge during construction works would gradually seep into the watercourses and tributaries on the mountain range site even if work is only done during the dry season.	Detailed Construction and Operation phase Environmental Management Plans identifying procedures to prevent, manage and monitor such potential impacts will be prepared during the preconstruction phase; this will be mandated by the various regulatory agencies.	
390.	S006	There is also every likelihood of watercourses being contaminated by spills and other accidental discharges during construction and also while in operation. These watercourses and tributaries of Granite Creek would seep into and contaminate the Channel system waterways. Since many remote residents far into the hinterland rely on the Channel waterways for human consumption, this represents an extreme danger of toxic water to many thousands of rural folks.	Refer to Appendix 31 Preliminary EMP and Volume 2 Section 12.5.6 Detailed Construction and Operational Phase Environmental Management Plans identifying procedures to prevent, manage and monitor such potential impacts will be prepared during the preconstruction phase; this will be mandated by the various regulatory agencies. Maintenance of downstream water quality is typically a key consideration within these EMPs including consideration of receiving water quality objectives. In this case Granite Creek is likely to be classified as a slightly to moderately disturbed aquatic ecosystem under ANZECC (2000) guidelines because of the potentially high impacts from agricultural practices and pesticide run off. The EMP will detail strategies and procedures, including a downstream monitoring program, which will ensure that existing water quality, is not further degraded.	Volume 2 Section 12.3.8
<u>Surface Flows</u>				
391.	S011	Lack of map/table of the total disturbance footprint for a project of this size, which we would expect to include detailed information about the building of the turbines, and detail such things as substation and infrastructure, topsoil dumps and sediment control, onsite (or otherwise) concrete plant and sewage treatment plants; fire control and management, erosion management, weed control and management, water management arising from baseline water quality assessments for both Oaky and Granite Creek. These appear to be ignored as inconsequential or non impacting – all things which are directly disturbing to the environment.	The range of activities and associated disturbance areas are outlined in Section 2.5 and further expanded in Section 2.6, along with any assumptions made in determining them. The total of the disturbance areas is approximately 57 hectares. A further breakdown of the disturbance areas is provided in Table 20.7. The potential downstream risks associated with soil erosion are well recognised by the project team. Detailed preconstruction erosion and sediment control planning underpinned by the proposed additional detailed geotechnical investigations across the site will significantly minimise such risks. The management of such risks in the Wet Tropics is well understood and codified within numerous regulatory “best practice” guidelines. Compliance of the proposed detailed erosion and sediment control plans with these guidelines will be assessed by local state and federal agencies and monitored regularly during and after construction. Such planning typically occurs in the preconstruction design phase of such projects when it can be informed by detailed engineering design. Similarly the potential risks and preventative strategies associated with geotechnical failures and slippages in such landscapes throughout the wet tropics are well understood. As is typical for large civil projects, this will be addressed during the detailed design and local government earthworks approvals phase.	Volume 2 Section 12.3.6
392.	S012	More detail is required on erosion management related to both access roads and turbine sites - mitigation after the fact is not an acceptable environmental protection strategy.		

No.	Submission	Issue	Response	Section Amendment
393.	S019	Although the proponents have stated the Mount Emerald plateau is not in the Barron catchment (SPP4/11: Not applicable as the site is not located within a Great Barrier Reef catchment, p.56) the vast majority of the site is included within the Barron River catchment as shown in the map below. This is very basic information accessible from a simple website search. If the proponents have failed to get this right, what else have they got wrong? It should also be noted that the latest report on reef water quality (Great Barrier Reef Report Card, 2014) ranked Wet Tropics rivers as the highest risk of all Great Barrier Reef catchments in terms of degraded water quality. The proposal is situated within the Barron catchment and should be assessed accordingly by the proponents and the Minister.	This submission is correct. The error exists in Volume 1 Table 4.2 of the Planning Section. This omission has been amended. All environmental aspects of the EIS have been assessed as within the Barron River Catchment for example Volume 2 Table 13.1 and Volume 2 Section 13.4 .	Volume 1 Table 4.2
394.	S017	There is potential for the project to impact on water quality in Oaky and Granite Creeks which is drinking water for many residents. No baseline water quality assessment has been provided. As per Section 5.14 of the EIS Guidelines, provide baseline data to enable ongoing monitoring of environmental parameters.	The proposed water quality monitoring sub plan within the Construction and Operational EMPs will nominate upstream background reference sites which will be monitored throughout the project life, reflecting the temporal and spatial variability of baseline water quality within Granite Creek. The understanding of baseline water quality will also be supplemented by a proposed preconstruction monitoring program and available local and state government databases.	Volume 1 Sections 4.4 and 5.5
395.	S019	The draft EIS states that the proponents will seek to minimise the number of waterway crossings and will “utilise existing crossings where practically possible”. If these crossings are used, they will require substantial upgrades – yet no details of these upgrades are provided. Substantial earthworks will be required and given the fragile nature of the soils, erosion and sedimentation are highly likely to occur.	The potential downstream risks associated with soil erosion are well recognised by the project team. Detailed preconstruction erosion and sediment control planning underpinned by the proposed additional detailed geotechnical investigations across the site will significantly minimise such risks. The management of such risks in the Wet Tropics is well understood and codified within numerous regulatory “best practice” guidelines. Compliance of the proposed detailed erosion and sediment control plans with these guidelines will be assessed by local state and federal agencies and monitored regularly during and after construction. Such planning typically occurs in the preconstruction design phase of such projects when it can be informed by detailed engineering design. Similarly the potential risks and preventative strategies associated with geotechnical failures and slippages in such landscapes throughout the wet tropics are well understood. As is typical for large civil projects, this will be addressed during the detailed design and local government earthworks approvals phase. Proposed earthworks will affect less than 2% of the project area, consisting predominantly of road and track works for which it is standard practice to avoid concentration of flows as much as possible. Where this is not possible, the use of best practice erosion and sediment control design will adequately maintain downstream water quality. Given the topographic position of the proposed construction activities and shallow nature of the proposed earthworks, consideration of impact on groundwater is limited to shallow seasonal perched waters, as recharge to deeper aquifers will be unaffected by the development. It is proposed to conduct the majority of the bulk earthworks such as footing and cabling trench preparation outside the peak wet season months; this will minimise any requirements to dewater these operations. Less than 2% of the area will be affected by earthworks, therefore any impacts associated with dewatering are considered to be minimal. Construction and operation phase sewage effluent will be either trucked to Mareeba for treatment and disposal via the municipal system or treated to tertiary standard and disposed via septic/irrigation in accordance with local and state regulations.	Volume 2 Section 12.3.6
396.	S019	The proponent states sediment detention basins may be built which would augment water supplies. This seems unrealistic. How large are these detention basins? Where will they be located? Has the area been factored into the disturbance footprint? Will they hold water throughout the dry season? This information should be included in the EIS. The proponents note that the Queensland Government has given permission for taking and interfering with water as construction “may result in the concentration of stormwater within drainage paths to minimize erosion and ensure all-weather access to the site” (4.1.2) .The plateau’s existing drainage lines can handle natural flows, including high wet season flows, but additional loads will result in significant erosion events in these fragile soils. This adds to the cumulative impacts on matters of National Environmental Significance. (It is unknown, for instance, whether freshwater crustaceans which are an important part of the Northern Quoll diet, will be negatively affected by increased flows loaded with sediment.) Concentrating stormwater has been a recipe for environmental damage and costly rehabilitation at high points all over the Tablelands. Barron Catchment Care recently received a \$1.8 million grant under the Federal Government’s Reef Rescue program to fix this same problem in neighbouring areas south of Mount Emerald near Tolga and Rangeview, where drainage lines have been used to channel stormwater from housing estates. The EIS should state what financial arrangements will be put in place to fund reparation when significant erosion, sedimentation and stormwater damage affects downstream properties and environments.		
397.	S022	What evidence is there to support that these turbines being built in such complex terrain with steep concave slopes that run down to many receptor locations don’t create additional problems of erosion as natural run off areas may be altered and that water aquifers will not be affected?		
Water Requirements				
398.	S017	Provide a total estimate of daily water requirements and advise the origin of the water supply.	Refer to Volume 1 Section 2.1.2	

No.	Submission	Issue	Response	Section Amendment
<u>Groundwater</u>				
399.	S010	Actual assessments on environmental aspects are unclear and contradictory. No mention is made of groundwater, blasting is stated as being 'little', yet this is clearly contradicted in the report when impact on Quoll communities are assessed, where mention is made of blasting and its effect on the quolls.	<p>Preliminary geotechnical investigations (Volume 3 Appendix 11) state; <i>"Groundwater was not encountered during investigations"</i></p> <p>As field work was conducted during the wet season (February 2013) it could be expected any intersection of groundwater tables would have occurred.</p> <p>The investigation also showed the rock to be "rippable". However, it is stated; <i>"...that an allowance should be budgeted for rock breaking works in addition to minor blasting."</i></p> <p>Subsequent Quoll impacts have thus included blasting as a potential occurrence even though it may be limited.</p>	<p>Volume 2 Section 12.5.3.1</p> <p>Volume 1 Section 8.4</p>
400.	S017	There has been no investigation of groundwater/surface water interactions and investigation is required. As per Section 5.14 of the EIS Guidelines, provide baseline data to enable ongoing monitoring of environmental parameters.	Detailed preconstruction erosion and sediment control planning underpinned by the proposed additional detailed geotechnical investigations across the site will significantly minimise such risks. The management of such risks in the Wet Tropics is well understood and codified within numerous regulatory "best practice" guidelines. Compliance of the proposed detailed erosion and sediment control plans with these guidelines will be assessed by local state and federal agencies and monitored regularly during and after construction. Such planning typically occurs in the preconstruction design phase of such projects when it can be informed by detailed engineering design.	<p>Volume 2 Section 12.5.3.1</p> <p>Volume 2 Section 12.3.6</p>
401.	S019	Surrounding residents believe the Mount Emerald plateau acts as an important recharge aquifer for the area. The plateau seems to soak up large amounts of rainfall before the creeks run in the wet season. Studies of the unique Walsh Bluff volcanics suggest buried lava flows have altered the normal, assumed relationships between ground and surface water systems (Nelson and Whitehead, 2010). The underground laval flow is at least several kilometres long, several hundred metres wide and about ten metres thick, buried under about seven metres of alluvium. As recommended by Sustainable Solutions Global, the geomorphological testing submitted with the draft EIS was too shallow when drilling down to 20 metres is proposed for the turbine footings. Further studies are also required to ensure blasting and rock drilling won't alter the existing groundwater properties.	<p>Rock anchor footings are typically fixed to the rock with an injected epoxy adhesive or grout, with a concrete slab providing the interface to the tower. Holes are drilled to a depth of around 20m with a diameter of around 200mm and have cables placed inside before grouting.</p> <p>Given the relatively small size of the drill holes in comparison to the noted lava flows (several hundred metres wide), and the spacing of turbines (around 400m apart) it is unlikely any penetration into a lava flow would cause a disruption to the flow of water through it.</p>	<p>Volume 2 Section 12.5.3.1</p> <p>Volume 2 Section 12.3.6</p>

13 MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

No.	Submission	Issue	Response	Section Amendment
402.	S006	World Heritage Properties should not be allowed to minimize the overall impact of this IWT project as this industrial behemoth sprawl is totally out of character and intent of this charter for nature conservancy.	No response necessary	
403.	S006	National Heritage Places is blatantly lying when it tries to impress that this wind project is unlikely to adversely affect the controlling provisions listed in Matters of National Environmental Significance.	No response necessary	
404.	S009	Knowledge gaps in flora, fauna and the potential impact of the proposed development still exist.	No response necessary	
<u>Avian Species (Birds and Bats)</u>				

No.	Submission	Issue	Response	Section Amendment
405.	S006	Birds and bats would be fatally attracted to these chopping blades even from afar in their preferred areas of congregation [16].	It has been acknowledged in the EIS that wind turbines have the potential to attract insectivorous bats (Section 17.2.2.1) however there is little evidence for turbines attracting diurnal or nocturnal birds from large distances. There is little adequate research in Australia examining the impacts of wind turbines on bird and bat populations e.g. comparison of pre-construction mortality risk modelling with actual post-construction mortality.	
406.	S006	Listed Migratory Species has 16 migratory bird species that are known to be in the area and therefore the reported field survey cannot be trusted to exclude any of these. These are mostly uniquely majestic birds that must not be allowed to be butchered in the hundreds every year to extinction.	Extensive bird utilisation surveys were conducted on the project site and collision risk modelling was conducted for those migratory species deemed at high risk of turbine collision for which sufficient data was available. Further research is required in order to adequately quantify the risk to some migratory species, especially those that occasionally fly at night time.	Volume 2 Section 13.7
407.	S006	Migratory Species Significant Impact Assessments downplays the real truth on wind turbines well-known devastating butchering of these majestic birds [27]. It is irrelevant to talk of other nearby foraging and roosting vegetated wetlands because these birds would inevitably fly inadvertently into these chopping blades. There must be zero tolerance for criminal butchering of these precious and regally elegant birds. Not a single kill is to be tolerated. RACL has no licence to kill and must never be allowed one to murder these birds in the thousands.	No response necessary	
408.	S008	Raptors which use the wind currents of the site which have their activity patterns disrupted in addition to direct risk of collision.	Turbines were removed from Walsh's Bluff to prevent disruption to activity patterns of Black Kites over the summit, as it was observed this area experienced a high level of activity.	
409.	S008	It is unfortunate that Australian wind farms have not been required to monitor bird or bat strikes to any great extent or to identify changes of fauna use of an wind farm site. Such information would be invaluable in determining the best sites for such facilities	It is a responsibility of the federal government to make open reporting of data mandatory so it is available to other potential proponents and researchers attempting to design wind farms and mitigation /preventative measures.	
<u>Terrestrial Species</u>				
410.	S006	It is also extremely pertinent to question why this wholesale habitat lost for Australia's iconic wildlife species like wallabies is totally ignored. There must surely be a fair reckoning for the tragic massive lost of less endangered wildlife species. Why should this regional extinction of wallabies in the heart of Atherton Tablelands be allowed? Protection must extend to all other uniquely Australian wildlife species.	Site clearance totals 57ha of a 2422 ha site (2.3%). The abundance of macropods commonly referred to as wallabies, particularly <i>Macropus parryi</i> , the Pretty-faced or Whip-tail Wallaby was found to be very low. It is highly unlikely that even in the event of the total clearing of all vegetation on the site, that this species could become even regionally extinct given the enormous extent of suitable habitat occurring off the site.	
411.	S009	It is acknowledged that the Mt Emerald area is known for its concentration of species of conservation interest. While several are recognised in the EIS there are several others listed under the Queensland Nature Conservation Act 1992 but not currently listed under the EPBC Act.	There are several species listed under the Queensland NCA but not under the EPBC. This is because the EPBC lists nationally threatened species, where the QLD NCA lists those species that are threatened within the state (some of which are also threatened at the national level).	Volume 2 Section 13.1.1
412.	S009	The development phase will cause transects of various widths to be opened in relatively undisturbed regional ecosystems. Such action of opening up of vegetation has in other areas allowed increased predation of fauna and this has not been adequately addressed.	It is difficult to quantify the impact of possible increased predator activity along the road network on the native fauna of the site.	Volume 2 Section 15.2.4
<u>Credibility of Fieldwork</u>				
413.	S006	Listed Threatened Species gives Table 13.1 which is a result of field survey done and interpreted by a group influenced directly or indirectly by RACL. Therefore it is more than likely inherently prejudiced in support of conclusions favourable to RACL. There is a need for an independent field survey with participation of some local community members to get a more accurate analysis. How do we really know, for instance, that the Red Goshawk does not nest near or in the site? If these large raptors even sometimes fly anywhere close or breed nearby, it is cause for great concern that they would be regionally extinct. Similarly, the Masked Owl would also be decimated. These birds are by nature fatally attracted to wind turbines [25].	RPS is an independent consulting company engaged by the client. All ecologists undertaking the surveys have decades of collective experiences working in the private industry, non-government conservation organisations, university and government departments. The current system of environmental approval allows the proponents to engage consultants to conduct environmental assessments. Few wind farms have been constructed within the known distribution of either Red Goshawks or Masked Owls. Masked Owls are unlikely to be fatally attracted to wind turbines given they are likely to predominately forage well below the lower rotor sweep height. There is no evidence to	Volume 2 Section 13.6.2 Volume 2 Section 13.6.4

No.	Submission	Issue	Response	Section Amendment
			<p>suggest that owls are “fatally attracted” to wind turbines. For example, there is only one confirmed case of a Barn Owl (<i>Tyto alba</i>) being injured or killed by wind turbines in the UK despite the presence many thousands of wind turbines.</p> <p>(http://www.barnowltrust.org.uk/infopage.html?id=296)</p> <p>Red Goshawks typically nest in very tall trees within 1 km of permanent water which excludes much of the project site. Any increase in the mortality rate of Red Goshawks is of major concern, however, given the enormous potential home range of the species and the absence of known nest trees on or in the vicinity of the site, the risk of turbine collision is likely to be very low.</p>	
<u>Management Plans</u>				
414.	S012	Little detailed information is available on an impact management plan for vulnerable and protected fauna and flora – mitigation after the fact is not acceptable and not always possible with already threatened species.	No response necessary	
415.	S012	Where is the management plan to minimise impact on flying and migratory species – or do they not matter? We see large families of Sarus Crane and or Brolga flying over the proposed site every year, let alone the numerous smaller migratory and day / night flying species	<p>Species specific management plans will be developed based on conditions of an approval process</p> <p>Refer to EIS Volume 2 Sections 13.6.8, 13.6.9, 13.6.10, 13.6.11, 13.6.12, 13.7 and 13.8, for further details</p>	
<u>Research</u>				
416.	S019	There is little scientific information about the impacts of wind farms on wildlife. In the scientific literature, there are repeated calls for longer term, scientifically robust studies before and after wind farms are built to understand their impacts on wildlife species and to compare different sites (Carrete et al. 2009, Cryan and Barclay 2009, Kunz et al. 2007b, Kuvlesky et al. 2007, Masden et al. 2009a, Stewart et al. 2007). Wind farms are uniquely suited for experimentation (by controlling turbine speed, activity, and placement) and these studies would lead to significant gains in understanding about how wind farm design and operation affects wildlife (Cryan and Barclay 2009). But the wind industry has a history of not cooperating with researchers, and rarely makes data publicly available. Hull and Muir (2013) note that only two wind farms in Australia, Bluff Point and Studland Bay in Tasmania, have made their bird and bat strike data available to researchers.	<p>While wind farms have the ability to modify and adjust turbine speed and output changing the location is not a simple task post construction.</p> <p>Much of the scientific studies undertaken as part of the development process are made publically available through processes such as this EIS.</p> <p>Obligations to provide post construction studies as part of permit conditions are met, however issues arise as to ownership of reports submitted which may complicate public release.</p>	
<u>Mitigation</u>				
417.	S019	The proponents state that “the primary preferred option in order to minimize and offset impacts is micro-siting of wind turbines”. Micro-siting will not alter the significant area which will be cleared for roads, crane pads, laydown areas and turbine areas. It doesn’t matter how many detailed field investigations and surveys are undertaken, the repeated claim that micro-siting “is going to ameliorate and mitigate impacts during and after construction” is not defensible. If it is a feasible option, why hasn’t it already been done? Micro-siting should be undertaken prior to the submission of the final EIS.	While micro-siting will not alter the area to be cleared for roads, crane pads, laydown and turbine areas, it will allow the types of areas and species encountered to be considered prior to the clearance occurring.	

14 FLORA

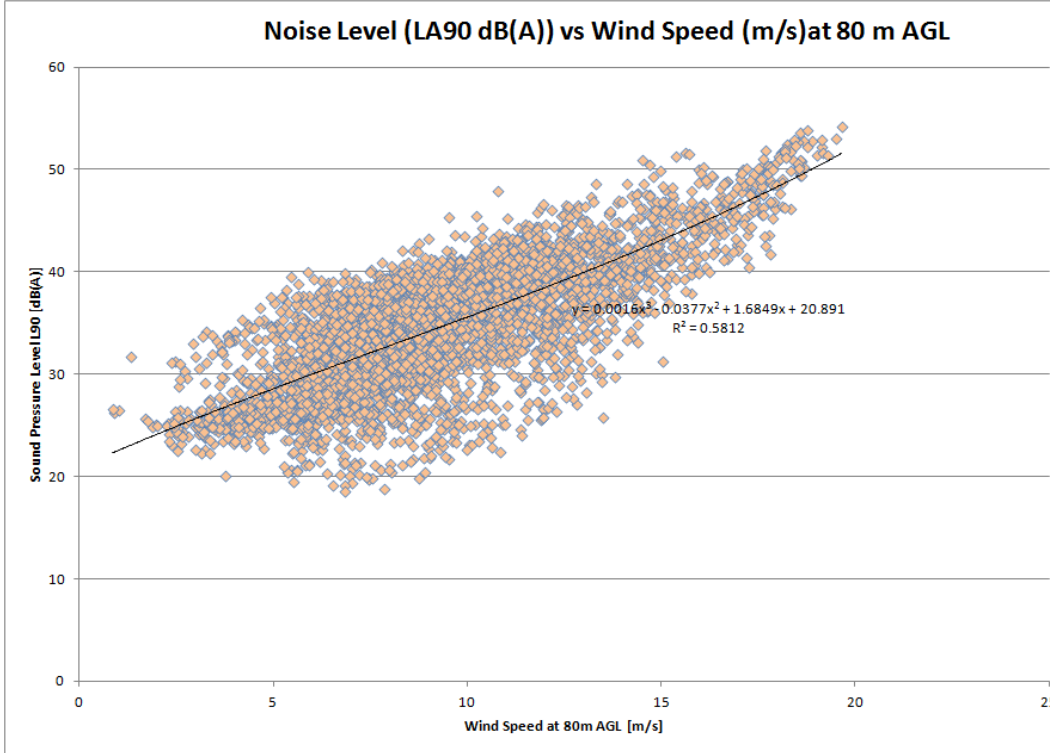
No.	Submission	Issue	Response	Section Amendment
<u>Wet Tropics Bioregion (>900m agl)</u>				
418.	S001	I do not believe that the building of turbines at some of the proposed locations should proceed. These include all those sites above the 800 to 900 metre contour. There are plant communities occurring above this altitude that are rare and threatened, and especially those growing on rock pavements and rocky ridges. Construction works/ on ground impacts will be significant and pose the greatest threat to the natural integrity of the area; threats such as soil disturbance and weed invasion.	The importance of the areas above 900 m for the conservation of threatened plant species has been clearly acknowledged by RPS ecologists. Chapter 14 details the avoidance and mitigation measures that will be undertaken to prevent impacts on conservation significant plants. Further micro-siting of turbines will be undertaken which will consider the detailed botanical surveys undertaken within 100m of each proposed turbine location and road alignment.	
419.	S003	Despite the proponent's compromise proposal of removing a number of turbines from the high elevation zones in the Wet Tropics bioregion section; plus the poorly compiled "Offsets Plan", which makes several misleading and incorrect claims of significant or sufficient areas of land with habitat for <i>Grevillea glossadenia</i> and <i>Homoranthus porteri</i> adjacent to the project site, the efforts at conservation of a considerably valuable habitat and vegetation area are inadequate.		
420.	S003	The associated Flora and Vegetation report to the EIS brings the value of the Wet Tropics bioregion section of the project site into focus and draws specific attention to several important environmental determinants and characteristics of that section that should be of immediate concern to government assessment agencies at the Federal and State levels. There are widespread historical examples of how modification of very similar landforms, with similar edaphic and vegetation features have not recovered after mining in the Watsonville, Herberton, Irvinebank and Stannary Hills localities. Again the associated EIS report identifies the recovery of track verges to the original floristic component as unlikely in zones above 900 m where the flora diversity hotspots have been identified. Constructively, the EIS (flora section) does acknowledge the lower environmental constraints of the Einasleigh Uplands bioregion section north of the powerline.		
421.	S003	In relation to ameliorating impacts, a conservation zone map has been compiled which is based on the 900 m elevation contour and detailed habitat mapping for conservation significant plants. This map has not however, not been applied in earnest by the proponent. The less than effective gesture on behalf of RAC Australia of removing a few turbines (originally in inaccessible, costly construction aspects of the site), fails to protect a critical section of core habitat for several conservation dependent plants, and a number of turbines and interconnecting tracks will cause irreversible damage and modification to a pristine area.		
422.	S008	The areas most subject to disruption are the higher ridge tops which, in the southern section support a plant community with a very restricted distribution and includes a number of rare and threatened plant species. In addition to the proposed loss of much of this ecosystem directly to windmill sites, road and related infrastructure, the disruption to wind flows by the action of the windmills affecting cloud on the higher ridges, will disrupt the cloud stripping on which this ecosystem depends.	Reduction in the vital input of soil moisture via cloud stripping on the higher ridges due to disruption of wind flow from wind turbines is not well understood at present; therefore it is not possible to make an assessment of the likelihood of disruption to this important process. However, it should be noted cloud stripping occurs during periods of low wind speed and hence low turbulence created by the local topography, as such any additional disruption to wind flow caused by the wind turbines under these conditions is expected to be negligible.	Volume 2 Section 14.5
<u>Mitigation</u>				
423.	S006	Flora admits that this site has "high floristic diversity and unique plant communities" but attempts to suggest that it is possible to avoid it's destruction with the listed measures in Table 14.3. There is no way that these measures would suffice to mitigate what would evidently result in irreversible massive flora damage that would change forever the pristine natural rugged iconic mountain ranges. Generations to come would lament the irresponsible, heart-breaking stupidity ruining of this once mighty majestic mountains. All exclusively in the interest of greedy and unscrupulous wind developers and their enablers.	The strategies outlined prioritise avoidance measures i.e. conduct surveys to identify key areas for these threatened species and avoid locating infrastructure where this is feasible.	

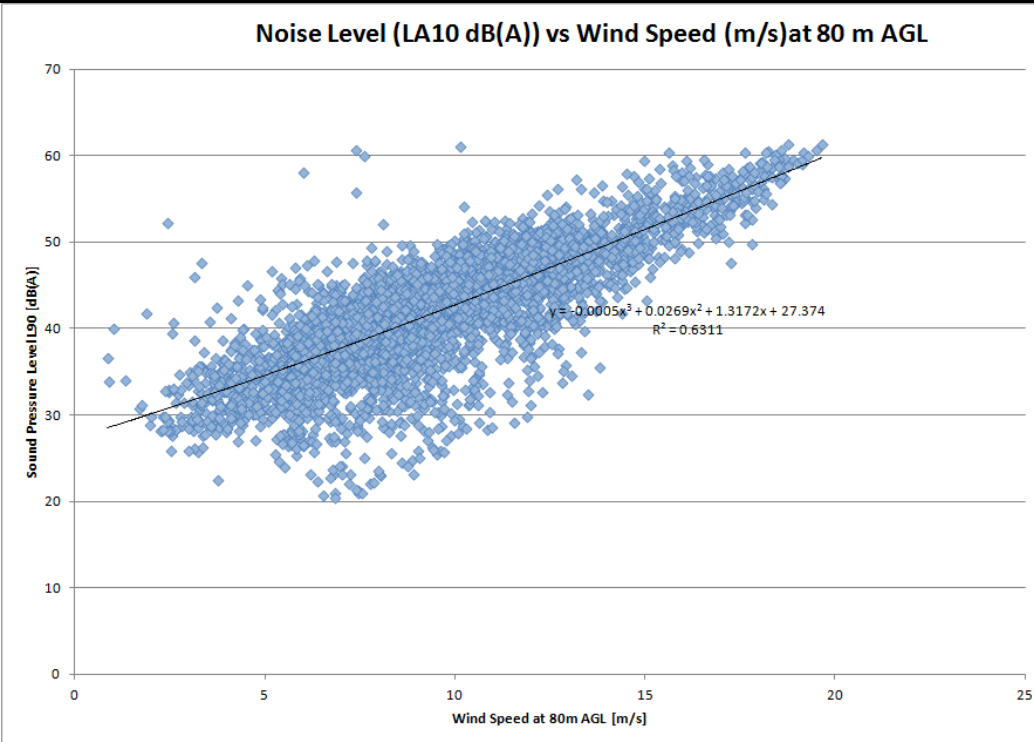
No.	Submission	Issue	Response	Section Amendment
424.	S017	The probability of reducing the significance of impacts will be considerably enhanced if the range of mitigation strategies such as weed management plans, rare and threatened plant translocation plans, and general environmental management strategies are implemented and progressed for the life of the project.” Under these circumstances, provide a Rare and Threatened Plant Translocation Plan for incorporation in the EIS.	<p>The proponent has committed to the production of environmental management plans for fire, invasive weeds, feral animals, threatened species etc. However, the development of this is dependent upon approval and the conditions imposed on the project.</p> <p>Refer to Attachment 31 Preliminary EMP for further information regarding timelines and relevance of Threatened Plant Translocation Plan.</p>	
425.	S017	Investigations in relation to the success or otherwise of vegetation trials MUST be undertaken prior to any construction, or approval. Provide vegetation trial details in the EIS for the Minister’s consideration.	<p>It is agreed the effectiveness of translocations/propagation of the threatened species is currently not well understood.</p> <p>We concur that there is currently little evidence for successful transplantation of the threatened species. Attempts at propagating of either <i>Homoranthus porteri</i> or <i>Acacia purpuropetala</i> in a nursery environment have typically met with very low success (Yaruga Nursery, pers. com.). Rehabilitation trials have not been feasible due to time constraints and the absence of disturbed rock pavement sites occurring above 900 m a.s.l to conduct such rehabilitation trials. To enable trials to occur an actual disturbance area would need to be first established.</p> <p>RPS ecologists suggest the avoidance of clearing/disturbance of known populations of these threatened plant species as such the aim is to protect rather than regenerate these particular locations.</p>	
426.	S017	Homoranthus porteri demonstrate in the EIS how it is proposed to rehabilitate the rocky pavements which have been destroyed by excavation in order to regenerate these endangered plants.		
427.	S019	The Environmental Risk Assessment highlights the limited mitigating measures which can be implemented to reduce the risks involved with clearing listed plants and montane heath habitat. We reject the assumption that micro-siting of turbines offers any real mitigation, when turbines simply should not be placed there in the first place. The proponents have had several years to provide detailed site surveys of each turbine site. Photographs and site surveys of each site should be provided as part of the final EIS, in order for the Minister to make an informed decision about the impacts of the proposal.		
428.	S019	We can find no evidence that transplanting or propagating the plateau’s threatened plant species will work. We recommend the risk assessment should be undertaken by an independent expert assessor rather than a consultant paid by the proponent.		
429.	S019	The challenges of restoring degraded native habitat and rehabilitating the disturbed wind farm site should not be underestimated, and the high risk of failure must be considered. The type of soils, slope and terrain of the Mount Emerald plateau will be extremely difficult if not impossible to rehabilitate. Give us proof that it can be achieved by undertaking trials and including the results in the final EIS.		
Clearing Areas				
430.	S017	Page 39 of the draft EIS Flora Report states that 6ha of land will be cleared for turbine construction pads and “areas given in this report are minimum, and it is expected that larger areas of clearing will be required for certain construction aspects of the project”. In addition it states the “network of tracks will require 51ha of land to be cleared and modified”. The EIS advises that the footprint of the project is 57ha, but this appears to be limited to minimum requirements for turbine pad and access pad tracks clearing. This is a severe underestimate of the clearing required. As required by Section 5.5(b)(iv) & (v) and 5.5(g) of the EIS Guidelines, provide a table and detailed map of total permanent and temporary vegetation disturbance areas showing:	<p>Since the EIS Flora Report was finalised further information was made available on the proposed project providing a more accurate assessment of the clearing activities. The area of impact considers road widths of 10m as a standard across the site which is conservative as the majority of the road widths will not exceed 6 metres. Likewise areas for construction aspects are also considered conservative rather than the minimum.</p> <p>Table 20.7 outlines the respective clearance areas.</p>	Volume 2 Section 20.4
431.	S017	If any of these cleared areas are to be located off site, this should be clearly indicated, including where they are to be located and the area of each. Under these circumstances the cumulative social, environmental and economic impacts, short and long-term, of these proposed developments must be identified as per Section 5.10.4 of the EIS Guidelines.		

No.	Submission	Issue	Response	Section Amendment
<u>Weed and Pest Management</u>				
432.	S017	In view of the impact that weeds could have on the environment, provide a Weed Management Plan for incorporation into the final EIS.	A Pest Management Plan has been developed and will continue to be updated and amended following approval and conditioning of the proposed project. The owners of the land continue to conduct weed management activities on the proposed MEWF site.	Volume 3 Appendix 33B
433.	S017	As per Section 5.14 of the EIS Guidelines provide preconstruction baseline assessment of weeds at the project site. This baseline assessment will enable subsequent monitoring and management of weeds, according to the Weed Management Plan.	As part of the management assessments and treatment of weeds have been performed on site and will continue to be undertaken throughout each stage of the development, construction and operation of the wind farm.	
434.	S019	The proponents have not considered the increased disturbance during Pre-Construction and Construction will escalate the risk of pathogens such as phytophthora cinnamomi and myrtle rust infecting listed species. These risks should be assessed and submitted as part of the final EIS.	Refer to Volume 2 Section 14.7 where this risk has been considered in more detail with mitigation strategies addressed.	Volume 2 Section 14.7
<u>Omissions and Concerns</u>				
435.	S017	Acacia purpureopetala This endangered plant has not been properly considered in the draft EIS. Undertake further investigations and an assessment of likely impacts for inclusion in the final EIS.	This species is considered in Section 13.5.3. Despite numerous and extensive field surveys, this species was not recorded on the site. In the absence of any known population of the site, it is not possible to make an informed assessment of the likely impact on the species. It is clearly acknowledged that, if the species is found to occur on the site, there is the potential for adverse impacts including disruption to regeneration, flowering and seeding, introduction of plant pathogens etc.	
436.	S022	We have today sighted evidence that protected vegetation within the proposed construction area has already been illegally poisoned prior to any approvals being sought.	There has not been any poisoning of protected vegetation undertaken by the owners of the land or the proponents of the project. It would seem this statement provides evidence the submitter has trespassed onto the site. This in itself is or particular concern in regard to the control and spread of weeds on site.	Volume 3 Appendix 33B

15 NORTHERN QUOLL IMPACT ASSESSMENT

No.	Submission	Issue	Response	Section Amendment
437.	S004	We must remember that the Northern Quolls are listed as an Endangered Species. By the reports own admission, this site is important in maintaining the viability of the species and is their most secure site. Also, the proponent admits that the Quolls population is at risk of extinction by the wind farm and even a small number of deaths could impact their viability. This is very clear, and could never be misinterpreted, other than refusal of the project.	Initial population and habitat suitability modelling needs further extrapolation and an understanding of patterns of gene flow across the landscape before any degree of certainty can be assigned to the results.	
438.	S008	The Mt Emerald area appears to be particularly important for Northern Quoll, providing relatively undisturbed habitat compared with much of the other identified habitat to which it provides connectivity.	No response necessary	
439.	S008	The estimated total population appears to be based on the Mt Emerald numbers. This may not be valid given the difference in degree of disturbance to other habitat areas and the general lack of knowledge of the species. Impacts affecting other populations include factors such as the presence of domestic animals, changed land use and fire frequency, settlement patterns and infrastructure, etc.	Other populations of Northern Quoll have been sampled in the region. The total estimated FNQ metapopulation was based upon abundances determined from camera trapping surveys conducted in various locations in the region including the Lamb Range/Davies Creek, Petford, Walsh River etc. The sites that were surveys covered a range of habitat types and degrees of disturbance including cleared land. Refer to Volume 3 Appendix 21	

No.	Submission	Issue	Response	Section Amendment
440.	S009	the threat to the endangered Northern Quoll (<i>Dasyurus hallucatus</i>) is a significant major concern. Obviously other fauna are subject to potential threat and it is questionable if these threats has been adequately addressed. It appears that it is still unknown if disturbance of the ridgelines will have a significant impact on these quolls. The impact of noise generated by the turbines on the quolls is unknown and has not been adequately addressed.	<p>The proponent has committed to preconstruction research to determine these population characteristics and potential threats.</p> <p>The potential impacts to other fauna, particularly threatened species known or predicted as likely to occur on the site, have been addressed in the relevant sections of the EIS. Further research and monitoring is explicitly proposed in the EIS in order to more accurately quantify the likely impact of the project on threatened species.</p>	Volume 2 Section 15.3.2
441.	S017	Turbine sites will be located mostly on these sensitive ridgelines and this is clearly unacceptable especially because Northern Quolls only have 1 or maximum 2 breeding seasons. Mitigations measures suggested are neither proven nor realistic. What other mitigation measures are available?	<p>Further research is proposed to provide additional knowledge on the significance of the ridge habitats to the Northern Quolls.</p> <p>There is no published research examining the impacts of construction noise (including explosive blasting, land clearing) and turbine operation noise on Northern Quolls or any other Australian native fauna. The uncertainty as to the impact of noise on the northern quoll population is clearly acknowledged.</p>	
442.	S017	Far from 57ha being the area of site impact, it is more likely that the Endangered Northern Quolls will lose the use of the entire site and simply abandon their dens for other more exposed areas of human habitation. The alternative is that they choose to stay on the site and become prey for predators because of noise interference to normal alerting behaviours. There is no way to mitigate for this impact. Clearly a wind turbine development on the project site would be an unacceptable use which would negatively impact on Northern Quolls.	<p>The proponent has undertaken background noise monitoring on-site (August – September 2014) to better understand the existing natural levels experienced by the Northern Quoll. Results (Figure X below) show existing noise can vary with wind speed from 30dBA to 60dBA across the operating range of the wind turbines.</p> 	

No.	Submission	Issue	Response	Section Amendment
			<p>Noise Level (LA10 dB(A)) vs Wind Speed (m/s) at 80 m AGL</p>  <p>It is unclear as to why exactly the sub-population of Northern Quolls would in fact abandon the entire site for “other more exposed areas of human habitation”. There is no literature available to provide information to support that submission.</p>	
443.	S019	It has become increasingly obvious that the EPBC Act and current EIS processes are not protecting matters of National Environmental Significance. <i>Australia's Fifth National Report to the Convention on Biological Diversity: Draft Report</i> shows that biodiversity is decreasing on all fronts. The Draft Report notes recent reports of major declines in mammals in northern Australia were unexpected and are raising concerns among ecologists. Quolls are specifically mentioned in <i>Case Study 7: Native Mammals in Northern Australia</i> . Habitat modelling has shown that 72 per cent of predicted high and very highly suitable habitat in Far Northern Queensland is found within a 55km buffer of the Mount Emerald site boundary. We have previously explained this region is experiencing multiple pressures from rural residential subdivisions and clearing of open woodland for sugar cane. Our immediate area is entering a period of catalytic growth and development and the wider region is also experiencing rapid change. The Aquis mega-resort 50km away is expected to ramp up development and settlement on the northern Tablelands. We beg the Minister to carefully consider whether the Northern Quoll meta-population will survive these cumulative impacts, and refuse the construction of an unwanted and un-needed wind farm in the middle of this important quoll refuge.	No response necessary	
444.	S019	The proponents claim only 57 hectares of foraging and denning habitat will be lost. We raised the inadequacy of the proponents' calculations of habitat loss in our 2012 submission to the Department, yet this issue remains ignored and unaddressed. The figure of about 57 hectares used in Table 15.1: Significant Impact Assessment is a gross underestimate of the true level of disturbance, fragmentation and alienation. The Northern Quoll National Recovery Plan has clearly highlighted major issues with habitat destruction and fragmentation. Modelling habitat preferences of Northern Quolls in a region on the outskirts of Darwin exposed to various degrees of fragmentation and habitat loss showed a strong negative response to fragmentation (Rankmore and Price, 2004 in the National Recovery Plan).	<p>The expert report produced by Burnett <i>et al</i> (2013) included in the EIS (Volume 3 Appendix 18) states;</p> <p><i>“It is unknown how the quoll population at the site will be affected over subsequent years as we lack any data or way of predicting changes to ecosystems carrying capacity that might occur as a result of construction and operation of the MEWF site”.</i></p> <p>It is not possible to accurately quantify the reduction in the total area of suitable habitat due to alienation and fragmentation. There is little research quantifying the impact of similar industrial developments e.g. mines, road networks etc on northern quolls or any other Australian fauna.</p>	

No.	Submission	Issue	Response	Section Amendment
			The Rankmore and Price (2004) study predicted that Northern Quolls in the vicinity of Darwin would disappear from landscapes with less than 70% woodland within a 4 km radius. It is not valid to make comparisons between the impacts of broad scale clearing for urban/agricultural development described in the Rankmore and Price (2004) study and the proposed development. It is unlikely that the proposed road networks will represent a barrier or a filter to the movement of Northern Quolls throughout the site, which is characterised by large open areas of bare rock pavements. In addition, no night time traffic is proposed to occur on the road network with the exception of ecological field surveys and emergencies so vehicle mortality and disturbance due to noise and vibration is likely to be minimal when animals are most active and is unlikely to adversely affect the species on the site.	
<u>Noise Impacts</u>				
445.	S006	Northern Quoll Impact Assessment cannot pretend that this IWT project is not the ultimate death sentence for these rare endangered species. Most wild animals are much more sensory acute than humans and would be extremely distressed and disoriented not only during the construction phase but also when the wind turbines operate to pollute the entire landscape with deadly infra-sounds and low-frequency sound disturbance. Nothing would save them from extinction in this bioregion if this dastardly IWT project is approved.	Further research is required in order to determine the significance of the Mt Emerald sub-population to the FNQ meta-population. It cannot be stated with any certainty that the project will result in the extinction of the FNQ meta-population. The impacts of various sources of noise (intermittent construction noise and continuous operation noise), including infra-sound on northern quolls are currently not understood.	Volume 2 Section 15.3.1.2 Volume 2 Section 15.3.2
446.	S017	Demonstrate how it is proposed to enhance or protect environmental values at both the wind farm site and proposed offset site during pre-construction, construction and operation, based on background +10dBA or other noise level which can be substantiated as being appropriate for endangered species at the project site.	The proponent has undertaken background noise monitoring on-site (August – September 2014) to better understand the existing natural levels experienced by the Northern Quoll. Results show existing noise can vary with wind speed from 30dBA to 60dBA across the full operating range of the wind turbines. Modelling of wind farm noise shows levels across the site vary from 45dBA to 55dBA.	
447.	S017	Provide details of how it is proposed to monitor noise impacts (including audible and inaudible noise) on fauna on both the project site and biodiversity offset site during pre-construction, construction and operation. As a minimum, baseline population surveys would be required at both sites. If the offset area is already at carrying capacity, it will not be available to quolls leaving the project site.	There is little research examining the impact of artificial noise on Australian fauna, with the exception of a single study examining the impacts of traffic noise and volume on two bird species in Victoria (Parris and Schneider, 2009). Studies have found that animals living in areas exposed to anthropogenic noise can suffer reduced reproductive success which may result in the exclusion of species from habitats that would be otherwise suitable (Slabbekoorn and Ripmeester, 2008). Rabin et al. (2006) found that California Ground Squirrels in close vicinity of turbines exhibited elevated levels of anti-predator behaviour compared to those at control sites. It is proposed to continue ecological studies of Northern Quoll in the preconstruction, construction and operation phase of the project to understand patterns of habitat distribution and abundance. The data obtained during the baseline preconstruction data studies will enable the impacts of the project during the construction and operation phase on the species to be examined e.g. is quoll abundance during pre and post-construction the same. However, it would be difficult to separate the effects noise from direct and indirect effects of the project e.g. vibration, dust, visual disturbance (e.g. shadow flicker), effects of fragmentation, in addition to other abiotic and biotic factors e.g. rainfall, fire, drought, predator density, food availability etc. We have undertaken studies to provide estimates of quoll population size within the site and the surrounding region.	
448.	S019	Habitat loss resulting from noise is often associated with roads, but wind turbine noise has also been discussed in the literature on wildlife and wind energy. In reply to the Council's Information Request, the proponents state the comprehensive EIS will address the health and noise impacts on fauna (such as quolls): "The concept of wind farm noise has been addressed throughout the EIS in respect of the various species under investigation." Studies suggest noise increases of 3 to 10 dBA correspond to 30 to 90 per cent reductions in alerting distances for wildlife (Barber et al. 2010). Researchers have suggested that the noise of operating turbines have also led animals to alter other behaviours: in a comparison between a control and a turbine site, animals at the turbine site showed greater vigilance and anti-predator behaviour, which authors concluded was an attempt to compensate for the difficulty of responding to auditory communication within the	The reported evidence of adverse impacts of turbine-related infra-sound and low frequency sound on the Danish farmed minks is anecdotal and has not been submitted to a peer reviewed scientific journal therefore it is of little value as other factors such as disease could not be discounted. Empirical evidence for the adverse impacts of low frequency noise and infra-sound on animals, including Northern Quolls is currently lacking. However, studies have outlined potential mechanisms by which such noises could interfere with animals including exciting subconscious pathways and amplitude modulation of audible sounds (Lichtenhan and Salt, 2013)	Volume 2 Section 15.3.2

No.	Submission	Issue	Response	Section Amendment
		wind farm site. In Denmark, a mink farm has reported 1600 stillborn baby minks since four 3MW turbines were commissioned earlier this year. The farm's veterinarian said before the turbines, 6,800 mink would get pregnant and 5-10 would miscarry. This year 320 females had miscarriages. In addition, 963 minks were sterile and another 2,280 rejected male minks and failed to mate. Even among those that successfully gave birth, litter sizes dropped from 5-6 pups to 3-4 and there were also numerous birth defects, most commonly the lack of eyeballs. The farm reports the mother minks are also displaying new aggressive actions by attacking their young pups. The veterinarian concluded that there were no other changes in habitat or food that could account for these devastating losses. This report aligns with studies on fish and frogs which have shown that low frequency vibrations affect developing embryos, in particular neural tube defects, left-right patterning and abnormal tails in tadpoles. The study concluded that low frequency vibrations are toxic to aquatic vertebrates (Vandenburg et al, 2012).		
449.	S019	The proponents state that quolls may be excluded by the 55dba noise at ground level of the operating turbines. Studies have shown noise levels under turbines have caused increased cortisol levels, behavioural disturbances and lower weight gains in geese (Milokajczak et al, 2013). Aitken et al (1994) speculate that for quolls, the low-frequency part of the hearing range concerns the recognition of adult conspecifics, the mid-frequency is important for the detection of pouch-young, and the upper range may be particularly concerned with prey/predator detection. A simple noise contour map in Appendix F shows most of the plateau is subjected to over 50dB, but does not specify the wind speed. The proponents do not state how far the 55dB zone will emanate from each turbine under various conditions and do not provide the total area affected. It is also unknown whether this area is included in the offset amount of 57 hectares. United States guidelines state noise should not exceed 10 dB above the background noise level "in or near habitat of wildlife known to be sensitive to noise during reproduction, roosting, or hibernation; or where habitat abandonment may be an issue" (USDA Forest Service, 2011a). As background noise is much lower than 45dBA on Mount Emerald, the wind farm would not meet the US guidelines. It is clear that north America's primary management strategy to avoid or minimize the effects of habitat loss is to place wind farms away from species of concern and areas of high wildlife value (Oregon Columbia Plateau Ecoregion Wind Energy Taskforce 2008, U.S. Fish and Wildlife Service 2012, USDA Forest Service 2011a, USDI BLM 2005b, Washington Department of Fish and Wildlife 2009). In both Oregon and Washington state guidelines, developers are advised to develop wind energy facilities on agricultural or disturbed lands, use existing transmission corridors and road networks, or place transmission corridors and other linear facilities in disturbed lands.	<p>It is proposed to continue ecological studies of Northern Quoll in the preconstruction, construction and operation phase of the project to understand patterns of habitat distribution and abundance. The data obtained during the baseline preconstruction data studies will enable the impacts of the project during the construction and operation phase on the species to be examined e.g. is quoll abundance during pre and post-construction the same. However, it would be difficult to separate the effects noise from direct and indirect effects of the project e.g. vibration, dust, visual disturbance (e.g. shadow flicker), effects of fragmentation, in addition to other abiotic and biotic factors e.g. rainfall, fire, drought, predator density, food availability etc.</p> <p>We have undertaken studies to provide estimates of quoll population size within the site and the surrounding region.</p> <p>The proponent has undertaken background noise monitoring on-site (August – September 2014) to better understand the existing natural levels experienced by the Northern Quoll. Results show existing noise can vary with wind speed from 30dBA to 60dBA across the full operating range of the wind turbines.</p>	Volume 2 section 15.3.2
Mitigation				
450.	S019	The proposed mitigation strategies to protect the Mount Emerald quoll population are inadequate and conflict with the draft National Wind Farm Development Guidelines (2010) and the Northern Quoll Referral Guidelines which is to redesign the wind farm layout to avoid areas of high conservation significance. The results of trapping and collaring quolls in 2013 failed to confirm whether the rocky ridge areas proposed as turbine sites are favoured maternal den sites. However, early results suggest females are tending to use dens on rocky ridges. Regardless, the proponents have presented the same turbine layout with the majority of turbines on rocky ridge lines. They have made it clear that moving the turbines from the ridgelines is economically unviable. They have also made it clear that construction must take place during breeding times, against the recommendations of the Referral Guidelines for the Northern Quoll. The only alternative is to attempt to trap and remove quolls. No examples have been provided where this technique has been successful at other major construction sites, and no statistics are provided about the percentage success rates. The proponents' consultant acknowledges there have been no studies in Australia or elsewhere examining the effectiveness of the use of spotter/catchers to minimize mortality, and "it is likely only a small proportion of all individuals of terrestrial fauna	<p>Section 15.2.1.2 states the population of Northern Quolls on the wind farm site to be 53 individuals, and this equates to between 0.35% and 1.2% of the entire estimated FNQ population (Appendix 18).</p> <p>Figure 15.1 shows the potential foraging and denning habitat to include the entire site area of 2,422 ha.</p> <p>The total disturbed area from the proposal is shown in Table 20.7 to be 57 ha.</p> <p>Using some simple math, the density of quolls on site is 53 in 2,422 ha or 45.7ha / quoll. Thus the number expected to be encountered in the disturbed area is 57 / 45.7 which is 1.2 quolls.</p> <p>This is a very basic assumption and does not consider the likely usage of the disturbed areas as preferred habitat by the quoll, as such research will be continued to identify areas of high value, with these areas avoided if necessary.</p> <p>The mitigation measure proposed to search and relocate (trapping, detection and telemetry)</p>	Volume 2 Section 15.6

No.	Submission	Issue	Response	Section Amendment
		species inhabiting tree hollows, fallen timber, rock piles and burrows are able to be located and removed prior to being killed.” The proponents state: “the live-trapping effort will have to be sufficient to ensure the capture of a high proportion of all individuals whose home ranges include the proposed construction areas” (p.117). How many undetected animals will be killed by earthworks and blasting? We would never know. The suggestion that injured animals could be given to a wildlife carers is surprising, given that the proponents have shown so little concern for the survival of individual animals, or indeed the entire Mount Emerald population. The proponents’ disregard for animal welfare and unwillingness to compromise on turbine layouts and construction schedules does not give us any hope for the quolls.	<p>would seem to be appropriate. While it is acknowledged there is limited information available as to the success of such a program, this is mainly due to the very nature of it not being implemented at other major construction sites. The relative success of on-site trapping and tracking (including dogs) throughout the investigation would suggest the approach is valid. It should be further noted research efforts did not kill animals and strict animal ethics guidelines were followed during the course of the field work.</p> <p>It is not necessarily the case at all that RPS ecologists will be engaged in the event that the project gains approval. The same criticism could easily be levelled at any consultant engaged to undertake such assessments. Auditing of the proposed mitigation actions by DotE will be required as part of any approval conditions.</p> <p>The situation at the MEWF site with respect to public oversight of mitigation actions will be no different to that of any other industrial development undertaken on private property e.g. mine, intensive farming etc. It is up to DotE to ensure that adequate auditing is carried out to ensure that the proponents are not in breach of approval conditions</p>	
451.	S019	The proponents plan to undertake more trapping to locate maternal denning sites so they can be removed prior to construction. The proponents state they will schedule bulk earthworks involving blasting outside of the breeding season “where feasible” but also acknowledge it isn’t economically feasible to limit construction to these times. The Referral Guidelines for the Northern Quoll strongly recommend that all construction activities involving heavy machinery and blasting should be avoided in the breeding season (May to November). The draft EIS has not provided any details of the amount of blasting required but as most of the site is rock, we can assume there will be considerable blasting required to build a new access road up onto the plateau, and to each turbine site. The proponents plan to start blasting from April-July, which is at the beginning of the breeding season. The proponents describe intensive, daily trapping in areas of proposed bulk earthworks, yet no information has been provided of the location and scale of these proposed bulk headworks.		
452.	S019	The Preliminary Environmental Management Plan states that the clearing schedule will be determined by the Construction Manager “in consultation with” catchers and ecologists. We don’t believe expensive construction works will be delayed to save quolls under these arrangements. The ecologist will be an RPS employee who is paid by the proponent, their views will not be independent and it is unlikely they will be listened to. Given the significant financial benefits gained by RPS if the proposal is approved, it is questionable whether their input to the draft EIS can be considered objective and without bias. Of even greater concern is the lack of an independent supervisor to ensure the proponents comply with permit conditions. The recent Senate Inquiry into Offsets found the Government has limited awareness of the progress of many approved controlled actions and the elevated risks to matters of National Environmental Significance during various stages of an action (for example, during ground clearance and construction). Because the plateau is an elevated private property and we expect there will be strict construction access controls, it will be impossible for the community to ensure mitigation measures are properly carried out.		
453.	S019	The proponents claim: “it is not well understood how the Northern Quoll will respond to disturbance associated with construction”. You don’t have to be a rocket scientist to surmise there will be significant response to the use of explosives; rock crushing machines; concrete batching plants; heavy vehicles used for construction of roads, infrastructure and towers; large numbers of vehicles; human activity; noise and vibration. In addition, the quolls will be subjected to daily tracking, quoll sniffer dogs, trapping and collaring. We believe it is highly likely that if quolls survive the stress of construction and so-called “mitigation measures” they will abandon the plateau and head into surrounding rural residential and agricultural lands, where they are unprotected from impacts such as cats, dogs, traffic, baits, etc. The result will be a failure of the breeding season. The affect of civil works on one breeding season is an unacceptable risk, let alone three seasons proposed by the applicant. If quolls remain on the plateau, their breeding season is likely to be interrupted by daily trapping and collaring, the use of quoll detection dogs, blasting and construction disturbance. Lactating females may desert their young if blasting occurs from August to November when they have been deposited in dens. Appendix 19 highlights the technical challenges of collaring and tracking quolls in such rugged and		

No.	Submission	Issue	Response	Section Amendment
		inaccessible terrain. Animal welfare is also an issue of concern, with previous research efforts injuring and possibly killing animals.		
<u>Weed and Pest Management</u>				
454.	S019	In the United States, indirect effects such as the introduction of invasive species and altered fire regimes at wind farm sites have played out over longer timeframes and have had significant impacts on habitat (U.S. Fish and Wildlife Service, 2012). The roads constructed on Mount Emerald plateau by the proponents in 2010 are already lined with weeds. It is a shame the proponents and their consultants do not take the necessary action to remove the weeds instead of allowing them to spread over the plateau. It doesn't give us much hope they will maintain weed management plans if the development proceeds. As mentioned previously, Mount Emerald Wind Farm Pty Ltd partners Port Bajool encouraged back-burning of the plateau when their surrounding rural residential subdivisions were threatened by wildfires. According to members of the local brigades involved, Port Bajool has shown no interest in maintaining and protecting the biodiversity and matters of National Environmental Significance on the plateau. The proponents claim "implementing appropriate management actions" should reduce weed and fire risks (Table 15.1). Given their prior actions and poorly detailed Fire Management Plan, frankly we don't believe them.	Control of invasive weeds along the access tracks (which it should be noted is used by Powerlink contractors to access the high tension transmission line) has been undertaken (e.g. Thatch Grass, Wynn Cassia). In fact weeds are relatively scarce along the access tracks compared with the surrounding properties.	Volume 3 Appendix 33B
455.	S019	The draft EIS has not addressed the potentially catastrophic impacts on the quoll population if the dingo pack on Mount Emerald is displaced during construction and/or operation. Recent international research is demonstrating that large predators such as dingoes play a critical role by making ecosystems more resistant to the negative impacts of invasive species (Ritchie, 2014). The most critical effects dingoes have on the Australian landscape are in reducing populations of introduced smaller-bodied predators, specifically cats and foxes which prey heavily on small to medium-sized native animals such as the Northern Quoll. Similar research in North America has found that large carnivores (like dingoes) may need to occupy large continuous areas to facilitate among-carnivore cascades (Ripple, 2014). In other words, removal of the Mount Emerald plateau as dingo habitat may have serious implications for threatened Northern Quolls. It is of extreme concern to us that the proponents plan to "trap, shoot and bait wild dogs" on the proposed offset block adjacent to the wind farm site as it is highly likely the dingoes will be killed, along with any remaining quolls.	Table 22.5 "Pest Management" has been modified to; <ul style="list-style-type: none"> Conduct an annual assessment of need for pest animal control measures Measures to include live trapping or shooting. Control by baiting will not be undertaken. 	Volume 2 Table 22.5 Volume 2 Section 15.2.4

16 SARUS CRANE IMPACT ASSESSMENT

No.	Submission	Issue	Response	Section Amendment
<u>Collision Risk</u>				
456.	S004	there is no scientific information on Cranes ability to avoid turbines. You need to get scientific data and not rely on medical quackery. You include an avoidance rate of between 90-99% but admit that there is no scientific information on the cranes avoidance behavior. This is unacceptable, especially when you also admit that mitigation measures are yet to be undertaken, and you will rely on reactive measure once the crane are been killed by turbine impact. The most recent count of Sarus Cranes in North Qld. By Australian Crane Network, list them at 1,700 birds only.	There is limited information on avoidance in closely related species. The avoidance rate values are arbitrarily decided upon, however , based upon the few studies based on empirical data, these range of values appear to be reasonable e.g.98-99% for Red Kites in Spain (Whitfield and Madders, 2006 in Eichorn et al., 2012); Wedge-tailed Eagles (Hull and Muir, 2013) Turbine avoidance remains little-studied for any species, and empirical information about actual avoidance can be obtained for a given site only by studying the responses of birds in the presence of operational turbines (Chamberlain et al. 2006).	Volume 2 Section 16.3.1.
457.	S006	Sarus Crane Impact Assessment has an ugly unsubstantiated lie in suggesting "crane species monitored at operational wind farms both nationally and internationally have shown a low collision risk which is suspected due to behavioural avoidance" because birds are alike in their		

No.	Submission	Issue	Response	Section Amendment
		lack of discernment of the danger posed by swirling blades in the sky which to them seem to appear out of nowhere. It is a sham to quote whatever nonsensical collision risk modelling to show low mortality rates. They hold absolutely no validity in real life. Suggesting bigger gaps can somehow prevent the incidence of bird chopping is ludicrous. Birds do not fly in imaginary road highways for they fly with the wind draft.		
458.	S006	Just why was no bird mortality investigation done at the Windy Hill Wind Farm? Could it be RACL was afraid the world would know the truth had there been one?	<p>A review of Windy Hill Monthly Operation Reports show only two instances of avian deaths;</p> <ul style="list-style-type: none"> October 2006 – young falcon found at door of WEC 4. No marks or feathers were missing. Not consistent with being struck by blade. Found following period of high winds and rain. January 2007 – bat (flying-fox) was found 5-6 metres from WEC 6. 	
459.	S006	Powerlines collisions pales to insignificance compared to the hundreds, maybe thousands, that would die every year cruelly chopped by wind turbine blades.	This does not appear to be supported by peer reviewed estimates of global bird mortality. Estimated bird deaths due collisions with powerlines, vehicles, buildings and other stationary objects are orders of magnitude greater than those caused by turbine collisions. No collision risk modelling or mortality surveys have been required for any Australian electricity transmission line development.	Volume 2 Section 16.3.1
460.	S006	No amount of "advanced avian radar system" surveys and "collision risk modelling" would do a thing to prevent a single bird chopping cruelty incident. That is how pathetic RACL would try to deceive with false hopes of overcoming this major non-compliance and absolute failure at mitigation measures. There is but only one right and proper decision: DISAPPROVE THIS MONSTROSITY OF IWT.	No response necessary	
461.	S008	Cranes that can be expected to fly fairly low over the ridges when moving between cultivation areas. However they are also a soaring species and may use the wind currents of the range to gain altitude. Comparison with North American wind farms where the issue is migrating cranes which would tend to be at a higher altitude may not be an good indication of risk.	Observations indicate that the vast majority of Cranes do not fly over the site (at least during the day) and tend to stay on the flat country to the east of the project site. Refer to Section 16.2.7.2.	
462.	S017	The Sarus Crane studies utilising a 90-99% avoidance rate need to be clarified. Is this avoidance rate based on static powerlines? If so, this should be clearly stated in the EIS.	<p>The avoidance rate isn't based on static powerlines. The avoidance rate values are arbitrarily decided upon, however , based upon the few studies based on empirical data, these range of values appear to be reasonable e.g.98-99% for Red Kites in Spain (Whitfield and Madders, 2006 in Eichorn et al., 2012); Wedge-tailed Eagles (Hull and Muir, 2013)</p> <p>Turbine avoidance remains little-studied for any species, and empirical information about actual avoidance can be obtained for a given site only by studying the responses of birds in the presence of operational turbines (Chamberlain et al. 2006).</p>	Volume 2 Section 16.3.1.
463.	S019	The draft EIS has focussed on collision risk rather than the potential for Sarus Cranes to lose substantial habitat by avoiding or being displaced by the wind farm. The draft EIS states that "specialist studies" were undertaken to investigate the collision risk for Sarus Cranes (Appendix 23). In fact, Appendix 23 is simply the application of a simplistic model that derived a risk of less than one collision a year. The use of this model should be rejected on the following grounds. The author notes the modelling is "best used to evaluate different wind farm configurations" not avian collisions. The model uses very high avoidance rates of 90 to 95 per cent. The author states long-term variations of bird utilisation of the site should be used to achieve accurate collision predictions, yet data used was collected over just 26 days in a 12-month period. The proponents have had two years to collect relevant weather, insect and other data, yet the model is overly simplistic and does not consider time of day, local climate and weather such as fog and windspeed, and migratory paths such as movements along ridgelines and foraging habits. The model has been tested against only two wind farms (Bluff Point and Studland Bay in Tasmania) as no other wind farms in Australia have made their bird strike data publicly available (Hull and Muir 2013).	The submitter raises some valid points. There is little published evidence to suggest that modelled collision risk is closely correlated with actual observed bird collision mortality. However, collision risk modelling is currently the only modelling technique accepted by DotE for collision risk at turbines.	Volume 2 Section 16.3.1.

No.	Submission	Issue	Response	Section Amendment
464.	S019	In Table 16.1: Significant Impact Assessment the proponents dismiss the first criteria for establishing if the proposal may have a significant impact on the Sarus Crane. We contend the proposal has the potential to substantially modify and isolate areas of important habitat because of the high risk of Sarus Cranes avoiding or being displaced by the wind farm and associated downwind turbulence. The Significant Impact Guidelines for matters of National Environmental Significance describe an area of important habitat as: “habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species.” A total of 839 cranes were observed during the limited surveys undertaken by the proponents, and the average number of cranes recorded on the Tablelands is 858 individuals. Any local resident can tell you Sarus Cranes utilise the area surrounding the plateau for feeding and roosting. Wind turbines and associated turbulence may create barriers to bird movements, with further flying discouraging them from utilizing feeding and roosting grounds around the plateau. “Important habitat” under the Significant Impact Guidelines may also include habitat within an area where the species is declining, and crane counters have reported fluctuations in recruitment and numbers visiting the Tablelands during recent years. As so little is known about the population dynamics, the precautionary principle should be applied and the Sarus Crane protected from further impacts. It should be noted these iconic birds are loved by locals and visitors alike. A single turbine collision may not affect the population dynamics of the species, but it will upset a lot of local residents and do enormous reputational damage to the region as an international birdwatching hotspot.	<p>There are no Australian studies examining bird displacement effects at wind farms or post construction comparisons of bird abundance and distribution at a wind farm and control sites.</p> <p>There are numerous studies which clearly demonstrate that some bird species avoid operating onshore and offshore wind energy facilities (Pruett <i>et al</i> 2009; Zeiler and Berger, 2005, Pearce-Higgins <i>et al</i>, 2009).</p> <p>There is some evidence to suggest that some birds are capable of behavioural adaptation to wind farms with avoidance distances reducing over time (Madsen and Boertmann, 2008). Several studies have demonstrated that some bird species do not influence bird distribution and abundance (Devereux, <i>et al</i>, 2008).</p> <p>Recent research has shown that some species of migrating birds are capable of detecting and avoiding operating wind turbines (Johnston <i>et al</i> 2014). However, the distances the birds fly to avoid operating turbines relative to the distance of their overall migration distance are trivial (Masden <i>et al</i>. 2009)</p> <p>There are no published studies examining bird wind turbine avoidance behaviour in Australia so it is not possible at this stage to make an informed assessment of the likely impacts of the project on the threatened bird species present on the project site. On the basis of overseas findings, there is the potential for resident and migratory bird species to exhibit avoidance behaviour in the vicinity of operating wind turbines which may result in a loss of foraging and breeding habitat, potentially for the operating life-span of the wind farm. This may be significant for threatened species with restricted distributions or small population sizes (e.g. Buff-breasted Button Quail) but is unlikely to significantly impact more widely distributed and abundant common or migratory species and is unlikely to have an impact on any species within the vicinity of the proposed MEWF site.</p>	Volume 2 Section 16.3.1.1.
465.	S019	Several international studies have discussed habitat avoidance after the establishment of wind farms. A wind farm in an agricultural area of the Midwest showed a 47 per cent decrease in raptor abundance after establishment of a facility (Garvin <i>et al</i> . 2011). Researchers in Norway were not able to differentiate whether territories were vacated around turbines because of disturbance or mortality, but showed that vacant territories were not recolonised over a 10-year study period, suggesting that wind turbine operation led to habitat loss (Dahl <i>et al</i> . 2012). In a meta-analysis of wind energy facilities, Stewart <i>et al</i> . (2007) found that decreases in bird abundance remained over time.		
466.	S019	Surveys undertaken were not adequate. Oregon guidelines recommend one full year of avian use surveys which may be expanded if managers expect high wildlife use of the wind farm site, if there is little background data, or if the project is especially large or complex. Washington’s guidelines recommend at a minimum one full year of avian use surveys and must include the surrounding area to determine potential impacts of construction (eg. a 3.2 km buffer around project site). Two or more years of relevant data are recommended if: risk to avian groups of concern is estimated to be high; there is limited or no relevant data regarding seasonal use of the project site; or the project is significantly diverse in habitat and species. The proponents have proposed to use preconstruction radar to improve their understanding of use of the plateau, but it appears they are proposing turbine development would occur regardless of the study outcomes. Further monitoring should be undertaken prior to submission of the final EIS.	As indicated in Appendix 25 twelve months of avian surveys were undertaken on-site.	
<u>Cumulative Impacts</u>				
467.	S019	The draft EIS has not fully considered other cumulative impacts on the Sarus Crane. Importantly, they breed and winter in non-protected areas which is a significant threat to their long-term survival. As mentioned elsewhere in this submission, there are proposals to increase cropping in the Gulf of Carpentaria which would remove grazing land which is breeding habitat and impound water currently available in wetland habitats (J. Grant in litt. 2007). Increasing residential subdivision and growing human use around Lake Tinaroo, as well as water quality concerns about cranes grazing at the water’s edge, has also removed sites from the cranes’ range (E. Scambler in litt. 2007). Each year there are one or two reports of individuals killed by powerlines on the Atherton Tableland, but this threat has not been investigated or quantified in the draft	<p>As discussed in Section 13.8.5; habitat destruction/degradation and collision with powerlines were raised as potential cumulative impacts.</p> <p><i>“The most significant threat to this species throughout its entire range is considered to be the modification and destruction of wetlands”.</i></p> <p><i>“Mortality due to collisions with high voltage powerlines is currently a significant source of mortality for Sarus Cranes on the Atherton Tablelands” (Dr John Grant, pers. com., Elinor Scambler, pers. com.).</i></p>	Volume 2 Section 16.4

No.	Submission	Issue	Response	Section Amendment
		EIS. Sarus Cranes are monogamous and if a mate is killed the remaining bird will rarely breed with a new mate.		
<u>Mitigation</u>				
468.	S019	The use of radar systems to detect birds and bats has been used overseas, but have not been trialled in Australia. They rely on having detailed pre-construction utilisation data, and the proponents do not seem willing to take the time or money to undertake the necessary studies. The use of turbine curtailment technology is proposed as a way of mitigating bat and avian collisions once the turbines are operating. Our understanding is that this approach is in its infancy and does not claim to protect all birds and bats – the best results are estimated to achieve about 50 per cent mortality. As so little is known of the behaviour of our tropical birds and bats around wind turbines, its use on the Mount Emerald plateau would be highly experimental. It has been used in the United States as a result of court orders against wind farms responsible for the bat and eagle deaths, but the wind industry doesn't seem to be embracing the opportunity to trial curtailment. Due to the heavy financial losses incurred by the proponents, we suggest any curtailment will be minimised and monitoring compliance will become a major problem.	<p>The client has committed to conduct expensive preconstruction radar habitat utilisation studies for threatened species if approval is gained.</p> <p>The use of advanced radar systems to mitigate bird strike at commercial and defence airfields has been widely adopted in the US and Europe. Advanced radar – automated turbine curtailment systems have been installed at several wind farms on the Gulf Coast of Texas (Penascal Wind Farm) and according to the press releases from the radar manufacturer and the wind farm operator, the system (Detect radar) appear to be working successfully to avoid turbine mortality associated with mass movements of migratory song birds associated with particular weather conditions</p> <p>However, there is no independent research assessing the effectiveness of any automated turbine curtailment system so the validity of the claim of only 50% bird/bat mortality avoidance cannot be verified.</p> <p>It is agreed that the use of such a system in Australia would be highly experimental; however it is important that such technologies are investigated in order to adequately avoid and mitigate the risk of turbine collision mortalities for birds and bats</p>	

17 BARE-RUMPED SHEATHTAIL BAT IMPACT ASSESSMENT

No.	Submission	Issue	Response	Section Amendment
469.	S004	by your reports own admission, proper research has not been conducted, with high numbers of bats expected to be on site, and therefore high numbers of mortality with construction and turbine impact. Why would you admit to underestimating the bat numbers? You need to get your information correct before this EIS can be approved. The mitigation measures presented are only a “potential” methodology and this is certainly not good enough. You are yet to identify all the threatened bat species, information on turbine blade impact, barotrauma, and roosting habits.	<p>No assessment of the population size of the Bare-rumped Sheathtail Bat was attempted in the EIS, nor was any assessment of the collision risk possible, given the lack of current information on the species.</p> <p>It is not possible to make inferences about the population size of Bare-rumped Sheathtail Bat on the basis of ultrasonic call surveys; the only information that can be derived is distribution and calling activity.</p> <p>It is acknowledged that further research is required before an adequate turbine collision risk assessment can be made.</p>	
470.	S006	Impact Assessment tries to avoid the obvious fact wind turbines are extremely deadly to bats/flying-foxes by insinuating that there is lack of ecological research into these creatures. The real world evidence is glaringly clear --- bats/flying-foxes would drop dead in the thousands in the vicinity of IWT projects without exception [26].	<p>The limited evidence available in Australia does not indicate that insectivorous bats are killed in large numbers at operating wind energy facilities.</p> <p>There are very few wind farms located within the distribution range and preferred habitat of any bat species in Australia or elsewhere for that matter so it is not possible to make such definitive claims.</p>	
471.	S006	The lengthy discussion on mitigation measures ring hollow in effectiveness because nothing suggested there remotely does anything to stop the wholesale murder of bats/flying-foxes communities.	<p>The EIS lists (Section 17.4) various mitigation strategies to minimise the turbine collision risk including pre-construction habitat utilisation radar studies and the use of automated turbine shut-down and advanced radar systems.</p> <p>The effectiveness of these measures is also discussed.</p>	
472.	S008	Microbats which can be adversely affected by barotrauma as well as direct collision.	No response necessary – discussed in Section 17.2.2.1	

No.	Submission	Issue	Response	Section Amendment
473.	S019	The proponents have identified the critically endangered Bare-rumped Sheathtail Bat utilising the site. (Local bat experts are surprised by the absence of other EPBC listed threatened species the Greater Horseshoe Bat <i>Rhinolophus philippinensis</i> and that only one Diadem Leaf-nosed Bat <i>Hipposideros diadema</i> was recorded.) Due to technical problems with detecting equipment, subsequent surveys didn't find evidence of the Bare-rumped Sheathtail Bat utilising the ridgelines where turbines are proposed. Regardless, numerous studies suggest that using acoustic monitoring to predict bat fatality and risk at a site has proved to be challenging. "Researchers should be aware of the fundamental gap between pre-permitting assessments and operations fatalities ... The ability to predict fatalities and thus risk from acoustic data has not yet been established" (NWCC, 2011). Overseas research has theorized that the reason there is such a poor correlation between pre-construction monitoring and post-construction fatalities is that bats are attracted to the turbines after they are constructed. Even if key microchiropteran bat roosts and forage areas were avoided, they could still be attracted to the towers. A recent study has suggested that certain turbine colours attracted more insects, in turn leading to a concentration of bats (Long et al. 2011). In another behavioural study, researchers documented that bats were struck by turbines during foraging and exploratory behaviour, not as a result of straight-line flight through the wind farm (Horn et al. 2008). Lights, the sound of moving turbines, the motion of turbine blades, novel vegetation such as forest edges created by turbines or roads, insect aggregations that occur around wind energy facilities, or an attraction to turbines as potential roosts, mating, or gathering sites have all been suggested as factors that may attract bats to wind energy facilities (Cryan and Barclay, 2009). These issues and their mitigation should be addressed in the final EIS.	<p>It is acknowledged (Section 17.4) that there is strong evidence from overseas that some insectivorous bat species can be attracted to operating wind turbines at certain times and certain locations. The possibility of this occurring at the project site cannot be discounted, especially given the lack of any research into these phenomena in Australia. Therefore it is possible that any preconstruction collision risk assessment may underestimate the actual risk of the operating wind farm due to attraction.</p> <p>The deficiency of relying solely on acoustic monitoring to assess potential turbine collision risk is acknowledged in the EIS and additional radar and thermal imaging surveys are proposed to be conducted. High pre-construction bat activity (as measured by acoustic detectors) may or may not equal high post-construction bat fatality, and the converse (i.e., low activity equals low fatality) may not be true, particularly if collisions are not random and bats are indeed attracted to wind turbines or wind energy facilities (Kunz et al. 2007, Horn et al. 2008, Cryan and Barclay 2009).</p> <p>The issues of bats potentially being attracted to operating wind turbines has been acknowledged in the EIS (Section 17.2.2.1 paragraph 4). There is currently no research examining whether Australian bat species are attracted to operating wind turbines.</p> <p>It is proposed to utilise vertical and horizontal X-band radar systems in addition to acoustic monitoring to assist with assessing turbine collision risk for threatened microbats.</p>	
474.	S019	It should be noted that even though the Windy Hill wind farm is within the distribution range of the Bare-rumped Sheathtail Bat, there has been no systematic monitoring of microchiropteran bat collision mortalities since the facility opened. This would have served to inform the proponents of the potential impacts at the proposed site. The lack of published data from other Australian wind farms (other than two previously cited Tasmanian wind farms) highlights the failure of the wind industry to take responsibility for environmental impacts. Any further approvals of wind farms under the EPBC Act should include mandatory monitoring of species fatalities by independent researchers and the findings should be made publicly available.	<p>It is ultimately the responsibility of the regulators to require wind farm operators to undertake monitoring and to make results publically available.</p> <p>Previously the same submitter pointed out that it is not valid to compare results from small, older turbines located in cleared agricultural land.</p> <p>It is agreed that the conduction of scientifically valid, spatially and temporally replicated collision mortality monitoring that accounts for detection biases and decomposition and predation rates should be conditioned as a part of wind energy facility approval conditions and that the public should have free access to such data. The opportunity to adequately assess the true environmental impact of wind energy facilities on Australia birds and bats has been largely wasted and there are still many information gaps. This makes a proper assessment of new facilities problematic and RACL acknowledges this.</p>	
475.	S019	Despite the problems with acoustic monitoring but faced with few alternatives, respected overseas researchers recommend the best strategy for assessing potential interactions between bats and wind turbines is to implement a long-term acoustic monitoring program (Arnett, 2011). The surveys should be conducted at each turbine site throughout an annual cycle and cover at least one to two years to assess inter-annual variability. Detectors should be placed on towers at the height of the rotor, at ground level and at an intermediate height, as bats operating at lower levels may be attracted to the turbines once they are operating. A preliminary analysis of data gathered at meteorological towers in Pennsylvania suggests that two or three towers typically monitored by detectors may fail to adequately represent bat activity on a given site (Redell, 2006). "It is difficult and largely indefensible to conclude that the absence of bat activity on one or a few nights of recordings ... supports the appropriateness of a given site for wind facility development" (Kuntz, 2007). Long-term monitoring should be adopted for the Mount Emerald proposal prior to the submission of the final EIS.	<p>Ideally, spatially replicated acoustic monitoring conducted below and within the proposed rotor sweep area of the wind turbines should be conducted, however it is not practical to install 80 m tall towers at each of the turbine sites.</p> <p>Some monitoring was conducted at the 80 m tall meteorological monitoring tower within the proposed rotor sweep area, however financial and technological constraints precluded long-term monitoring at this location i.e. no suitable microphone pulley system or budget available for regular hire of qualified climbers.</p> <p>It was felt the best compromise was to conduct continuous monitoring at a network of full spectrum detectors covering as much of the site as was possible (Appendix 23).</p> <p>It is readily acknowledged that acoustic monitoring conducted a ~ 5 m above the ground may not have adequately sampled high-flying insectivorous bats such as the Bare-rumped Sheathtail Bat.</p>	
476.	S019	Without significant further research on the plateau site and surrounding lands, it is impossible to discount unavoidable and catastrophic adverse impacts on the region's threatened bat populations. Considering the status of these endangered bats, more rigorous, long-term acoustic	It is unlikely, even given worst case scenarios and the current lack of understanding of the ecology of the threatened bat species, that the project could result in "unavoidable and catastrophic adverse impacts on the region's threatened bat populations" given the widespread extent of	

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		monitoring, trapping and DNA sampling would be required to provide insights into the population size and genetic structure of local bat populations and therefore make better assessments of the direct, indirect and cumulative impacts of the proposed wind farm.	potentially suitable habitat throughout the region. For example, the Bare-rumped Sheathtail Bat is known to occur from Ayr north to Weipa.	
<u>Mitigation</u>				
477.	S017	lowering the cut in speed of the turbines is “is one of the only post-construction mitigation methods that has demonstrated effectiveness at significantly reducing bat turbine collision/barotrauma mortalities.” This is clearly an experimental exercise with no guarantee of success, with the bats being the losers. In the event of failure, provide details of the expected impact on endangered bats. Provide details of other mitigation measures available.	Given the real difficulties in gathering any data on small insectivorous bats, lowering turbine cut-in speeds is one of the few proven (Refer to Section 17.4.3.1) effective means of minimising turbine collision fatalities at operating wind farms. Overseas experience indicates that the raising turbine cut-in speeds results in significant reduction in bat deaths in the US. Further research is proposed to examine the relationship between bat activity and meteorological conditions prior to construction to assess the suitability of whether lowering turbine cut-in speeds as a mitigation method.	Volume 2 Section 17.4
478.	S019	It is disappointing that, due to the costs involved, the focus of further research is proposed to focus on operational mitigation measures such as increased cut-in speeds and shutting down turbines in high-risk conditions. These attempts at mitigation are unlikely to be successful when the “high-risk conditions” have not been identified, and so little is known about the ecology and population dynamics of the Bare-rumped Sheathtail Bat. For a critically endangered species, any fatalities could have a significant adverse impact on local populations and potentially regional populations. The Significant Impact Assessment states the project is unlikely to interfere with the recovery of the species, an astonishing conclusion when so little is known about the species. Experimenting with cut-in speeds and risking unnecessary fatalities with threatened bat species in Australia is an unnecessary and foolhardy risk, especially considering the critically endangered status of the Bare-rumped Sheathtail Bat. As previously noted, turbine curtailment has not been widely embraced by the wind industry. It is usually required in the hours before and after dusk, when the weather is warm and there is high insect abundance. This is when energy demand is at its greatest in Far North Queensland. We believe financial imperatives may overcome the requirement to protect endangered bats.	It was decided that the focus of the pre-construction research should be to determine the high risk weather conditions and locations (i.e. times and areas associated with high insect abundance within rotor sweep area and bat abundance/call activity) as this was likely to be more achievable than obtaining data sufficient to conduct collision risk modelling, which requires detailed information on bat flight heights and abundance. Lowering cut-in speeds has been shown to be the most effective means of minimising turbine collision fatalities at operating wind farms. Overseas experience indicates that the raising turbine cut-in speeds results in very minor reductions in energy production (<1% of total annual output) (Arnett et al., 2011). The proponents are committed to adopting all of the proposed mitigation strategies, especially raising turbine cut-in speeds given its demonstrated effectiveness elsewhere and relatively low cost of implementation relative to other options.	Volume 2 Section 17.4
479.	S019	Other measures such as clearing tree hollows prior to construction are proposed to mitigate impacts. There is no evidence that these measures will work in an Australian landscape on listed species with small and highly vulnerable populations. We contend that the effectiveness of the measures proposed is not well established and there is not a high degree of certainty that impacts will be avoided or reduced. The draft EIS should also address the risks of barotrauma from the frequent use of explosives during construction.	Given the relatively low tree height within much of the proposed development footprint and the relatively small area of proposed clearing, it is feasible to ensure that the majority of potential hollows are investigated using “burrowscope” type video cameras and ultrasonic call detectors immediately prior to clearing of any hollow bearing trees. The effect of barotrauma from explosives was not explored due to the expectation that pre-clearing strategies would prevent individuals from being impacted. There is a paucity of information available on the risks of barotrauma to bat species in Australia.	Volume 2 Section 17.4.2
480.	S019	The draft EIS proposes to construct the wind farm in order to undertake more bat research. What if the research reveals the wind turbines should not be constructed because the risk to the species is too great? Instead of undertaking the studies necessary to understand the potential impacts on microchiropteran bats, the proponents plan to get the turbines up and running, and then count bats killed by the turbines (if they can find them) to come up with strategies to stop the turbines killing more bats. How many deaths are too many? Do the blades just keep turning until there are no more bats left? The proponents should be ensuring bats are not killed in the first place. This approach is the antithesis to the precautionary principal: building first and dealing with the real impacts on biodiversity later. Fatality estimates are generally based on a sample of carcasses around wind turbines, but it is generally accepted that searcher efficiency and the removal of carcasses by scavengers make this data unreliable (see NWCC, 2011). A number of studies have shown that carcass searches may vastly underestimate the actual number of animals killed. Due to the small size of the endangered microchiropteran bats and the extremely rugged terrain, the Mt Emerald plateau would be considered by American standards	It is acknowledged in Section 17.4.1.1 that additional pre-construction surveys including vertical radar and call detection surveys will be required in order to attempt to adequately quantify the collision risk to insectivorous bats. The findings of these preconstruction surveys will inform proposed management actions e.g. resighting of high risk turbines, curtailment of operation during high risk periods etc. The post construction mortality surveys are required in order to validate the preconstruction assessment of turbine collision risk. The proponent has committed to this proposed research. Carcass removal rates by predators, differential detection rates and decomposition rates are typically factored into estimates of bat turbine collision mortality. Carcass searches utilising sniffer dogs in addition to the investigation of automated collision detection systems is likely to provide the most effective means of estimating turbine collision mortality, given the valid points raised about the difficulty of detecting small carcasses on the site due to rugged terrain and dense vegetation. Research indicates that sniffer dogs are more	Volume 2 Section 17.4.1.1 Volume 2 Section 17.4.3

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		as “Class 4: Very Difficult” in that there is little or no bare ground with more than 25 % ground cover over 12” tall. The applicant proposes to use tracker dogs to find carcasses. United States researchers state that the decision to begin formal testing of dogs is “somewhat objective” and the use of dogs “presents challenges that warrant further consideration” (NWCC, 2011). Some studies have found that dogs found 71-81% of planted carcasses compared to 14-42% for human searchers. However, other studies found that dogs didn’t improve searcher efficiency over humans, and in fact was less in some of the comparisons, perhaps because of the variability in scent characteristics of bat species (Kronner 2008). It should also be noted that it is not appropriate to predict mortality using per turbine estimates from the older, smaller turbines, or statistics from other sites which are generally highly modified landscapes with very low species diversity. Going through an exercise of finding dead bats once the wind farm is constructed is not a valid solution when populations of endangered bats such as the Bare-rumped Sheathtail Bat are so small and restricted in range. Just a couple of mortalities may tip local populations over the edge. More baseline data and a better understanding of the population status of the species are required before the proponent can predict the impact of the wind farm. Even a small reduction in population size could result in inbreeding depression and a reduction in genetic variation, both of which can lead to extinction (Boyce, 1992).	<p>accurate than humans at detecting turbine collision carcasses independent of vegetation density (Paula <i>et al.</i>, 2011). Mathews <i>et al.</i>(2013) found that sniffer dogs located 76% of bats compared with 20% for humans in a blinded, randomised study.</p> <p>It is not possible to make an informed assessment of the viability of the Bare-rumped Sheathtail Bat population given the uncertainty as to the total population size and other key demographic factors. This is the case for almost all insectivorous bats within Australia. In the absence of an accepted Population Viability Model derived from by accurate demographic parameters, it is up to the relevant authorities and experts to make the decision as to what constitutes an acceptable level of mortality for the species.</p>	

18 SPECTACLED FLYING-FOX IMPACT ASSESSMENT

No.	Submission	Issue	Response	Section Amendment
481.	S004	Your incompetence with research data continues with the Flying Fox. Novel, untested methodologies cannot be substituted for scientific data that can be tested. High mortality is likely with a long term decline in the total population.	<p>Obtaining statistically valid data on the habitat utilisation patterns this species proved difficult given its mobile nature and nocturnal foraging habits and limitations are discussed throughout Section 18.</p> <p>The proposed radar surveys are widely used elsewhere in the world to assess potential risk to nocturnal birds and together with additional limited telemetry data represent the most effective methods of obtaining data on the utilisation of the site by the species. The EIS acknowledged the potential for infrequent high mortality of Spectacled Flying-foxes events due to unpredictable spatially and temporally variable mass flowering events, and that such events could increase the extinction risk of the species. The use of radar system and targeted shut-down of high risk turbines represents the best currently available strategy for mitigating the impacts of an operating wind farm on flying-foxes.</p>	Volume 2 Section 18
482.	S006	Since there have been measures taken by the Tablelands Regional Council to eliminate bats and flying-foxes from more dense urban regions, it is vitally important to never compromise any further the destruction of these very important creatures in the delicate eco-system balance. The IWT project would be an unacceptable definite major extinction factor of these creatures. These mountain ranges is one of their last precious few wildlife refuge habitats that must never be sacrificed for this useless wind project [26].	<p>It is not clear whether the project does actually represent a definite major (or minor) factor contributing to the extinction of the species. It is noted in Section 18 there is the potential for large numbers of Spectacled Flying-foxes to be killed during the projected lifespan of the project, however, these events would be difficult to predict in advance given the large distances that the species can travel to forage and the spatially and temporally unpredictable nature of the mass flowering events of myrtaceous trees.</p> <p>The proposed mitigation strategies incorporating further pre-construction habitat utilisation surveys, and an advanced radar and automated turbine shut-down system may reduce the risk of significant turbine collision deaths.</p> <p>It is acknowledged that such systems have not been used in Australia and the technology is still in its infancy. Preliminary evidence suggests that the systems are effective in reducing kills of migrating birds in the US, however, as noted in the EIS, there are no published, peer reviewed studies examining the effectiveness of the systems.</p>	Volume 2 Section 18

19 HAZARDS AND RISKS

19.1 Aviation

No.	Submission	Issue	Response	Section Amendment
<u>Aerial Agriculture</u>				
483.	S002	“essential agricultural spraying of crops on farms within five kilometers downwind of the site will be difficult.” Aerial spraying is essential for farmers, particularly during the wet season or at times of elevated pest/disease pressure. This is even more so for banana farmers who also have State Legislation that compels them to control disease. There are currently approx. 1,000 acres of bananas within five kilometers of this proposal. In your EIS, you concede that there is an issue with aerial agricultural spraying, and you offer a farcical option of turning the wind turbines off when spraying is necessary. If you believe this will happen, then you believe in the tooth fairy.	<p>Mount Emerald Wind Farm Aeronautical Assessment prepared by Rehbein Airport Consulting is included as Appendix 26.</p> <p>Agricultural spraying operations are normally conducted at low altitude and often require calm or very light wind conditions. Agricultural operators have stated that generally they operate in wind conditions up to 15km/h.</p> <p>The operating wind speed range for the wind turbines is from 15km/h to 95km/h, thus it is expected that there should be minimal restriction to aerial spraying downwind of the wind turbines under normal aerial spraying conditions.</p>	Volume 2 Section 19.1.1.3
484.	S004	There has been different “spin” put on aerial agricultural operational limits, but the fact remains that such operations are hazardous within 5km of turbines. There are approximately 1,000 acres of Banana Plantations within 5km of the turbines. There is also State Legislation that Banana Plantations must be sprayed to prevent a fungal disease, and during the wet season, aerial agricultural spraying is the only alternative. The offer to cease turbine operations when banana plantations require spraying is farcical, and logistically impossible.	<p>Volume 2 Table 20.4 “Aviation” notes a mitigation measure of;</p> <p><i>Agreed shutdown protocols with aerial operators when conditions and proximity of aerial spraying operations increase risk</i></p> <p>Aerial Agricultural Association of Australia recommends consultation with local operators to better understand any likely impacts from wind farm proposals.</p>	
485.	S006	Far North Queensland Regional Plan 2009-2031 subtopic Policy 2.1 Regional Landscape Values falsely claims “the turbines will not prejudice the ongoing operation of the existing farmlands ...” . This IWT would obliterate all existing farming and other businesses within 5-10 km radius due to the extremely harmful toxic noise emissions that are known to result in even horses developing bone deformities [10], not to mention to less robust humans	<p>Mount Emerald Wind Farm commenced consultation with Atherton Tableland Air Service the only Tableland based aerial spraying contractor in September 2011. Correspondence received from Atherton Tableland Air Service, notes:</p> <ul style="list-style-type: none"> • <i>‘the developers of the proposed Mount Emerald wind farm have undertaken consultation with me and made me aware of the perceived issues and impacts the project may have</i> • <i>at this time, I am comfortable the Mount Emerald Wind Farm will not negatively impact our ability to continue to safely operate in and around the traditional areas in which we have previously serviced our customers and there should be no negative impact to the new farming development within these areas.’</i> 	
486.	S006	Mareeba Shire Planning Scheme requires that good agricultural land be protected but this IWT project would greatly imperil the safe operation and productivity of the vast adjoining tracts of fertile farming lands within 5-10 km radius.		
487.	S017	Section 4.1 of the EIS Guidelines states “the nature and level of investigations must be related to the likely extent and gravity of the potential impacts (likelihood, consequence, magnitude, extent and scale of impacts, including worst case scenarios)”. Provide details of what “extensive investigation” the proponent has conducted in relation to impacts on aerial spraying.	<p>Mount Emerald Wind Farm commenced consultation with representatives from Civil Aviation Safety Authority (CASA) in April 2011. Advice received from the consultation recommended an approval will be required from the Mareeba Aerodrome Manager, who will advise and consult with CASA as necessary.</p>	
488.	S017	Provide references for the source of the information on the potential 5km aerial spraying impact zone as discussed in the Aeronautical Assessment (Appendix 27).	<p>In November 2011, MEWF commenced liaison with Mr Ron Walmsley, Mareeba Airport Upgrade Coordinator (Tablelands Regional Council). The result of this referral was advice received from Mr Brett Nancarrow (Tablelands Regional Council), 22 June 2012. The advice contained assessment from Air Services Australia and Mareeba Airport Upgrade Coordinator.</p>	
489.	S017	We question whether the new aerial agriculture operator has been made fully aware of the safety risk and the potential impacts on his business and the farming community.	<p>In summary, Air Services Australia advised:</p> <ul style="list-style-type: none"> • <i>‘With respect to procedures promulgated by Airservices in accordance with ICAO PANSOPS and Document 9905, at a height of 1179.5m (3870ft) AHD turbine number 34 will affect the VOR-A instrument procedure at Mareeba aerodrome however, at a maximum height of 1144m (3754ft) AHD turbine 34 will not affect the VOR-A instrument procedure nor any sector or circling altitude, nor any instrument approach or departure procedure at Cairns, Mareeba, and Atherton aerodromes.</i> • <i>The remaining 74 wind turbines will not affect any sector or circling altitude, nor any instrument approach or departure procedure at Cairns, Mareeba and Atherton aerodromes.</i> • <i>This development to a max height of 1179.5m AHD will not impact the performance of</i> 	
490.	S017	The Rehbein Aeronautical Assessment has failed to mention the Commonwealth’s Guideline D: National Airports Safeguarding Framework: Managing the Risk to Aviation Safety of Wind Turbine Installations (Wind Farms)/Wind Monitoring Towers which states: <i>Wind farm operators should be aware that wind turbines may create turbulence which noticeable up to 16 rotor diameters from the turbine. In the case of one of the larger wind turbines with a diameter of 125 metres, turbulence may be present two kilometres downstream.</i>		

No.	Submission	Issue	Response	Section Amendment
			<p><i>Precision/Non-Precision Nav Aids, HF/VHF Comms, A-SMGCS, Radar, PRM, ADS-B, WAM or Satellite/Links.'</i></p> <p>In summary, Mareeba Airport Upgrade Coordinator advised:</p> <ul style="list-style-type: none"><i>'Turbine 34 is not constructed in its proposed location and that any structure associated with the wind farm does not exceed a height of 3870 feet (1179.5m) AHD.'</i> <p>In response to this advice Mount Emerald Wind Farm moved the turbine in question and can confirm no other turbine tip height exceeds the height of 1179.5m AHD.</p>	
<u>Hazard Lighting</u>				
491.	S006	Aviation Impacts discloses that there is a need for hazard lighting atop some of these wind turbines and therefore this is yet another ugly intrusion and disturbing light blinking that would be for all to see from many tens of km away. Why should the rural community be subjected to this grotesque lighting distraction in the otherwise darkness of nights so pleasingly a feature of rural areas? There is an increased potential for aircraft disasters regardless of the assurances given.	<p>Civil Aviation Safety Authority (CASA) is responsible for regulating civil aircraft operations, including operational safety in and around aerodromes and along air traffic routes. In relation to wind farms, CASA has two concerns:</p> <ul style="list-style-type: none">the penetration of wind turbines into the obstacle limitation surface (OLS) and the Procedures for Air Navigation Services (PANS-OPS) around an aerodrome;the potential for wind farms to be a hazard to aviation operations. <p>The OLS is the airspace around an aerodrome, defined by an imaginary surface, which is maintained free of obstacles to permit the safe arrival of aircraft under a visual approach. Similarly, the PANS-OPS surface is to safeguard an aircraft from collision with an obstacle when using an instrument approach.</p> <p>In September 2009, AC 139-18(0) Obstacle Marking and Lighting of Wind Farms was withdrawn after Civil Aviation Safety Regulations 1998 (CASR) ASR 139 (Aerodromes) was found not to be applicable to areas located away from aerodromes regulated under CASR 139.</p> <p>Revisions to AC 139-18(0) may incorporate a requirement to provide obstacle lighting for structures 150m or more above ground level, unless an aeronautical study can show that the structure will not be an obstacle.</p> <p>The Mount Emerald wind turbines do not exceed the 150m tip height threshold and, in accordance with current CASA guidelines, will not require night time obstacle lighting.</p> <p>CASA have one current publication, AC 129-08(0) that sets out the reporting requirements for tall structures. It is accepted a condition of approval will require Mount Emerald Wind Farm to notify the relevant agency in regard to the location of wind turbines, after determining the final layout and location after micro-sighting occurs on site.</p> <p>Night time lighting is discussed in Section 11 of Appendix 6, and includes various actual images depicting lighting in operation.</p>	
492.	S017	There is confusion over the requirement for night-time lighting of turbine towers in the draft EIS. Provide a clear map of proposed lighting location and type (eg intensity, colour, flashing).		
493.	S017	In addition, if lighting is required, address the night-time visual impact and the environmental impact of attracting bats to the turbine danger zone as a result of the greater presence of insects.		
<u>Mitigation</u>				
494.	S017	The EIS needs to show a commitment to the farming community to turn off turbines when and immediately aerial spraying is required. Despite assurances only aerial spraying up to 600m would be affected, the EIS does not take into account the wind conditions identified in the noise impact assessment . That is the wind fields of the mountain and the flats below are different – the turbines could be running at close to rated power on the mountain ridgelines whilst the valleys below would normally be suitable for aerial spraying. Aerial spraying would be severely restricted under these conditions.	<p>Volume 2 Table 20.4 “Aviation” notes a mitigation measure of;</p> <p><i>Agreed shutdown protocols with aerial operators when conditions and proximity of aerial spraying operations increase risk</i></p>	
495.	S017	Either provide evidence that the turbines will cause no restrictions on aerial agriculture around the project site up to 5km, or provide a firm commitment in writing to mitigation measures that		

No.	Submission	Issue	Response	Section Amendment
		turbines will be turned off whenever (and immediately) aerial spraying is required.		
496.	S017	Will aerial firefighting be possible over the prison site?	It is assumed the possibility of aerial fire fighting over the prison site must include a large range of variables to determine its outcome. Given the location of the prison to the north of the site at a distance of over 3km and the relatively small amount (~4%) of wind expected from the south it is not expected aerial fire fighting would be affected by the wind farm.	
497.	S017	Will the Police helicopters be able to transport prisoners to Cairns early in the mornings, or to hospital, when they are affected by downwind turbulence from the 63 turbines operating in high winds on the ridgelines?	Given the location of the prison to the north of the site at a distance of over 3km and the relatively small amount (~4%) of wind expected from the south it is not expected Police helicopters would be affected by the wind farm.	

19.2 Telecommunications

No.	Submission	Issue	Response	Section Amendment
498.	S004	The EIS clearly states that research and details of telecommunication issues have not been completed. This is totally unacceptable. We live in a marginal telecommunication area and the last thing that we need is any issue that will further affect us.	The telecommunications impact assessment (Appendix 27) was undertaken to identify the potential impact from the proposal on existing telecommunications services as well as identifying mitigation measures.	Volume 2 Section 19.2
499.	S006	Telecommunication Impacts does nothing to allay the degradation in services of various devices and technologies that rely on radio wave transmissions [28].	The largest concern noted in the assessment is the uncertainty in the location of the communications sites. A review of the assessment shows;	
500.	S017	Little consideration has been given to the possible impact of the moving turbines on marginal television and mobile phone reception around the mountainous project site. The TLPI under which the wind farm will be assessed by the state government states as a specific outcome that “the wind farm has no adverse effect on pre-existing television or radio reception transmission”. Clearly baseline studies are required and this information needs to be provided in the EIS. Alternatively there needs to be an acknowledgement of this gap in the information provided.	<ul style="list-style-type: none"> No turbines are located within the defined near-field exclusion zone One point-to-point service may be impacted by wind farm. AM / FM broadcasting is considered to be negligible Mobile reception may be affected by shadowing however, this can be rectified by minor position adjustment Television signals in the majority of cases are not likely to be impacted <p>Regarding the point-to-point link the proponent is aware of this link and has made alterations to avoid impact.</p> <p>Shadowing effects which may affect mobile and television signals are likely to be more prolific in close proximity to the wind farm site, and are more related to topographic impacts where direct line-of-sight to broadcast sites is not available.</p>	

19.3 Fire and Bushfire

No.	Submission	Issue	Response	Section Amendment
501.	S004	It is well documented that Wind Turbines increase the risk of fires, and we feel that this has not been addressed. You cannot expect the local Rural Fire Brigade to risk their lives fighting fires associated with Wind Turbines. This is an extremely dangerous site with hazardous possibilities that will be imposed on volunteers.	The risk of fire in wind turbines is actually very low. A group in the UK – Caithness Wind Farms compile a list of wind turbine related incidents around the world. This database shows reported fire incidents since 1995 to 2012, total less than 200 or 11.7 per year. At the end of 2012, the Global Wind Energy Council estimated there were approximately 225,000 wind turbines operating globally, so the chance of a turbine catching fire in	
502.	S006	Fire and Bushfire Impacts makes little mention of wind turbines exploding into flames [9] [29].		

No.	Submission	Issue	Response	Section Amendment
		This is one weakness of wind turbines that is often overlooked.	a year is slight less than 1 in 20,000.	
503.	S019	Quoting an eight-year-old study is not an adequate response to the serious issue of increased fire risk in our region. See for example the quote below from Overview of Problems and Solutions in Fire Protection Engineering of Wind Turbines, International Association for Fire Safety Science (Draft Proceedings of the Eleventh International Symposium, 2014): “Unfortunately, there are very poor statistical records of wind farm fires, with researchers describing official figures as “the tip of the iceberg”. There is very little publicly available scientific information, since much of this information is proprietary. What is widely known, however, is that fire-fighting is difficult. Wind turbines are mostly located in remote locations, further complicating the problem by increasing the response time. Even in the case of rapid detection, the nacelles are so elevated they are beyond the reach of most fire-fighting appliances.” At a turbine fire at the Starfish Hill wind farm in South Australia, RACL would not allow fire crews to approach closer than 1km from the tower due to the possibility of blades breaking up and flying some distance from the tower (Birrell, 2012 - Senate Inquiry submission). There is potential for ground fires to ignite from falling turbine components, expanding to uncontrollable bushfires which then place volunteers and properties in jeopardy. On 22 January 2006, a turbine caught fire during a heat wave at Lake Bonney in South Australia. The wind farm was shut down, leaving 63,000 homes without power and 80,000 hectares of national park destroyed by wildfire ignited by the turbine debris (Border Watch newspaper, 2006). The Vestas turbine worth \$3.2 million was completely destroyed, but the total loss to surrounding communities and the environment incurred by the accident far exceeded the cost of the turbine.	<p>Within this same database, there are 3 recorded incidents where the wind turbine related fire has caused its surroundings to catch fire. The chance of this happening each year is of 1 in 1.2 million.</p> <p>Wind farms actually provide added benefits in regard to fire prevention. The lightning strike earthing systems built into the turbines prevents ignition of the surrounding area. The internal roads allow fire fighter to enter areas previously inaccessible and provide firebreaks in themselves.</p>	
504.	S019	The proponents’ Environmental Risk Assessment assesses the damage from fire to the environment and adjoining properties during wind farm construction and operation as likely, yet claims proposed mitigation measures reduces the risk to minor / moderate. The proponent states that the bushfire danger season is approximately from August to late October in north Queensland. The Springmount area is extremely prone to destructive bushfires from September to December, when native vegetation is dry and electrical storms are common (the last two major fires swept through the Mount Emerald plateau in August and December). Given that construction is planned during extreme fire danger periods when the Fire Service recommends using machinery only early in the morning or late at night, we believe the proposed mitigation measures will not alleviate the risks. The risk assessment should be reviewed by an independent expert.	<p>The risk of wind turbines being engulfed by bushfire is very low, as the turbines are situated approximately 80 metres above the ground within a nacelle. The only wind farm infrastructure potentially exposed to bushfire would be the turbine towers, which are of steel construction and hence fire resistant. Each tower is surrounded by a cleared hardstand that would provide a firebreak.</p> <p>The substation would be surrounded by a gravel and concrete area free of vegetation to prevent the spread of fire and to reduce the impact of bushfire on the structure. Similarly a protection zone would be established around the site buildings.</p> <p>To protect the value of the wind turbines to owners and insurers it is becoming increasingly common for fire suppression systems to be installed in the nacelle of modern wind turbines.</p>	
505.	S019	The draft EIS does not mention the majority of the proposed site is zoned Bushfire Hazard Area Very High (potential intensity) under mapping layers provided under the Queensland State Planning Policy (SPP, 2013). The SPP requires the risks associated with natural hazards, such as bushfire, to be avoided or mitigated to protect people and property. The SPP requires development to: avoid natural hazard areas or mitigate the risks to the natural hazard; support, and not unduly burden, disaster management response or recovery capacity and capabilities; and directly, indirectly and cumulatively avoid an increase in the severity of the natural hazard and the potential for damage on the site or to other properties. The draft EIS acknowledges that the construction of the wind farm may lead to an increased risk of accidental wild fire and recognizes that the rugged nature of the terrain and consistent high winds could result in wild fires spreading rapidly into areas where control would be difficult if not impossible (p.107). We do not consider the Fire Management Plan (Appendix 29) adequately addresses any of these issues or mitigates the increased risk. We believe there is an increased likelihood of brigades attending fires emanating from the wind farm site, unnecessarily burdening our brigades and placing volunteers in danger. The Preliminary Environmental Management Plan should acknowledge the impacts on surrounding land owners by establishing a performance indicator of “no fires emanating from the site will affect surrounding properties”.		

No.	Submission	Issue	Response	Section Amendment
506.	S019	The draft EIS and associated documents have not documented the large amounts of flammable oils, lubricants and other materials that would be housed in each turbine and at the transmission station. They are packed close to potential ignition sources such as overheated mechanical components and electrical connections. The nacelles are made from fiberglass reinforced plastic (FRP) which is flammable and difficult to extinguish due to the epoxy resins. Insulation materials in the turbines are often made of foam, which is highly inflammable and becomes part of the fuel load. Once a fire is ignited, the situation rapidly escalates because of the high wind favoured by turbine locations. In the event of a turbine fire, the proponents do not detail how it will be extinguished.		
507.	S019	Wind turbines have been associated with increased fire risk due to lightning strikes. Most tall structures are prone to lightning strikes, but recent published research suggests wind turbines are not only susceptible targets, but may be generating currents that cause the strikes (Montanya and van der Velde, Journal of Geophysical Research, 2014). The probability of this “upward initiation” increases when the turbines are located on locally elevated terrain, as is the case on Mount Emerald (Lightning Attachment to Wind Turbines in Central Kansas, EWEA conference proceedings, 2013).	It is likely the frequency of lightning induced bushfires will be reduced during the operational phase of the wind farm. It is acknowledged the wind turbines are prominent structures elevated above the existing ground levels, and as such will be subject to lightning strike. This is why the turbines have extensive lightning conduction systems built into their structures. Thus, a lightning strike that might otherwise ignite vegetation is now safely negated and conducted to earth and reducing the risk of bushfire to the surrounding district.	
508.	S019	The Fire Management Plan does not refer to the increased fire risk from disturbing unexploded ordinance, or how the proponents propose to respond to this risk.	<p>EHP Contaminated Land Unit’s Permit Number SPCL04185012 provides the Concurrence Agency Conditions and general comments imposed for the Mt Emerald Wind Farm project, dated 21 June 2012.</p> <p>The permit recommends that further investigation and assessment are undertaken by a nominated UXO Investigation and Remedial Search Contractor.</p> <p>The preparation of a Management Plan recommending site specific clearance procedures would be informed by this process.</p> <p>In accordance with the EHP Guideline for Managing contaminated land under the Sustainable Planning Act 2009 (dated July 14) a UXO Investigation and Remediation consultant <i>‘must provide a report that states one of the following has been achieved:</i></p> <ol style="list-style-type: none"> <i>1. UXO Site Clearance together with the report on works undertaken;</i> <i>2. Partial UXO site clearance together with the report on works undertaken;</i> <i>3. Draft UXO Management plan together with the report on the preliminary works undertaken.’</i> <p>It is intended that this work be conducted as part of the pre-construction works programme after the project reaches Financial Close.</p>	
509.	S019	The Aerial Agricultural Association of Australia (AAAA) states that: “asa result of the overwhelming safety and economic impact of wind farms and supporting infrastructure on the sector, AAAA opposes all wind farm developments in areas of agricultural production or elevated bushfire risk” (see www.aerialag.com.au). We believe the proposal not only increases fire risk, it will greatly constrain aerial fire-fighting assistance.	In a similar way to shut down for aerial agricultural activities the wind farm operations would be curtailed should aerial fire fighting be undertaken in the area.	
510.	S022	How will the fires caused by turbines be fought in the area considering that it will become a no-fly zone?		
511.	S019	The Fire Management Plan makes frequent references to the District Fire Warden and the Fire Brigade being invited to attend safety briefings, taken on regular site tours, provided with relevant site plans, and having their contact details on signage and made available to construction and operational contractors. We have checked with members from several fire brigades and they all said they had not been approached by the wind farm developers at any	<p>The risk to fire fighters is no greater for a wind turbine fire than for other fire incidents, with the officer in charge determining the most appropriate response strategy.</p> <p>Arguably, access roads within the wind farm precinct reduce this risk, by allowing ready access and egress for appliances and fire fighters to areas previously not accessible.</p>	

No.	Submission	Issue	Response	Section Amendment
		time to undertake these duties. They stated they will not be attending these events, they are volunteers and are not responsible for inductions or any other activities on industrial and commercial developments. Rural fire brigade insurance is limited to protecting rural properties and local brigade members said they have no intention of entering the Mount Emerald site to fight fires if a wind farm is constructed there. Containing these fires will be the responsibility of the wind farm operator. We can only assume frequent references in the document to the “District Fire Warden” must refer to urban fire crews based in nearby towns such as Mareeba and Atherton, or to paid rural fire service coordinators based in Cairns and Innisfail.		
512.	S019	The plan refers several times to “access to water troughs, dams and tanks throughout the properties”. It is well known among local residents and also to the proponents that there are no such facilities on the Mount Emerald plateau. This may have been an accidental inclusion from a generic template at other RACL wind farm sites where turbines are constructed on cleared agricultural land, not on an undeveloped, naturally vegetated plateau. Or is this a reference to using these facilities on surrounding properties? We do not consider surrounding properties should be responsible for providing additional water sources to the wind farm development.	The proponent will provide appropriate fire-fighting equipment and water supplies to respond to bushfire or other fire events. Water supplies would be established within the project boundary in accordance with a suitably developed fire management plan.	
513.	S017	The Fire Management Plan focuses on minimising the risk of fire. It fails to address ecological fire needs and does not propose fire breaks to protect infrastructure and allow control burns. Undertake studies on long-term fire history of site and surrounds, optimum fire regime to protect habitat and regenerate endemic flora and update the Fire Management Policy in EMP and Fire Management Plan accordingly.	The development of an ecologically appropriate fire regime for the purposes of maintaining the viability of threatened species is proposed in Volume 2 Section 19.3 and Appendix 31.	Volume 2 Section 19.3
514.	S019	An additional cumulative impact of increased residential subdivision is the impact of fire. Port Bajool has moved quickly to protect the subdivisions by encouraging back-burning of the Mount Emerald plateau on at least two occasions when bushfires have threatened the area. Under current state regulations, there is no mechanism for protecting habitat of threatened species such as quolls, bats, birds and plants from back-burning. There has been no attempt by Port Bajool to undertake fire management regimes that would conserve the plateau’s threatened populations. There is no consideration under the proponent’s draft Fire Management Plan to properly consider threatened species.		
515.	S021	Another thing which caught my attention is that the Springmount Rural Fire Brigade will become involved. This is not true. My son is the warden and there is NO way that the rural fire brigade will become involved in a fire on an industrial site like Mt Emerald. Please amend your EIS accordingly.	The risk to fire fighters is no greater for a wind turbine fire than for other fire incidents, with the officer in charge determining the most appropriate response strategy. Arguably, access roads within the wind farm precinct reduce this risk, by allowing ready access and egress for appliances and fire fighters to areas previously not accessible.	

19.4 Climate Extremes and Climate Change

No.	Submission	Issue	Response	Section Amendment
516.	S002	In the daytime, temperatures downwind of a wind farm can fall by as much as 4C, at night the reverse happens and turbines have a warming effect. These near surface air temperature and humidity fluctuations extend downwind for 20km. Some 20,000 HA of prime agricultural land, growing bananas, coffee, beans, sugarcane, avocados, mangoes etc. are grown within this area. All of these tropical crops are extremely temperature sensitive, and any variation of certainly 4C, will effect the growth cycle and productivity.	Reduction in the vital input of soil moisture via cloud stripping on the higher ridges due to disruption of wind flow from wind turbines is not well understood at present; therefore it is not possible to make an assessment of the likelihood of disruption to this important process. However, it should be noted cloud stripping occurs during periods of low wind speed and hence low turbulence created by the local topography, as such any additional disruption to wind flow caused by the wind turbines under these conditions is expected to be negligible. A review of the reference study (Roy 2012) shows;	

No.	Submission	Issue	Response	Section Amendment
517.	S019	Residents living below the Mount Emerald plateau can testify the escarpment is often covered in low cloud, and cloud-stripping is likely to be an ecosystem service provided by the plateau's vegetation communities. Yet the draft EIS has not addressed the effects of modern wind turbines on local climates. Research has shown that modern turbines bring heat and moisture from ground level into the atmosphere, and vice versa, for typical downwind distances of 18-23km (Roy, 2012). Wind farms can influence humidity and raise minimum temperatures and reduce maximum temperatures by as much as four degrees. The author concludes: "This study has significant implications for future energy and land use policy ... Impacts from wind farms on surface meteorological conditions are likely to affect agricultural practices as well as communities living in residential areas around the farms." (We bet the researchers would not have dreamed a wind farm would be considered on an elevated tropical plateau with such high ecological value, or they would have suggested the surface meteorological impacts on the environment should also be considered.) Another recently published analysis of land surface temperatures around large wind farms in Texas from 2003 to 2011 shows wind turbines can produce a night-time warming trend of up to 0.72 degrees per decade (Zhou, 2012). We believe the turbines may have a negative impact on the vegetation communities surviving on Mount Emerald plateau. An assessment should be undertaken on turbine impacts on cloud-stripping and temperature changes on vegetation communities as part of the EIS.	<ul style="list-style-type: none"> The study was published in 2010 The study uses weather prediction modelling to provide results not actual measurements The model does not take into account topographic effects and places the wind farm on a flat plane in a simple grid pattern The temperature changes ΔT noted in the study show a maximum value of 1.2°C The conclusion includes a statement that "more simulations with a wider range of initial conditions are required to conclusively demonstrate this phenomenon." <p>The referenced study by Zhou (Zhou 2012);</p> <ul style="list-style-type: none"> Used satellite data of land surface temperature. Land surface temperature is how hot the "surface" of the Earth would feel to the touch in a particular location. From a satellite's point of view, the "surface" is whatever it sees when it looks through the atmosphere to the ground. It could be snow and ice, the grass on a lawn, the roof of a building, or the leaves in the canopy of a forest. Thus, land surface temperature is not the same as the air temperature that is included in the daily weather report. Note that the land surface temperature has a larger day-night variation than the surface air temperature. found a localized warming under wind farms at night of 0.72°C this effect is highly localised, with no spread beyond the wind farm site <p>Zhou provided further clarification comments - Q&A on "Impacts of Wind Farms on Land Surface Temperature" Published by Nature Climate Change on April 29, 2012, which highlighted;</p> <p><i>"Overall, the warming effect reported in this study is local and is small compared to the strong background year-to-year land surface temperature changes. Very likely, the wind turbines do not create a net warming of the air and instead only redistribute the air's heat near the surface (the turbine itself does not generate any heat), which is fundamentally different from the large-scale warming effect caused by increasing atmospheric concentrations of greenhouse gases due to the burning of fossil fuels."</i></p>	

19.5 Health and Safety

No.	Submission	Issue	Response	Section Amendment
518.	S019	Threats to public safety and health have been dismissed as being limited to noise and shadow flicker impacts. Our local community disagrees: We are very concerned about the impacts increased traffic, construction impacts, vibration, low frequency noise, degradation of local water supplies, etc. Throughout the draft EIS the proponents continually claim they can comply with the Environmental Protection Policy (Noise) 2008 (see for instance p.59, p.60). Perhaps the proponents think if they repeat this claim often enough we will believe them. The proponents have failed to provide the assurances expected of the local community and required by the Federal Minister prior to his approval.	Throughout the documentation various expert reports have been provided to address the issues noted.	

19.5.1 Wind Farm Noise and Health

No.	Submission	Issue	Response	Section Amendment
519.	S004	Your reference to the noise and health studies, relates predominately to noise. To date there has not been an adequate health study. The Senate Enquiry into wind farms way back in June 2011, recommended HEALTH studies be conducted. To date this has not happened. Even the recent NHRMC recommended further studies, and was no way conclusive that there are no health effects. For every example that the proponent presented, there is an equal number with the opposite view.	In addition to the Reviews of Wind Farms and Health Impacts included in Section 19.5.1; the following information is supplied. National Health and Medical Research Council (2014) <i>The National Health Medical Research Council released their draft Information Paper regarding evidence on the potential effects of wind farms on human health, in February 2014.</i>	Volume 2 Section 19.5.1
520.	S006	Very seriously harmful impulsive low frequency and infra-sounds [11] are generated by IWT.	This review provides a statement on the evidence of; <i>There is no reliable or consistent evidence that wind farms directly cause adverse health effects in humans.</i>	
521.	S006	Deadly infra-sounds pollution and sleep depriving low-frequency impulsive sounds which suffer little attenuation would affect residences more than 10 km away.	The findings of this review in relation to NOISE state;	
522.	S006	Noise Assessment fails to acknowledge the persistent and undeniable facts that IWT generate very harmful infra-sounds and low-frequency noise in addition to very loud audible noise, all of which have been documented and studied in-depth to result in real serious adverse health effects to humans and animals [18] [19] [20].	<ul style="list-style-type: none"> <i>There is no reliable or consistent evidence that proximity to wind farms or wind farm noise directly causes health effects.</i> <i>There is consistent but poor quality evidence that proximity to wind farms is associated with annoyance and, less consistently, with sleep disturbance and poorer quality of life. Finding an association between wind farms and these health-related effects does not mean that wind farms cause these effects. These associations could be due to selection or information bias or to confounding factors.</i> <i>There is no direct evidence that specifically considered possible health effects of infrasound or low-frequency noise from wind turbines.</i> <i>It is unlikely that substantial wind farm noise would be heard at distances of more than 500–1500 m from wind farms. Noise levels vary with terrain, type of turbines and weather conditions.</i> <i>Noise from wind turbines, including its content of low-frequency noise and infrasound, is similar to noise from many other natural and human-made sources. There is no evidence that health or health-related effects from wind turbine noise would be any different to those from other noise sources at similar levels.</i> <i>People exposed to infrasound and low-frequency noise in a laboratory (at much higher levels than those to which people living near wind farms are exposed) experience few, if any, effects on body functioning.</i> 	
523.	S006	Wind farm noise and health tries to dismiss the truth on this topic. In truth there is a plethora of scientific findings and research plus factual documented real life experiences that definitively shows wind turbines noise emissions to be very adversely harmful [30] [31] [32].		
524.	S007	The actual facts of experiences and effects, physical and psychological, that existing wind turbines are having on residents of existing project areas, particularly examining LOW FREQUENCY Vibrations, need to be taken into serious consideration.		
525.	S010	As a health assessment is not required, this has not been addressed in the scope of the EIS. Isn't it about time Australia caught up with the developing countries who include this as a requirement for companies who are proposing developments which may impact their residents health and wellbeing?		
526.	S013	2011 the Australian Senate called for an urgent inquiry into health of those living within close proximity of wind farms. To this date it still has not been done. NHMRC has stated that until health is adequately investigated developers of wind farms should err on the side of caution		
527.	S016	Health concerns have not been addressed and this is one of the most contentious issues in this debate. Over 2500 people live and work within 5km of this proposed industrial site.	Senate Environment and Communications Legislation Committee on the Renewable Energy (Electricity) Amendment (Excessive Noise from Wind Farms) Bill 2012 (Commonwealth of Australia, 2012)	
528.	S017	A lack of evidence of a problem certainly does not mean there is no problem. This needs to be clearly stated in the EIS. As the existing evidence is poor and not conclusive, adverse health impacts, such as chronic sleep disturbance, must be considered as potential direct/indirect impacts as per Section 5.10 of the EIS Guidelines and assessed accordingly. The need for high quality research on the impacts of wind turbines on health must be stated in the EIS.	A report was released responding to submissions received and the outcomes of a public hearing. The report considered the health effects of wind farm noise, specifically infrasound, and concluded that: <i>"...while it is possible that the human body may detect infrasound in several ways, there is no evidence to suggest that inaudible infrasound (either from wind turbines or other sources) is creating health problems. In contrast, there is an established literature confirming the existence of psychogenic, or nocebo, effects in general, and at least one study suggesting they may be responsible for symptoms in some wind turbine cases."</i>	
529.	S018/S020	It is noted that State concurrence agency responses have been included in the draft EIS, but that the State advice agency response from Queensland Health has been omitted.		
530.	S018/S020	The draft EIS Executive Summary states: "A number of reviews of the perceived impacts of wind turbine operation on human health have been undertaken over the last five years, both in Australia and internationally". Provide details of the human health studies which have been conducted on residents who report being affected by wind turbine noise.	A nocebo effect has been defined as "...a negative symptom induced by the patient's own negative expectations and/or by negative suggestions...in the absence of any treatment" (Häuser et al. 2012). The study referred to above, which exposed subjects to infrasound and sham	

No.	Submission	Issue	Response	Section Amendment
531.	S018/S020	The National Health and Medical Research Council (NHMRC) released its draft information paper regarding evidence on the potential effects of wind farms on human health in February 2014. Despite the wind industry and media almost exclusively reporting ‘there is no reliable or consistent evidence that wind farms directly cause adverse health effects in humans’, it failed to report NHMRC comments such as “The body of evidence relating to wind farms and health is small and poor quality”, or that “further high quality research is needed – particularly exploring relationships between noise at varying distances from wind farms and annoyance, sleep and quality of life”. It also stated “No studies were identified that explicitly considered possible effects on human health of infrasound and low-frequency noise or electromagnetic radiation produced by wind turbines”. A direct connection between wind turbine noise and adverse health impacts is unlikely to be found if it is not explicitly considered. A lack of evidence of a problem certainly does not mean there is no problem. This needs to be clearly stated in the EIS. As the existing evidence is poor and not conclusive, adverse health impacts, such as chronic sleep disturbance, must be considered as potential direct/indirect impacts as per Section 5.10 of the EIS Guidelines and assessed accordingly. The need for high quality research on the impacts of wind turbines on health must be stated in the EIS.	<p>infrasound, concluded that:</p> <p><i>“Healthy volunteers, when given information about the expected physiological effect of infrasound, reported symptoms which aligned with that information, during exposure to both infrasound and sham infrasound. Symptom expectations were created by viewing information readily available on the internet, indicating the potential for symptom expectations to be created outside of the laboratory, in real world settings. Results suggest psychological expectations could explain the link between wind turbine exposure and health complaints”</i></p> <p>The potential for a nocebo effect in relation to wind farm health impacts appears to be corroborated by the following committee observation on the submissions received:</p> <p><i>“Given that as of April 2012 there were approximately 1,345 turbines operating in 59 facilities around Australia, the numbers expressing concern appear small compared to the numbers of residents near these turbines. The committee received just over 160 submissions, of which a little under 140 supported the bill and/or expressed concern about noise effects. Of these, the majority of submissions were from people worried about whether they might experience noise or health effects from proposed wind farms, rather than from people who claimed to have actually experienced annoyance or other adverse effects.”</i></p>	
532.	S021	Mt Emerald Wind Farm says there has been a lot of public consultation but a lot of the things you claim as consultation are in fact advertising and one article which comes to mind and is not included in your EIS on March 12 2014 when you claimed that the “National Health and Medical Research Council draft paper should reassure the community that wind farms are safe and pose no threat to their health”. This was a gross misinterpretation of the NHMRC’s information paper. The NHMRC said “there is no reliable or consistent evidence that wind farms directly cause health effects in humans” and then they went on to say “wind farms are unlikely to be heard from distances beyond 500 – 1500 metres”. Firstly the NHMRC had 3800 references to consider and only 7 of these were of sufficient scientific quality to meet their strict standards. Only one of the seven papers considered was from Australia. It said there are problems out to 10kms and for you to quote that turbines were unlikely to be heard beyond 1500m is irresponsible given that the South Australian government’s own noise testing has confirmed audible noise out to 8.5km. Infrasound has not been properly addressed in the EIS and prisoners at Lotus Glen Correctional Centre 3km downwind of the proposed site are likely to be adversely affected given that infrasound is reported to travel much further and cannot be mitigated against.	The committee noted its concern “...that a nocebo response is developing, caused by the reproduction and dissemination of claims about adverse health impacts – claims not grounded in the peer-reviewed literature currently available” and recommended that no regulatory changes should be made prior to the forthcoming release of the National Health and Medical Research Council’s review of wind farm health issues.”	
533.	S021	There is cause for concern and given the lack of specific research it is irresponsible for Ratch to dismiss possible infrasound health effects and simply proceed with the project. This is not the precautionary approach suggested by the NHMRC. This information gap in the EIS needs to be acknowledged. And this is just one aspect of the proposal which cannot be mitigated against.		
534.	S017	Given the reports of residents experiencing impacts up to 10km from Australian wind farm sites, how many of the 800 prisoners at Lotus Glen will be affected, or claim to be affected by wind turbine noise as an excuse for violence or to obtain pharmaceutical drugs?		
535.	S017	What will be the increase in violence on officers and other prisoners if a certain percentage of the prisoners become chronically sleep deprived, irritated, confused, dizzy and/or anxious? – claimed as indirect “annoyance” symptoms by the wind industry. It makes little difference whether these symptoms are “direct” or “indirect” especially in this context.		
536.	S017	What will be the cost of these impacts, both socially and economically? If there are problems (and the proponent cannot say for sure there will not be any), will the wind farm stop operating, or will the prison?		

19.5.2 Electric and Magnetic fields

No.	Submission	Issue	Response	Section Amendment
537.	S004	Once again your own report states that evidence available is inconclusive. We cannot take a risk with people's health.	Volume 2, Section 19.5.2 of the Environmental Impact Statement provides an overview of the Electromagnetic Fields (EMF) in relation to the project. This section also details the proposed mitigation measures to be implemented to ensure that there would be no unnecessary exposure to EMF from the proposal.	Volume 2 Section 19.5.2
538.	S006	Electromagnetic Fields (EMF) is a misleading focus of the danger electromagnetic waves pollution posed by IWT. The true mechanism of harmful EMF effects of IWT lies not in the magnetic field strength but in the phenomena of dirty electricity and related effect of ground current. The IWT generates high-frequency voltage transient spikes over a wide range of frequencies that results in poor power quality known as dirty electricity. This dirty electricity is fed into the electric grid and can flow along wires damaging sensitive electronic equipment and cause adverse health problems for humans and animals [33].	<p><i>The National Health Medical Research Council</i> released their draft Information Paper regarding evidence on the potential effects of wind farms on human health, in February 2014.</p> <p>This review provides a statement on the evidence of;</p> <p><i>There is no reliable or consistent evidence that wind farms directly cause adverse health effects in humans.</i></p>	
539.	S006	Ground current is the flow of dirty electricity along the ground and induces harmful current in humans and animals as well as other objects. A study has linked ground current with leukaemia risk. Burying the collection cables from the wind turbines can improve the power quality slightly but may not eliminate the ground current.	<p>The findings of this review in relation to ELECTROMAGNETIC RADIATION state;</p> <ul style="list-style-type: none"> There is no direct evidence on whether there is an association between electromagnetic radiation produced by wind farms and health outcomes. Extremely low-frequency electromagnetic radiation is the only potentially important electromagnetic emission from wind turbines. Limited evidence suggests that the level of extremely low-frequency electromagnetic radiation close to wind farms is less than average levels measured inside and outside Australian suburban homes. There is no consistent evidence of human health effects from exposure to extremely low-frequency electromagnetic radiation at much higher levels than is present near wind farms. 	

19.5.3 Shadow Flicker

No.	Submission	Issue	Response	Section Amendment
540.	S004	Any flicker is too much flicker. You need a measurement on every effected dwelling in order to assess the impact. There is an epileptic child living in close proximity to the proposed site. What has been done about this child's safety?	Section 19.5.3 provides an overview of the shadow flicker assessment undertaken for the project. Appendix 30 provides the Shadow Flicker Assessment Report prepared by Parsons Brinkerhoff.	Volume 2 Section 19.5.3 Put this at the end of the section
541.	S004	Assumptions that nobody will experience in excess of 30 hours of shadow flicker per year, are not good enough. Use science to determine the shadow flicker for every close (5km) residence. Reports using works like "low impact" are unacceptable. We must have a measurement. If there is a mitigation method like "matt coating", why not include this in the construction. Don't just talk about it.	<p>The assessment undertaken concluded that the calculated levels of shadow flicker caused by MEWF on the receptors listed are substantially less than the limits prescribed by the draft National Wind Farm Guidelines.</p> <p><i>The National Health Medical Research Council</i> released their draft Information Paper regarding evidence on the potential effects of wind farms on human health, in February 2014.</p> <p>This review provides a statement on the evidence of;</p> <p><i>There is no reliable or consistent evidence that wind farms directly cause adverse health effects in humans.</i></p>	
542.	S024	Engagement of the project feasibility stage. It's crucial that everyone involved in the development team focuses on building trust and constructive relationships within the community. With years of hearing the lies from John Morris, that the wind farm would not be seen and we wouldn't hear it, all trust or belief in honesty had flown out the window. I was originally told by Ratch that I wouldn't receive any flicker. Now they agree I will. Years of misappropriated comments such as these, mean that the local community does not or ever will believe anything they say.	<p>The findings of this review in relation to SHADOW FLICKER state;</p> <ul style="list-style-type: none"> There is insufficient direct evidence to draw any conclusions on an association between shadow flicker produced by wind turbines and health outcomes. 	

19.5.4 Epilepsy/Seizure

No.	Submission	Issue	Response	Section Amendment
543.	S004	Any flicker is too much flicker. You need a measurement on every effected dwelling in order to assess the impact. There is an epileptic child living in close proximity to the proposed site. What has been done about this child's safety?	<p>Section 19.5.4 provides an overview of Epilepsy/Seizure.</p> <p>The operating rotational speeds of the wind turbines likely to be installed vary between 6 – 16 rpm. This equates to a flicker rate ranging between 0.3Hz to 0.8Hz.</p> <p><i>The National Health Medical Research Council</i> released their draft Information Paper regarding evidence on the potential effects of wind farms on human health, in February 2014.</p> <p>This review provides a statement on the evidence of;</p> <p><i>There is no reliable or consistent evidence that wind farms directly cause adverse health effects in humans.</i></p> <p>The findings of this review in relation to SHADOW FLICKER state;</p> <ul style="list-style-type: none"> Flashing lights can trigger seizures among people with a rare form of epilepsy called photosensitive epilepsy. The risk of shadow flicker from wind turbines triggering a seizure among people with this condition is estimated to be very low. 	Volume 2 Section 19.5.4

19.6 Unexploded Ordnance

No.	Submission	Issue	Response	Section Amendment
544.	S017	Provide details of how fauna will be protected from unexpected detonation of UXO.	EHP Contaminated Land Unit's Permit Number SPCL04185012 provides the Concurrence Agency Conditions and general comments imposed for the Mt Emerald Wind Farm project, dated 21 June 2012.	Volume 2 Section 19.6
545.	S017	Due to the high risk of UXO, provide an Unexploded Ordnance Management Plan for incorporation into the final EIS.	<p>The permit recommends that further investigation and assessment are undertaken by a nominated UXO Investigation and Remedial Search Contractor.</p> <p>The preparation of a Management Plan recommending site specific clearance procedures would be informed by this process.</p> <p>In accordance with the EHP Guideline for Managing contaminated land under the Sustainable Planning Act 2009 (dated July 14) a UXO Investigation and Remediation consultant '<i>must provide a report that states one of the following has been achieved:</i></p> <ol style="list-style-type: none"> <i>UXO Site Clearance together with the report on works undertaken;</i> <i>Partial UXO site clearance together with the report on works undertaken;</i> <i>Draft UXO Management plan together with the report on the preliminary works undertaken.'</i> <p>It is intended that this work be conducted as part of the pre-construction works programme.</p>	

20 ENVIRONMENTAL RISK ASSESSMENT

No.	Submission	Issue	Response	Section Amendment
546.	S004	I refute your Risk Assessments of the following, and have reassessed using your Risk Matrix; Northern Quoll – Risk Level 6, Bare-rumped Sheath-tail Bat – Risk Level 6, Flying Fox – Risk Level 5, Sarus Crane – Risk Level 5, Flora – Risk Level 5. You don't appear to have a risk assessment on the Sarus Crane, why not?	<p>The Environmental Risk Assessment was conducted as per specific instruction in the Guidelines on the requirement for the EIS to detail this information and in particular, mitigation of cumulative impacts on the site.</p> <p>The risk assessment of the MNES was conducted utilising all information that is currently available (from specialist scientific reports) to determine the potential for impact to these species from anticipated environmental issues. Furthermore, the risk to each species was assessed in detail based on the mitigation measures proposed (the majority having strong scientific validation to support their success as a mitigation measure as identified throughout the EIS document). This was completed in a thoroughly rigorous way as per the:</p> <ul style="list-style-type: none"> AS/NZS ISO 31000-2009 Risk management – Principles and guidelines; and Handbook 436-2004 – Risk management guidelines. <p>A risk assessment was completed on the Sarus Crane however as noted in Table 20.4 the risks to the species from environmental issues on site were not identified as high (or greater than 3) with the implementation of mitigation measures and therefore not picked up later in the document as a residual risk (Section 20.4)</p>	Volume 2 Section 20.1
547.	S006	Environmental Risk Assessment presents nothing new except give a subjective bias assessment to all the repeated foregoing measures by RACL that are purported to deal with the multitude of problems besetting this IWT project. Why should this exercise in hand-waving dismissal to all these intractable problems as presented in Table 20.4 be given much credence at all? It is not for the proponent to give value judgement to the severity of the problems nor the worthiness of mitigation measures suggested. That is the role of a truly independent third party		
548.	S019	The Northern Quoll Impact Assessment has highlighted the limited knowledge and high levels of uncertainty surrounding the Northern Quoll population. Quoll movement, dispersal and recruitment rates, the location of maternal den sites and gene flow mechanisms remain unknown. The proponents have had several years to undertake this research, but it would seem that budget constraints have limited the research outcomes (p.103). These factors combine to suggest a high risk of extinction if the plateau is developed, which could have unacceptable risks for the wider quoll population. Given the lack of information and the highly questionable proposed mitigation measures, the Environmental Risk Assessment has underestimated the risks and likely consequences for the Northern Quoll.	<p>The data presented in this EIS is a result of specialist studies conducted by RPS and sub consultants over the course of 12 to 18 months, and research constraints extend beyond budget and time to typical scientific factors such as elusiveness of a species and the technical difficulties of surveying in harsh environs. Evidence of these inherent difficulties is in the paucity of information available on the species prior to commencement of RPS studies.</p> <p>All mitigation measures proposed in the EIS have been thoroughly researched with the majority having strong scientific validation (through use at other wind farms site or similar species specific monitoring programs). Novel techniques have been fully researched and a commitment has been made by the proponent to a preconstruction program for research. The majority of mitigation measures form part of a program of measures that are used together to prevent an impact from occurring on a species, ecosystem, to humans etc.</p> <p>Furthermore there is a commitment by the proponent for ongoing Quoll research during preconstruction to continue to gather important information on population and denning characteristics, for example. This is set out in the Statement of Commitments by the proponent.</p>	
549.	S019	The Environmental Risk Assessment highlights the very minimal attempts to mitigate noise and visual impacts for surrounding residents. We strongly reject the ridiculous proposal to reduce noise by providing air conditioning and cladding. We live in the tropics, our houses feature open living and verandahs to take advantage of breezes and views. We don't want to be boxed in and forced to run air conditioners to block out turbine noise. The risk assessment should be re-assessed by an independent expert.	<p>The applicable mitigation measures for Noise Control include;</p> <ul style="list-style-type: none"> amend turbine layout turbine pitch adjustment noise reduction selection of lowest noise output turbine reduction of indoor noise via acoustic treatment of dwellings (i.e. air conditioning, cladding) if necessary in consultation with owners. <p>As is noted in the mitigation measures the concept of acoustic treatment to dwellings would include consultation with the owner. Other mitigation measures are also provided which will provide the protection necessary to adhere to noise limits if required.</p>	

21 CUMULATIVE IMPACTS

No.	Submission	Issue	Response	Section Amendment

22 OFFSETS

No.	Submission	Issue	Response	Section Amendment
550.	S003	Instead, the proponent is attempting to placate well-grounded conservation concerns by engaging consultants removed from the biological reality to compile an artificial Offsets Plan with no real basis or background other than borrowing selected, non-committal sections of the environmental reports compiled by other workers, and then attempting to justify loss of these key habitats and vegetation communities by offering up land that has not been ground-truthed by practiced, local botanists with the expertise to accurately report on the efficacy of the offset (i.e. finding out whether there is indeed sufficient habitat for conservation significant plants in an offsets area that is largely below 900 m).	<p>The development of the Offset Plan was informed by, and based on, technical information available at the time. This included flora, vegetation and fauna surveys undertaken on and surrounding the project area. As outlined in the Offset Plan, a potential offset area has been identified.</p> <p>The offset area is mapped with the same vegetation communities and is contiguous with vegetation in the project area. It is expected that due to its close proximity to the project area it also contains similar flora and fauna habitat values. There are also known records of <i>Grevillea glossadenia</i> and <i>Homoranthus porteri</i> within the offset area. Additionally, for <i>Homoranthus porteri</i>, the estimate of 117 ha of available habitat is based on the presence of suitable regional ecosystems 900 m above sea level.</p>	
551.	S003	The Offsets Plan is inadequate and does not propose justified conservation initiatives regardless of the platform and calculations that it is based upon. As a last conservation and mitigation resort, serious consideration should be given to defining an appropriate offset area that is known to hold the values for conservation significant plant habitat identified in the detailed flora and vegetation report prepared for the EIS.	<p>Whilst the offset area is yet to be ground-truthed, a preliminary assessment of the offset against the EPBC Act Offsets Assessment Guide indicates that there is sufficient potential to configure a compliant offset on the identified property. While this assessment is preliminary in nature, the values generated from the offsets assessment guide indicate that the proposed offset is suitable to acquit the offset requirements of the project and that the percentage of impact offset is over 100% for all values.</p> <p>Furthermore, the proponent has committed to undertaking field surveys of the offset area to determine the actual extent of environmental values on the ground and confirm the suitability of the offset area. Field assessments of the offset area will include flora and fauna surveys, which will be undertaken by qualified ecologists and other suitably qualified experts.</p> <p>Following completion of the field surveys, a detailed offset proposal for submission to the Department of the Environment will be prepared. In the event that the offset area proves not to be suitable following field surveys, further work in order to identify a suitable alternative offset will be undertaken.</p> <p>All possible steps have been taken to design the project to avoid and mitigate impacts on environmental values; however some residual impacts on Matters of National Environmental Significance remain and are unavoidable. To compensate for these unavoidable impacts, the proponent has committed to delivering offsets in accordance with the <i>Environment Protection and Biodiversity Conservation Act 1999</i> Environmental Offsets Policy.</p>	
552.	S005	Offsets has nothing concrete to offer in compensation. This attempt to remedy this destructive environmental project and violation of controlling provisions by resorting to impose environmental management on another site is totally preposterous and insulting. RACL does not have the right to violate Australia's environmental regulations and then require imposing demands on another area to excuse for RACL's criminal environmental sabotage.	The proposed approach to delivering offsets in order to compensate for unavoidable residual impacts on environmental values is wholly in accordance with the relevant provisions of the <i>Environment Protection and Biodiversity Conservation Act 1999</i> and the associated Environmental Offsets Policy.	
553.	S008	Offsets cannot replace the specialised habitats occurring on the ridges. Due to the nature of these areas with limited soils and microhabitats formed by rock platforms and boulders and the effect of the windmills on cloud stripping any rehabilitation of the site is unlikely to be unsuccessful.	<p>Analysis of satellite imagery was used to divide the potential northern quoll habitat area into denning and foraging habitat types.</p> <p>Rocky areas on ridge lines were considered as denning habitat, while the steep slopes, gullies and low flats were considered as suitable foraging habitat. Based on this analysis the proposed offset</p>	

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			<p>area is estimated to contain 347.32 ha of denning habitat and 236.17 ha of foraging habitat for the northern quoll.</p> <p>The actual extent and quality of the habitat within the offset area will require field verification; however, as the offset area neighbours the project area, the habitat quality within the offset area is expected to be similar to the baseline conditions of the project area as identified in the Flora Report (Vol 3, Appendix 16).</p> <p>The baseline conditions within the project area are characterised by high levels of natural landscape integrity, remnant and relatively intact vegetation communities. As the offset area is likely to provide habitat for the northern quoll, it is expected that the proposed offset area can effectively compensate for specific impacted attributes of the project on the species (i.e. habitat loss, habitat degradation and potential displacement) by securing a neighbouring area that meets, if not exceeds, the quality of the habitat at the project area.</p>	
554.	S019	<p>Offsets should be a last resort. Under the EPBC Act Offsets Policy, proponents must demonstrate that they have taken steps to avoid and minimise impacts on matters of National Environmental Significance before offsets are available. We believe the proponents have not adequately demonstrated they have undertaken the necessary steps to avoid or mitigate impacts, as we have consistently raised in in this submission. In circumstances like the Mount Emerald plateau, it is simply not possible to offset the impact of development in a manner that will ensure there is an improved (or maintained) conservation outcome. Where the habitat to be removed is in excellent condition, any form of offset and particularly indirect offsets can only mean a loss. The proposed offset simply cannot undo the loss of biodiversity and damage caused to the Mount Emerald plateau during construction and operation of the wind farm.</p>	<p>As part of the comprehensive EIS impact mitigation process, the proponent has demonstrated that it has taken all possible steps to avoid and mitigate impacts on environmental values during the pre-construction, construction and operational phases of the project.</p> <p>Avoidance and mitigation measures are referenced throughout the documentation.</p> <p>As a controlled action subject to the provisions of the <i>Environment Protection and Biodiversity Conservation Act 1999</i>, offsets are only required for residual impacts on Matters of National Environmental Significance that are considered significant in accordance with the <i>Matters of Environmental Significance – Significant Impact Guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999</i>. Residual significant impacts are those that remain after avoidance and mitigation measures have been implemented. Offsets for these impacts are to be delivered in accordance with the <i>Environment Protection and Biodiversity Conservation Act 1999</i> Environmental Offsets Policy.</p> <p>Through the EIS process significant residual impacts on three EPBC Act listed fauna species and two flora species are likely to remain after all avoidance and mitigation measures have been undertaken. To compensate for these unavoidable impacts, the proponent has committed to delivering offsets in accordance with the EPBC Act Environmental Offsets Policy October 2012.</p> <p>The Offset Plan prepared as part of the EIS outlines the project's offset requirements under the EPBC Act Offsets Policy and identifies a potential direct, land-based offset area located adjacent to the project area. The proposed offset includes the:</p> <ul style="list-style-type: none"> - protection of up to 583 ha of native remnant vegetation through the application of a statutory covenant under the <i>Land Title Act 1994</i> - adaptive management of up to 583 ha of native remnant vegetation including weed control, pest animal management and fire management - translocation of <i>Grevillea glossadenia</i> and <i>Homoranthus porteri</i> individuals directly impacted by the project - ongoing management of the translocated species - implementation of a monitoring program to determine the success of management actions and inform adaptive management. <p>The suitability of the offset area is subject to an assessment against the EPBC Act Offsets Assessment Guide. The guide has been developed to give effect to the requirements of the EPBC Act offsets policy and utilises a balance sheet approach to assess the appropriateness of offsets to compensate for impacts on threatened species and ecological communities. A preliminary assessment of the area against the Offsets Assessment Guide has been undertaken as part of the EIS process and the results are presented in the EPBC Act Offsets Assessment Guide Preliminary</p>	

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			<p>Results report (Vol. 3 – Appendix 35).</p> <p>Based on the results of the offset assessment, there is sufficient potential to configure an offset area compliant with the requirements of the Australian Government’s EPBC Act Offsets Policy on the proposed offset property. While this assessment is preliminary in nature, the values generated from the Offsets Assessment Guide indicate that not only is the proposed offset capable of acquitting the project’s offset requirements entirely but, for some values, provides more than twice the offset area required.</p> <p>The final configuration of the offset area will be determined following ecological surveys, the results of which will inform the final offsets assessment guide scores. The offset area provides for the long term protection of habitat for the five threatened species and through the implementation of adaptive management practices the quality of the habitat will be improved and maintained over time.</p>	
555.	S019	The proponents state that a maximum loss of 57.11 ha will occur for endangered quolls, birds and bats from the construction of turbine pads, laydown pads, access tracks and substation. Elsewhere in the draft EIS references are made to a range of other activities that require additional clearing including a mobile concrete batching plant, a temporary construction site, material stockpiles, washdown facilities for weeds, sewage treatment for 250 workers, additional rehabilitation areas for revegetation trials, and sediment detention basins. We don’t believe the figure of 57.11 ha includes the upgrade of Kippin Drive or the extra clearing required for stormwater diversion drains every 50-70 metres on steeper roads. All of these areas should be included in the development footprint in the finalised EIS.	<p>The range of activities and associated disturbance areas are outlined in Section 2.5 and further expanded in Section 2.6, along with any assumptions made in determining them.</p> <p>The total of the disturbance areas is approximately 57 hectares.</p> <p>A further breakdown of the disturbance areas is provided in Table 20.7.</p>	
556.	S019	The changes to Mount Emerald plateau during construction and operation are far-reaching and go beyond the actual construction footprint which has been used to calculate the proposed offset. Obermeyer notes the terrestrial footprint of modern wind energy development is about 20-28 ha per megawatt of installed capacity, and the ecological footprint can be even larger (2011). The proposed offset is not of a proportionate size or scale to mitigate impacts on Matters of National Environmental Significance. The offsets do not address the potential for the wind farm to create barriers of movement which limit foraging and breeding movements (both terrestrial and avian) on a regional scale. Offsets need to account for not only the direct loss of terrestrial habitat but also increased mortality from turbine collisions/barotrauma, which does not appear to have been identified as part of the offsets analysis (63 turbines = over 20,000 sq m)	<p>The impact of the construction and operation of the project on Matters of National Environmental Significance has been determined in accordance with section 5.6 of the EIS Guidelines. Ecological surveys of the site have been undertaken since May 2010 and include targeted vegetation, flora and fauna surveys (see Appendix 13 of the EIS).</p> <p>Based on these surveys, residual significant impacts are likely to remain after all avoidance and mitigation efforts are undertaken for five threatened species. Consequently, a potential offset area to compensate for these unavoidable impacts has been identified.</p> <p>The suitability of the offset area is subject to an assessment against the EPBC Act Offsets Assessment Guide. The guide has been developed by the Department of the Environment as a tool to assess the appropriateness of offsets to compensate for impacts on threatened species and ecological communities. A preliminary assessment of the area against the Offsets Assessment Guide has been undertaken as part of the EIS process and the results are presented in the EPBC Act Offsets Assessment Guide Preliminary Results report (Vol. 3 – Appendix 35).</p> <p>Based on the results of the offset assessment, the offset is of a size and scale to offset the impacts of the development on Matters of National Environmental Significance. While this assessment is preliminary in nature, the values generated from the Offsets Assessment Guide indicate that not only is the proposed offset capable of acquitting the project’s offset requirements entirely but, for some values, provides more than twice the offset area required.</p>	
557.	S019	The recent Senate Inquiry into Offsets highlights some of the problems with offsets under the EPBC Act. The Inquiry heard the system is under intense pressure from proponents to lower standards and hasten approvals, leading to a relaxation of standards. There is concern that the mitigation hierarchy is not rigorously applied and involves subjective judgements that serve the interests of proponents. It is often left to the proponent to ensure that details of monitoring, compliance and other evaluations are made public. Even when they are fully implemented, Australia’s short history of offsets means there is inadequate evidence of the long-term effectiveness of any offsets to date. In particular, there is very limited data on the environmental outcomes of offset projects, nor is there a coordinated program of evaluation that would inform future offsetting arrangements.	<p>As part of the comprehensive EIS impact mitigation process, the proponent has demonstrated that it has taken all possible steps to avoid and mitigate impacts on environmental values during the pre-construction, construction and operational phases of the project.</p> <p>However, significant residual impacts remain and the proposed approach to delivering offsets in order to compensate for unavoidable residual impacts on environmental values is wholly in accordance with the relevant provisions of the <i>Environment Protection and Biodiversity Conservation Act 1999</i> and the associated Environmental Offsets Policy.</p> <p>The history, appropriateness and effectiveness of the use of environmental offsets in federal environmental approvals in Australia is not a requirement to be addressed as part the EIS.</p>	

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558.	S019	The proposed offset does not appear to have been ground-truthed or physically assessed through field surveys. Any proposed offsets should be physically assessed and the results included in the final EIS.	As outlined in the Offset Plan, field assessments of the proposed offset area and will include flora and fauna surveys, which will be undertaken by qualified ecologists and other suitably qualified experts. Following completion of the field surveys, a detailed offset proposal for submission to the Department of the Environment will be prepared. In the event the offset area proves not to be suitable following field surveys, further work in order to identify a suitable alternative offset will be undertaken.	
559.	S019	The proposed offsets contravene the EPBC Act's Offsets Policy because it is not additional to what is already required under current planning regulations. The Offsets Area Management Plan prepared by consultants CO2 Australia Ltd states that the proposed offset area "is not currently reserved by law or planning regulation ... therefore securing and managing the proposed offset area will deliver a new conservation gain" (p.17). This is not true. The blocks 7SP198648, 40SP58906, 21SP210202, 22 SP210202, 23 SP210202 and 42SP258905 are part of a lifestyle subdivision developed by Mount Emerald Pty Ltd joint venture partners Port Bajool. It is understood Port Bajool still owns four of the lots - suggesting they could be paying themselves for the offsets they provide. (It is extraordinary that the draft EIS does not refer to the project partners as the land owners of some of the identified lots, stating that: "Through consultation, RACL has determined that the landholders of the identified lots are amenable to securing the offset area for conservation purposes.") Port Bajool submitted an application to the Tablelands Regional Council in 2012 to reconfigure some of these blocks. The following is an excerpt from the Council report: "The key issue with this reconfiguration application is to ensure any future buildings are located outside the predicted area of noise nuisance for the proposed Mount Emerald Wind Farm. A building envelope condition has been recommended for this purpose. The building envelope condition is based on the preliminary noise impact information and there is no certainty that the final noise impact information will remain the same. Whilst this should not prevent the reconfiguration from proceeding, the applicant has been advised these new lots could compromise the wind farm development in the event that the final noise impacts are predicted to be greater. Council officers have informed the applicant of the potential for the reconfiguration to compromise the proposed wind farm; however they have chosen to proceed with reconfiguration and will therefore have to accept any future consequences for the proposed wind farm." As part of the conditions of the reconfiguration, the building envelopes of 100m by 100m must be located outside the buffer zones shown below. An offset will not deliver a net gain if it was not under any threat in the first place.	<p>The proposed approach to delivering offsets in order to compensate for unavoidable residual impacts on environmental values is wholly in accordance with the relevant provisions of the <i>Environment Protection and Biodiversity Conservation Act 1999</i> and the associated Environmental Offsets Policy.</p> <p>Under the EPBC Act Environmental Offsets Policy there is nothing that restricts a proponent from using its own land as an offset to compensate for the significant residual impacts of a project. Nor are there any restrictions on joint venture partners entering into an agreement to secure offsets on land owned by one of the partners. It is proposed to acquit the project's offset requirements by securing an offset area across parts of Lot 7 SP198648, Lot 40 SP258906, Lot 21 SP210202, Lot 22 SP210202, Lot 23 SP258905 and Lot 42 SP258905. Of these, only Lot 21 is the subject to a reconfiguration application, which was approved in January 2013.</p> <p>Whilst the reconfiguration requires that all new buildings, associated firebreaks and effluent disposal areas must be located within the approved building envelope, this in itself does not prevent the clearing of remnant vegetation on the allotment. Although remnant vegetation is protected by the <i>Vegetation Management Act 1999</i>, the <i>Sustainable Planning Act 2009</i> and associated policies and codes, an application can made to the state government to clear remnant vegetation. It is possible that an application could be approved to clear remnant vegetation within the offset area for a number of activities including, but not limited to:</p> <ul style="list-style-type: none"> • residential activities • service infrastructure (e.g. transmission lines) • access roads. <p>However, it is recognised that, given the location and topography of the proposed offset area, the risk that the vegetation in the offset area could be lost as a result of development activities is low. The assessment against the EPBC Act Offsets Assessment Guide therefore assumed only a 5% risk that the habitat would be lost completely without the offset. Despite the risk of loss being very low, the results of the assessment show that the offset area is still capable of providing for the long term protection of habitat for the five threatened species and through the implementation of adaptive management practices the quality of the habitat will be improved and maintained over time.</p>	
560.	S019	Due to the remote and natural aspect of the proposed offset area, it is highly likely it already forms part of nesting, foraging and habitat area for matters of National Environmental Significance. If endangered species moved here due to construction and operational impacts on the Mount Emerald plateau, they are likely to exceed the area's natural carrying capacity and displace the current occupants. The proposed offset area contravenes the EPBC Act's Offsets Policy in that it does not "maintain or improve the aspect of the environment that is affected by the proposed action".	<p>The results of the preliminary assessment against the EPBC Act Offsets Assessment Guide, demonstrate the proposed offset area meets all the criteria of a suitable offset under the EPBC Act Environmental Offsets Policy. This includes the ability to provide for the long term protection of habitat for the five threatened species and through the implementation of adaptive management practices the quality of the habitat will be improved and maintained over time. However, as outlined in the Offset Plan, field assessments of the proposed offset area which will include flora and fauna surveys undertaken by qualified ecologists and other suitably qualified experts.</p> <p>Following completion of the field surveys, a detailed offset proposal for submission to the Department of the Environment will be prepared. In the event that the offset area proves not to be suitable for any reason following field surveys, further work in order to identify a suitable alternative offset will be undertaken.</p>	

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561.	S019	Much of the site is extremely steep and the consultants have not provided an overlay of the proposed turbine layout with the proposed offset. However, it is estimated that the proposed offset areas on lots 7SP198648, 40SP58906 and 21SP210202 are less than 500 metres from six to eight proposed turbine sites. While outside the wind farm property boundary, given the draft EIS reports on quoll movement and dispersal (p.103), the known impacts of fragmentation on quoll distribution (Rankmore and Price, 2004) and the rocky nature of the environment, the potential denning and foraging habitat of the proposed offset area may also be highly disturbed by the impact of construction and operation of the turbines. While the proponents claim the offset area's proximity to the project decreases the risk of the offset not succeeding, this is certainly not the case for the Bare-rumped Sheathtail Bat which would remain exposed to the risk of blade and barotrauma.	<p>As outlined in the EPBC Act Offsets Assessments Guide Preliminary Results Report (Vol 3. Appendix 34), the suitability of the proposed offset area is largely due to its proximity to the project site.</p> <p>The offset area is mapped with the same vegetation communities and is contiguous with vegetation in the project site. It is expected that due to its close proximity to the project area it also contains similar flora and fauna habitat values.</p> <p>It is recognised that assessment of the proposed offset area has to date been based on desktop information. Field assessments of the offset area will therefore be undertaken and will include flora and fauna surveys.</p> <p>Following completion of the field surveys, a detailed offset proposal for submission to the Department of the Environment will be prepared. In the event that the offset area proves not to be suitable – for example, due to impacts on the matters of national significance resulting from the proximity of turbines to the offset area – further work in order to identify a suitable alternative offset will be undertaken.</p>	
562.	S019	The draft EIS states that: “The construction of the wind farm may lead to an increased risk of accidental wild fire (eg. Hot exhaust manifolds from heavy machinery coming in contact with dry flammable vegetation) particularly during the late dry season. The rugged nature of the terrain and consistent high winds could result in wild fires spreading rapidly into areas where control would be difficult if not impossible.” (p.107) The proposed offset area will be at an increased risk of wildfire during construction and operation of the turbines.	<p>As outlined in the EIS, a detailed Fire Management Plan is under development (Appendix 29) to identify the approach to fire management during the Design, Construction and Operations Phases.</p> <p>The offset area will also be subject to a management plan which will include fire management. The fire management strategy will be developed based on an assessment of risk and the fire management guidelines for the vegetation communities present within the offset area.</p>	
563.	S019	For many threatened ecological communities, our understanding of restoration techniques is too limited to ensure that, even with ongoing management and after an appropriate period of time, planted offsets will provide anywhere near the quality of habitat that has been cleared (Wilkins et al. 2003; Munro et al. 2011). Younger planted vegetation can be especially problematic for wildlife, as it can form dense clumps which animals are unable to navigate through and feed within (Law et al. 2011). Native plants can also take years before they start flowering, and younger plants don't flower as frequently as older trees.	<p>The offset area will be managed to improve and/or maintain habitat for the impacted threatened species listed under the EPBC Act and is to be protected in perpetuity through a statutory covenant. While the offset area will be managed in accordance with an approved management plan, revegetation is not anticipated to form a large component (if any) of offset management as the majority of the offset area is remnant vegetation. Remnant vegetation is defined where the dominant canopy has greater than 70% of the height and greater than 50% of the cover relative to the undisturbed height and cover of that stratum and is dominated by species characteristic of the vegetation's undisturbed canopy.</p> <p>Ecological restoration efforts will be based on the results of field surveys, best available information and will be undertaken by suitably qualified and experienced professionals. The offset area may also be utilised as a translocation site for the impacted flora species and a translocation plan will be developed in addition to the offset area management plan. The translocation plan will be based on the criteria and guidelines detailed in the Guidelines for the translocation of threatened plants in Australia (Vallee et al., 2004).</p>	
564.	S019	Globally, tree hollows represent a vital roosting and breeding resource for many species of wildlife (Manning et al. 2012) and are rapidly being lost from the landscape through intensive agricultural intensification and habitat clearing (Fischer et al. 2009). In Australia alone, there are over 300 species that are dependent on hollows (Gibbons and Lindenmayer 2002). When eucalypts are cleared, it takes planted trees around 100 years to form cavities (Gibbons et al. 2000; Rayner et al. 2013), so restoration efforts will not offset the loss of hollow-bearing trees (Vesk and Mac Nally 2006). Nest boxes are often proposed as a solution to the problem of time lags in hollow development, and are recommended by the EPBC Act's offsets assessment guide). However, there are no records of EPBC-listed bat species that roost in hollows using bat boxes (Goldingay and Stevens 2009).	<p>As outlined in the Offset Plan (Vol. 3 Appendix 35), the offset area consists of remnant vegetation dominated by a variety of eucalypt tree species (including <i>Corymbia intermedia</i>, <i>Eucalyptus portuensis</i>, <i>Corymbia leichhardtii</i>). Consequently, there is estimated to be 391 ha of potential roosting habitat for the bare-rumped sheathtail bat within the offset area. The actual extent and quality of roosting habitat within the offset area will require field verification; however, as the offset area neighbours the project area, the habitat within the offset area is expected to be similar to the bare-rumped sheathtail bat habitat identified in the project area. Field verification will include identification of necessary microhabitat features, including tree hollows.</p> <p>No revegetation is proposed within the offset area; however, the final ecological restoration program will be based on the results of field surveys, best available information and will be undertaken by suitably qualified and experienced professionals.</p>	
565.	S019	The proponents suggest further wildlife research would provide an indirect offset. While	The preferred offset delivery method is direct offsets and will only seek to use other	

No.	Submission	Issue	Response	Section Amendment
		research is important, it will not make up for the loss of habitat. According to the Senate Inquiry submissions, the effectiveness of indirect offsets remains theoretically dubious and unproven in practice. Funding to support research for example, is not appropriate because the link to conservation outcomes depends on the quality of the research, the findings of the research, and the political will and resources of the responsible agency to implement management changes.	<p>compensatory measures should additional offsets be required. Compensatory measures, such as investment in research, may be utilised where it has been identified as a priority action for the species in a published recovery or threat abatement plan or in published scientific literature. For some species it may be appropriate to provide a combination of direct offsets and compensatory offsets in order to improve or maintain the viability of the species.</p> <p>For example, the Approved Conservation Advice for <i>Homoranthus Porteri</i>¹ states that further research is needed to identify threats to the species including:</p> <ul style="list-style-type: none"> Identify the threatening processes affecting or potentially impacting on <i>H. porteri</i>. Reassess the conservation status of <i>H. porteri</i> (the distribution may be reduced due to taxonomic changes). Design and implement a monitoring program or, if appropriate, support and enhance existing programs. <p>Additionally, the proposed approach to delivering offsets in order to compensate for unavoidable residual impacts on environmental values is wholly in accordance with the relevant provisions of the <i>Environment Protection and Biodiversity Conservation Act 1999</i> and the associated Environmental Offsets Policy. The policy states that compensatory measures may satisfy up to a maximum of 10 per cent of the total offset requirement.</p>	
566.	S019	The limitations of the Department's compliance monitoring was also highlighted by the Senate Inquiry. It appears that desk-based officers passively assess and approve management plans and compliance reports submitted as required under approval conditions. Numerous plans and compliance returns were found to be overdue, with generally poor evidence of appropriate assessment. In many cases, instances of non-compliance were either not identified by staff or were not referred for assessment and possible enforcement action. Investigations into reported non-compliance with approval conditions were conducted inconsistently. As a consequence, we doubt the department's capacity to ensure the proponents comply with approval conditions.	<p>The proposed approach to delivering offsets in order to compensate for unavoidable residual impacts on environmental values is wholly in accordance with the relevant provisions of the <i>Environment Protection and Biodiversity Conservation Act 1999</i> and the associated Environmental Offsets Policy.</p> <p>The history, appropriateness and effectiveness of the use of environmental offsets in federal environmental approvals in Australia is not a requirement to be addressed as part the EIS.</p>	
567.	S019	Plant translocations are also proposed as project offsets. These activities should be undertaken as part of the development and should not be considered offsets. They provide no net gain. In the cases where funding for research into restoration is being provided as an offset, we would argue that if there is a lack of understanding as to how to restore these communities, then appropriate research should be carried out prior to the project approval. It may well emerge that it will be prohibitively expensive to effectively restore a community, or because of issues associated with germination, effective restoration is simply not possible—this needs to be known before the site is cleared so as to avoid irreversible losses.	<p>The preferred offset delivery method is direct offsets and will only seek to use other compensatory measures should additional offsets be required.</p> <p>Plant translocation has been identified as a potential compensatory measure and may be utilised, in accordance with the EPBC Act Environmental Offsets Policy to 'improve or maintain the viability of the aspect of the environment that is protected by national environment law and affected by the proposed action'.</p> <p>Compensatory measures, such as investment in research, may be utilised where it has been identified as a priority action for the species in a published recovery or threat abatement plan or in published scientific literature. For some species it may be appropriate to provide a combination of direct offsets and compensatory offsets in order to improve or maintain the viability of the species.</p> <p>For example, the Approved Conservation Advice for <i>Grevillea glossadenia</i> states that a priority recovery and threat abatement action is to raise awareness of the species within the local community, particularly within the mining industry.</p> <p>In regard to restoration of direct offsets, an offset area management plan will be required to be approved by the Australian Government. The process for offset management, including restoration of habitat for impacted species, will be outlined in the management plan. It will also identify any risks associated with improving or maintaining the viability of the species within the offset area and corrective actions to be implemented if the management actions are not achieving</p>	
568.	S019	The proponents have suggested preparing interpretive and educational material to promote the species which they threaten, perhaps they will record its demise? This is an unacceptable compensatory measure.		

¹ <http://www.environment.gov.au/biodiversity/threatened/species/pubs/55196-conservation-advice.pdf>

No.	Submission	Issue	Response	Section Amendment
			the objectives and outcomes of the management plan.	

23 ENVIRONMENTAL RECORD

No.	Submission	Issue	Response	Section Amendment
569.	S004	You have not included the environmental record of the other companies and partners that are associated with this proposal. Ratch Aust. is owned by the Thai power generator, Ratchaburi Electricity Generating Holding PCL and the proposal has the partnership with Port Bajool Pty Ltd	<p>Details of Ratch-Australia Corporation Limited’s Environmental Record are provided in Section 6.0 of the Executive Summary, as well as an Environmental Statement in Volume 1 Section 1.4.</p> <p>It should be noted that Mt Emerald Wind Farm is a company with equal shares held between RATCH-Australia and Port Bajool. While it is recognised Ratch-Australia are the party taking action the following information is supplied in reference to the contribution of Port Bajool.</p> <p>Port Bajool are the owners of the land and have developed property in the Port Douglas and Tablelands areas for over 30 years. They have developed and held interests in various projects during this time including;</p> <ul style="list-style-type: none"> • Agriculture – sugar farming and grazing including Wetherby and Crystalbrook Stations • Tourism – Vacation Village, Rainforest Habitat, Treetops Resort, Crystalbrook Lodge • Land Development – Gorge Estate, Highland Park, Reef park, Port Gardens, Oaky Creek, Springmount Park <p>Further detail on the record of Port Bajool is included as Appendix 36B.</p>	<p>Volume 2 Section 23.1</p> <p>Executive Summary Section 6</p> <p>Volume 1 Section 1.4</p> <p>Volume 3 Appendix 36B</p>
570.	S006	Environmental Record references Tablelands Regional Council court proceedings against RACL and that should speak volumes for not trusting RACL corporate bullying behaviour so very typical of wind developers.	Section 6.2 of the Executive Summary, Environmental Impact Statement confirms that on 7 December 2012 the Tablelands Regional Council withdrew the proceedings in relation to the Windy Hill Wind Farm.	
571.	S019	RACL claims to “fully respect environmental laws and regulations”. This statement is not backed up by their local reputation. Periodic monitoring requirements were not undertaken at Windy Hill Wind Farm from 2000 to 2011 until the issue was pressed by the local council. When it was recommended by Council’s noise expert that 3 turbines should be turned off at night, RACL refused and the matter went to the Planning and Environment Court. The case was later discontinued, Council realizing the permit conditions were not strong enough to force the issue.	Reasoning as to why the case was discontinued is speculative.	
572.	S019	Our community’s experience with RACL at Windy Hill wind farm near Ravenshoe does not instill us with a lot of trust in the proponents. They don’t have a strong track record of undertaking the environmental and noise monitoring that they promised, or of cooperating with independent compliance audits. Tablelands Regional Council has experienced considerable problems with RACL when trying to achieve noise compliance at Windy Hill. We have already experienced a similar lack of cooperation at Mount Emerald, where RACL refused to undertake noise monitoring at nearby residences. We have undertaken our own independent noise and weather monitoring, but RACL has failed to provide the requested comparative data from monitoring towers on Mount Emerald. Most importantly, if monitoring reveals there is a problem, we are not confident that the proponents will stop the turbines.	<p>Refer Volume 1, Section 1.4, Environmental Impact Statement for Ratch-Australia’s Environmental Statement.</p> <p>Reference should also be made to Ratch-Australia’s Integrated Quality, Safety and Environment (IMS) Policy located in Appendix 36 of the Environmental Impact Statement. RATCH-Australia is committed to ensuring our ‘Social Licence to Operate’ by promoting a culture of ‘zero harm’ to our people and to the environment through our activities. To achieve this commitment Ratch-Australia has an Integrated Management System (IMS) compliant to ISO 9001; ISO 14001; AS/NZ 4801.</p> <p>Ratch–Australia has an obligation to comply with all applicable legislation, mandatory guidelines, codes, standards and development approval conditions as they relate to our business activities.</p>	
573.	S019	The Windy Hill Wind Farm Environmental Management Plan, (approved by the Council) states: “Bird strikes will be monitored”. RACL has twice stated in the draft EIS “There have been no systematic bird and bat turbine collision mortality monitoring conducted at the single operating wind farm, Windy Hill”. This is a breach of the company’s responsibilities. If RACL has failed to monitor the Windy Hill site, why should we trust them to monitor Mount Emerald?	Noise monitoring has been undertaken at locations in close proximity to the proposal. One request for monitoring was refused as modelled maximum noise levels were below the minimum noise requirements.	

No.	Submission	Issue	Response	Section Amendment
574.	S019	A study of Environmental Impact Assessments on wind farms highlights some of the problems with monitoring, with assessors finding monitoring of impacts after construction was weak and showed a lack of commitment (Jones and Fischer, 2013).	Ratch–Australia has an obligation to comply with all applicable legislation, mandatory guidelines, codes, standards and development approval conditions as they relate to our business activities.	
575.	S019	When breaches are confirmed, we believe there should be strict constraints to approvals granted to related companies and projects in the future. If companies knowingly ignore approval conditions, the Government must send the message that there are ramifications.	No response required.	
576.	S019	RACL states on page 15 they are progressing a development application for the High Road Wind Farm 40km from the Mount Emerald site. The development was approved in June 2011 and we would like to know why they haven't started construction.	<p>The High Road Wind Farm development is currently within the Feasibility phase of its development.</p> <p>In the end the overall project financial viability is the key determination in whether it will proceed. This assessment cannot be made until the each main aspect of the project is understood.</p> <ul style="list-style-type: none"> • environment and approvals • equipment supply and contracting • electrical connection • land tenure • power sales <p>The development application, although approved, is currently subject to a Negotiated Decision Notice process, pursuant to Section 361 of the Sustainable Planning Act 2009.</p>	
577.	S022	Lastly, who will ultimately be responsible for professional indemnity of the Mt Emerald Wind Farm?	<p>In accordance with wind industry best practice, the insurance package for the MEWF project would include:</p> <ul style="list-style-type: none"> • Contract works insurance, in an amount not less than 100% of the construction contract sum; • General third party liability insurance, with a limit of liability of not less than \$50M for any one occurrence; • Workers compensation insurance; • Professional indemnity insurance covering the liability of the contractor, in an amount of not less than \$20M for any one claim; • Motor Vehicle liability insurance; • Marine transportation insurance, in an amount not less than the value of the transported goods; • Delay in start-up, and marine loss delay in start-up insurance; and • any other insurances required by law. <p>The final specifics (including limits and indemnities) would be settled at the time of financial close, taking into account regulatory obligations and requirements of other stakeholders, for example, banks.</p>	
578.	S022	Is Ratch going to on-sell the development if the development application is approved?	Ratch Australia is a long term investor and owner of power generation assets in Australia.	

LIST OF SUBMISSIONS

Submission No.	Submitter
S001	Saeed DE RIDDER
S002	Cameron LAVIS
S003	Peter BUENZLI
S004	Denise LAVIS
S005	Renee SERRA
S006	Ivan CHAN
S007	Diana TAYLOR
S008	Ian FREEMAN/Ann SUTHERLAND (Wildlife Preservation Society of Queensland)
S009	Des BOYLAND (Wildlife Preservation Society of Queensland)
S010	Antonia CHEW
S011	Linda BROSNAN
S012	Donna CHEW
S013	Krista WATKINS
S014	Brain and Irene WESTWOOD
S015	Christine DOAN
S016	Annette ALLWOOD
S017	Lee SCHWERDTFEGER
S018	Volker SCHWERDTFEGER
S019	TABLELAND WIND TURBINE ACTION
S020	Lee SCHWERDTFEGER
S021	John GARGAN
S022	Patina SCHNEIDER (Australian Industrial Wind Turbine Network)
S023	Jenny DISLEY
S024	Jenny DISLEY