



MOUNT EMERALD WIND FARM



Fact Sheet

Summary of Investigations and Assessments

The information provided below is a summary of the various studies and investigations undertaken as part of the development of the Mount Emerald wind farm project. For the full reports please refer to the Development Application documents available through the Tablelands Regional Council or on the Mount Emerald project website at www.windforms.net.au

PROPOSAL

The project provides for the installation of up to 75 wind turbines, each with a nominal capacity of 2 to 3MW. While the actual make and model is yet to be determined, the typical physical characteristics of the turbines include a tapering steel tower supporting a 3 blade rotor with blade lengths up to 50m and a hub height of 80 to 90m. Of the turbines being considered the largest has an overall tip height of 131m (hub height of 80m and blade of 51m).

Investigations have identified 78 representative dwellings in the vicinity of the wind farm, the relative proximity of these dwellings to the nearest wind turbine is

Distance from WTG (m)	No. of Residences
1000	0
2000	10
3000	44
4000	69
5000	78

The townships of Walkamin and Rangeview are located approximately 4.7km and 3.1km from the nearest wind turbine respectively. Representative dwellings have been included in the analysis for these areas.



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TRAFFIC

There are two alternative routes being considered for delivery of components to the Kennedy Highway and ultimately the site – one inland route via Kennedy Development Road and the other via the Palmerston Highway. From the Kennedy Highway at Walkamin the recommended route follows Hansen Road and Springmount Road before turning into Kippen Drive to access the entrance to site. The route along Hansen Rd and Springmount Rd is gazetted for large vehicles accessing the Arriaga Mill.

The intersection of Springmount Rd and Kippen Dr will warrant upgrade works to accommodate the construction vehicles.

FLORA AND FAUNA

Various site investigations have been undertaken on the site to determine the range of species expected to be encountered. These include;

- Early dry season survey in May 2010
- Late wet season survey March-April 2011
- Targeted survey for Northern Quoll June-July 2011
- Specific bat survey in mid-dry season June-July 2011
- Specific vegetation survey June 2011

Many of the potential impacts on conservation significant species resulting from the construction and operation of the proposed wind farm may be reduced to acceptable levels through the implementation of appropriate controls. In the longer term the operational impacts on these species are not considered likely to be significant provided the recommended monitoring and management programs are implemented.



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VISUAL

Considering the elevation of the site, size of the structures and the prominence of the land along public viewpoints, the wind farm will inevitably create an impact on the natural landscape. How the impact is perceived is largely subjective, with both positive and negative elements.

A 3D model has been prepared which replicates the anticipated visual impact from the wind farm from various locations around the site. High quality montages have been prepared for 10 general locations around the site and approximately 130 further simulations for other viewpoints.

SHADOW FLICKER

Wind turbines due to their size cast shadows on their surrounds at specific times of the day. Using simple geometry incorporating the sun's path, topography and wind turbine dimensions, it is possible to calculate the time that a receptor will be subject to shadow flicker. In the simplest of cases (worst case), the turbine is assumed to be operating all the time, is perpendicular to the receptor at all times and the sun is shining at all times of the day. This case will provide an upper bound or maximum to the number of shadow hours expected each year.

The shadow flicker investigation concludes that for the largest wind turbine contemplated, there are four dwellings which it is predicted will experience shadow flicker. Under the worst case scenario the annual amount of time shadow flicker is experienced at these receptors is well below the recommended allowable limit of 30 hours per year, with the most affected dwelling experiencing 7 hours 43 minutes for the year with a longest single incident of 13 minutes. Thus the impact is within allowable limits for all neighbouring dwellings to the wind farm.

NOISE

The noise from the wind farm must remain below prescribed limits. These limits are set out in a range of guidelines and standards. The Mount Emerald wind farm has been designed to conform to the following limits;



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- Audible Noise – the greater of 40dBA or the background noise level plus 5dBA - Qld Environmental Protection (Noise) Policy 2008 and South Australian EPA Wind Farm Environmental Noise Guidelines 2009
- Infrasound Noise – 85dBG indoors – Qld Department of Environment and Resource Management (DERM) Assessment of Low Frequency Noise Part A Infrasound
- Low Frequency Noise – 50dB(Linear) indoors - Qld Department of Environment and Resource Management (DERM) Assessment of Low Frequency Noise Part B Low Frequency Noise

The existing noise levels or background was determined by monitoring the noise levels at six locations in closest proximity to the wind farm.

The results of the noise assessment for audible noise show that noise goals are met at all locations. The predicted wind farm noise levels are well below the background noise levels at most locations, with only 7 receptors having a level above the background. In all of these cases the increase is within the allowable 5dB and all are below the minimum level of 40dBA even under the highest noise emission of the turbines.

The low frequency and infrasound assessment also shows compliance with levels calculated being below the prescribed limits. For infrasound the maximum calculated level is 66dBG (85dBG limit) and for low frequency the maximum calculated limit is 56dB(Lin) against a 60dB(Lin) limit for outdoors.

ELECTROMAGNETIC INTERFERENCE

The potential impact on radio communications services was investigated as part of the development process. The key to this investigation is identifying the existing radio communication sites and services and their associated paths. This data was obtained from the Australian Communication and Media Authority (ACMA).

28 radio communication sites were found within a 10km distance of the wind farm with an associated 222 registered assignments. These locations and their standard exclusion zones were mapped against the proposed wind farm layout. From the assessment it is considered that one



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turbine may intrude on a particular path. Confirmation of the location for the site is being sought prior to any minor modifications to the location of the turbine is undertaken.

AVIATION

Mount Emerald wind farm is located within 13km of the Mareeba Aerodrome, but is not considered to impact upon the operations of this aerodrome. Analysis indicates there will be no impact upon airborne traffic transiting the area.

Current aviation safety guidelines stipulate that objects over 110m should be marked with hazard lighting, however Civil Aviation Safety Authority are presently considering increasing this limit to 150m which would remove the requirement for lighting.

CULTURAL HERITAGE

The history of the land use reduces the likelihood of non-aboriginal cultural significance remaining on the site, although it is noted the area was used for training during World War II. An assessment of the likely indigenous cultural heritage was undertaken including the turbine footprints, road and cable layouts. The investigation, although finding no particular sites being present recommended consultation with the appropriate parties.

The appropriate party has since been identified as the Bar Barrum people and consultation and work is underway to prepare and implement a Cultural Heritage Management Plan with this group.

UNEXPLODED ORDNANCE

Given the sites history in terms of military training in World War II there remains some potential that it contains unexploded ordnance. A search of the Department of Defence website confirms this. It is intended that an investigation of the site be undertaken prior to construction in accordance with relevant guidelines to outline remediation requirements necessary to reduce the risk of exposure to such ordnance.



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ECONOMIC BENEFITS

It is expected the proposed wind farm will bring positive benefits (direct and indirect) to the local and regional economy throughout the life cycle of the project. The phases can typically be described as development, construction and operation.

At a direct level the procurement of local goods and services will be strongly encouraged. It is anticipated workers and contractors required for the project will include plant operators, truck drivers, mechanics, welders, fencers, electricians, labourers and other individuals typically used in a civil construction context.

At an indirect level, it is expected economic benefit will arise through the provision of short to medium term accommodation, entertainment and goods & services primarily felt during the construction and operational phases. It is expected this expenditure will occur within the local community as a proportion of wages paid to employees associated with the wind farm. Indirect employment opportunities may also be created as a result of meeting increased demand for these services as well as in the area of tourism.

The expected overall cost of the project is estimated to be in the order of \$500 million and has the potential to supply the annual electricity needs of approximately 75,000 North Queensland homes. This is roughly equates to all of the power needs for the Tablelands or 60% of Cairns.

For general enquiries, please contact:

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Mt Emerald Wind Farm Community Newsletter

Issue 3 – September 2011

Welcome to Issue 3 of the Mt Emerald Wind Farm newsletter.

This newsletter will provide you with an update on the progress for the development of the wind farm and to provide factual information in relation to key concerns being raised by the community.

Change in Ownership

In July this year, Transfield Services ownership in the Mount Emerald Wind Farm project was sold to Ratch Australia Corporation Limited (RACL). RACL is 20% owned by Transfield Services Australia and 80% by Ratchburi Electricity Generating Holdings, a Thai based electricity company with over 5,000MW of installed capacity.

As the Transfield Services team have transferred to this new entity these changes will have no impact on the development of the Mount Emerald project and the project manager remains the same.

Status of Development Application

The development application for the Mt Emerald wind farm was finally lodged with the Tablelands Regional Council on 15 August 2011. This was possible only after we spent 18 months investigating a wide range of issues, including the impact on traffic, flora and fauna, view, aeronautics, culture and heritage and creation of shadows and noise around residences in the vicinity of the wind farm.

Shortly thereafter, the Tablelands Regional Council applied to have an amendment made to the planning code to allow them to fully assess wind farm development applications in the region. This amendment is known as a Temporary Local Planning Instrument (TLPI). The TLPI was approved by the State Minister for Planning on the 16th September.

As developers of the Mount Emerald wind farm, we have been in ongoing contact with the Tablelands Regional Council in relation to the proposed requirements of the TLPI and our documentation relating to the project was prepared to address the Council's proposed conditions. As such, **the Development Application addresses the requirements of the proposed TLPI and includes a Statement of Commitments that embraces the conditions outlined in the TLPI.** The application and the supporting studies are available through the local council or can be viewed on the project website.

www.windfarms.net.au/html/development_portfolio/mount_emerald.php

Studies into Visual Impact

The elevation of the site, size of the wind farm structures and the prominence of the land along public viewpoints means that the wind farm will be visible from the surrounding landscape. Because of this, we commissioned a consultant to prepare a 3D model that replicates the anticipated visual impact from the wind farm from various locations. High quality montages have been prepared for 10 general locations around the site while a further 130 computer generated simulations have been prepared for more specific viewpoints such as residences and towns.

The montages and simulations represent the primary human field of view that would be seen from the actual viewpoint position at the same time of day and reflecting the same climatic conditions as those experienced on the day the photograph was taken.

All of these representations have been prepared by Truescape, which is a highly qualified company, expert in the preparation of such images, with views calibrated using on-site survey to ensure the quality and accuracy of the reproductions. Truescape's client base spans many industries, from landscape architecture and engineering firms through to major New Zealand, Australian and US companies. 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.

The high quality montages will be available at our next community day but we have a wide variety of other viewpoints available, so to understand what your view of the wind farm will look like, please contact the Project Manager.



Noise

The Mt Emerald wind farm will be designed such that noise emitted by the wind farm remains below specific limits as set out in accepted guidelines and standards in Queensland and Australia.

The following noise limits have been used:

- Audible Noise – the greater of 40dBA or the background noise level plus 5dBA – applicable standards; *Qld Environmental Protection (Noise) Policy 2008 and South Australian EPA Wind Farm Environmental Noise Guidelines 2009*.
- Infrasound Noise – 85dBG indoors – *Qld Department of Environment and Resource Management (DERM) Assessment of Low Frequency Noise, Part A Infrasound*
- Low Frequency Noise – 50dB(Lin) indoors - *Qld Department of Environment and Resource Management (DERM) Assessment of Low Frequency Noise Part B Low Frequency Noise*

The existing noise levels or background was determined by monitoring the noise levels at six locations in close proximity to the proposed wind farm site over a two week period to obtain a collection of data for a range of different conditions and wind speeds.

The levels of background noise recorded range from 26dB to 32dB under a light wind (18km/h) to 30dB to 35dB for a moderate wind of 36km/h. For winds higher than this moderate level the background noise level will continue to increase, however the noise emitted by the wind farm will not increase as the turbines have reached their maximum noise level at this speed.

The results of the noise assessment for audible noise show that noise goals will be met at all locations, with all below the minimum level of 40dBA even under the highest noise emission conditions for the turbines.

Predicted wind farm noise levels are also below the background noise levels at most locations, with only 7 out of the 78 nearby receptors/houses likely to experience a noise level above the existing background. In all of these 7 cases the increase is within the allowable 5dB increase under the guidelines, which is the amount generally accepted to be required for a noticeable change in noise level.

The low frequency and infrasound assessment also shows compliance with the standards, with levels calculated to be below the prescribed limits. For Infrasound the maximum calculated level is 66dBG compared to a 85dBG limit and for low frequency the maximum calculated limit is 56dB(Lin) compared to a 60dB(Lin) limit. An outdoor limit for low frequency noise is used at this time due to specific intricacies involved in modelling the low frequency noise within a dwelling, making it too difficult to undertake for all receptors.

Impact on Aviation

Aviation consultant Lambert & Rehbein determined that even though the Mount Emerald wind farm is located within 13km of the Mareeba Aerodrome, it is not considered to impact upon the operations of this aerodrome. Their analysis, which is available on our website, also indicates there will be no impact upon airborne traffic transiting the area.

Lighting

Current aviation safety guidelines stipulate that objects over 110m should be marked with hazard lighting, however Civil Aviation Safety Authority are presently considering increasing this limit to 150m which would remove the requirement for lighting. If the wind farm is determined to require night-time hazard lighting, the lights will be located on the body of the wind turbine and will include shields to

limit the lighting to areas above a horizontal plane, level with the hub height of the wind turbine. It is expected that only 8 of the turbines will require lights under such a scenario.

Given the wind farm site is approximately 300m above the surrounding land and allowing for a 1° down angle, the lights will be shielded to a distance of roughly 17km from the wind farm.

Agricultural Spraying

Lambert & Rehbein also evaluated the impact on aerial spraying activities and concluded that under strong wind conditions aerial spraying may be difficult downwind of the wind farm, however it is unlikely aerial applications would occur in such winds.

We have been concerned by the misunderstanding that has occurred as a result of the Lambert & Rehbein Aeronautical Assessment report. We have sought clarification from Lambert & Rehbein in regard to aerial spraying operations and can confirm that spraying operations are very unlikely to be affected by the wind farm for the following reasons:

1. 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. At wind speeds of 15km/h, the proposed wind turbine generators are either not rotating or rotating minimally and hence the agricultural operations would not be affected.
2. The wind turbines are proposed on elevated undeveloped ground and reasonably removed from the surrounding agricultural land. As spraying and spreading operations are normally conducted within a height of 90m above ground level, the aircraft is well below the level of the wind turbines on the wind farm site (roughly 300m above the surround land).

Further, we would like to clarify some statements made in the Aeronautical Assessment conducted by Lambert & Rehbein:

Report statement 1: Low level flying such as aerial spreading and spraying operations or inspection of power transmission lines will no longer be feasible on the downwind side of the turbines over the properties on which the turbines are sited, or over portions of some adjoining properties that are sited downwind from the turbines. Wind shear, turbulence and downdrafts in the wake of the turbine rotors can present a critical hazard to aircraft such as agricultural aircraft operating at low level and high weights during application of chemicals and seeding.

Clarification: Wind shear, turbulence and downdrafts in the wake of the turbine rotors occur when the turbines are operating, which is at wind speeds above the normal operational parameters of aerial spraying. As previously noted aerial spraying generally occurs in winds up to 15km/h, the operating range of the wind turbines is 15km/h to 95km/h.

Report statement 2: "Instead of operating at the usual height of 90 m, pasture seeding or spreading of fertilisers would have to be performed from a height in excess of the turbine rotor zenith in order to maintain a safe vertical distance from the rotors and their wake. Substances being spread would impact the rotors, possibly causing damage.

Clarification: This relates to aerial spraying on the wind farm site land only, not on areas outside the leased land. As the land leased for the wind farm is not used for agriculture, no spraying is done and would not need to be done. This would not be required in adjoining agricultural properties.

Report statement 3: “Spraying in stronger wind conditions would be rendered impractical by the rotor wake which can contain downdrafts that may exceed the performance of the aircraft, particularly at high operating weights. This hazard, combined with the undulating nature of the terrain on the wind farm site, could make aerial application of chemicals difficult on properties in the vicinity of the wind farm, particularly those within 5 km downwind from the site.”

Clarification: These stronger wind conditions are not suitable for aerial spraying. For turbulence to be felt at 5km distant, the wind speed would need to be significantly stronger than wind speeds in which aerial spraying normally occurs. Aerial sprayers in the region have indicated that operations generally only occur in winds conditions up to 15km/h. Given the operating wind speed range for the wind turbines is from 15km/h to 95km/h, there should be little, if any, restriction to aerial spraying downwind of the turbines under normal spraying conditions.

Given the location and topography of the Mount Emerald wind farm and the surrounding area it is expected there will be very little disruption to aerial agricultural activities. The alignment of aerial spraying approaches and run lines can be easily adjusted to avoid passing over the project site. Provided the wind farm area is avoided on approach and exit there should be no restriction to normal operating procedures. Areas to the east and west of the site should use a predominantly north-south alignment and areas to the north an east-west line.

Provided a common sense approach to the alignment of aerial runs is adopted there is no reason operation cannot be continued. We would like to work with the industry to understand and alleviate any concerns.

Impact on Property Values

The most comprehensive Australian study to date on land values and wind farms was undertaken by the NSW Department of Lands in 2009 for the NSW Valuer General. This study investigated 8 wind farms (2 in NSW and 6 in Victoria) across varying land uses using conventional property valuation analysis. **The main finding was that the wind farms do not appear to have negatively affected property values in most cases.** This outcome is consistent with the findings of other international studies.

Economic Benefits

It is expected the proposed wind farm will bring significant economic benefits (direct and indirect) to the local and regional economy throughout the life cycle of the project. The phases can typically be described as development, construction and operation.

The expected overall cost of the project is estimated to be in the order of \$500 million. **At a direct level, we will strongly encourage our contractors to, procure goods and services from local suppliers and employ people in the local area wherever possible.** It is anticipated workers and contractors required for the project will include plant operators, truck drivers, mechanics, welders, fencers, electricians, labourers and other individuals typically used in a civil construction context.

At an indirect level, it is expected economic benefit will arise through the provision of short to medium term accommodation, entertainment and goods & services primarily during the construction and operational phases. It is expected this expenditure will occur within the local community as a proportion of wages paid to employees associated with the wind farm. Indirect employment opportunities may also be created as a result of meeting increased demand for these services as well as in the area of tourism.

Environmental Benefits

The development has the potential to supply the annual electricity needs of approximately 75,000 North Queensland homes. This is roughly equates to all of the power needs for the Tablelands Region or 60% of Cairns.

More Information

Please contact: Mt Emerald Wind Farm Project Manager, **Terry Johannesen** on **07 3248 8765** or **terry.johannesen@ratchaustralia.com** with any questions.

The application and the supporting studies are available through the local council or can be viewed on the project website.

www.windfarms.net.au/html/development_portfolio/mount_emerald.php



MOUNT EMERALD WIND FARM DEVELOPMENT

NEWSLETTER RELEASED

MEDIA RELEASE

5 October 2011

RATCH Australia has today published a community newsletter relating to the proposed Mt Emerald Wind Farm. This is the third such publication and is part of the company's ongoing commitment to engage and consult with local residents and business.

"The newsletter forms part of our commitment to keep the Tablelands community fully informed of all aspects of the proposed Mt Emerald Wind Farm. This includes listening to residents and taking action to address their concerns," said Terry Johannesen, RATCH Australia's project manager for the Mt Emerald development.

The newsletter summarises RATCH's investigation into issues that have been raised by residents, including:

- **Noise:** the results of audible noise and infrasound assessments show that any wind farm noise will be less than the current requirements at all locations, even under the highest noise emission conditions for the turbines;
- **Views:** high quality visual representations have been prepared by an experienced consultant. Montages are available for ten general locations around the site while a further 130 computer generated simulations have been prepared for more specific viewpoints such as residences and towns;
- **Aerial spraying:** operations are highly unlikely to be affected by any turbulence from the wind farm because spraying typically requires low wind speeds in which the turbines are barely moving and the spraying would be at altitudes significantly below the turbines; and
- **Land values:** while no studies have been conducted in Queensland, a study undertaken by the NSW Department of Lands in 2009 for the NSW Valuer General found that wind farms do not appear to have negatively affected property values in most cases.

RATCH Australia will work within the guidelines agreed with the Tablelands Regional Council, including the Temporary Local Planning Instrument (TLPI) adopted by the Council.

"The Development Application includes a Statement of Commitments that addresses and complies with the conditions outlined in the TLPI," stated Mr Johannesen.

Mr Johannesen also said that RATCH Australia will strongly encourage its contractors to procure goods and services wherever possible from local suppliers and employ people in the local area, thus benefiting the local economy.

Mt Emerald Wind Farm is expected to generate enough clean energy for an estimated 75,000 North Queensland homes.

More information, including all newsletters, can be found at www.windfarms.net.au and following the links to the Mt Emerald project.

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For more information, please contact the Project Manager, Terry Johannesen on (07) 3248 8765.

Mt Emerald Wind Farm Community Newsletter

Issue 4 – March 2012

Welcome to Issue 4 of the Mt Emerald Wind Farm newsletter.

This newsletter will provide you with an update on the progress for the development of the wind farm and provides factual information in relation to key concerns being raised by some members of the community.



Project Approval

The Tablelands Regional Council (TRC) is soon to commence their assessment of the application for the Mount Emerald Wind Farm. The Council will refer various aspects of this assessment to respective government departments and suitable external consultants to ensure the assessment is completed with the utmost diligence.

Our preliminary development application was first published in August 2011 and since then Council, Government departments and interested members of the community have made a number of requests for further information regarding various aspects of the proposal. These have been valuable in assisting us to develop our studies to address areas of concern for our stakeholders.

Some of the key areas where information has already been updated are:

- **Noise** – a greater number of receptors have been included in the study and corrected distances to these receptors
- **Shadow** – a greater number of receptors have been included in the study and corrected distances to these receptors
- **Aviation** – additional detail has been provided regarding the impacts on aerial agriculture activities
- **Land use** – additional land uses around the site have been identified and noted
- **Economic benefits** – incorporating the latest information available from case studies of other wind farms around the country
- **Ecology** – incorporating the latest information from the continued flora and fauna monitoring activities being undertaken on site. This is an on-going process and is planned to continue throughout the development process

The updated application and all the supporting studies are available through the local council or can be viewed on the project website.

www.windfarms.net.au/html/development_portfolio/mount_emerald.php

Community Benefit Fund

In response to a variety of requests from members of the local community, we are pleased to provide further information on the proposed Community Benefit Fund.

While Mt Emerald Wind Farm has the capacity to provide many opportunities for the local community through employment, tourism and use of local businesses, RAC and Port Bajool, as the owners of the Mt Emerald wind farm development, also intend to establish a community fund to provide further benefits from the wind farm to the wider local community.

Purpose: The proposed Community Benefit Fund (the Fund) is intended to fund projects or initiatives that will benefit the local community.

Governance: It is proposed for the Fund to be managed through a special purpose Community Trust. The Trust would be managed by a committee comprising a range of community representatives. The committee would have full control over administration of the Fund.

The committee would be free to use the Fund in whatever manner it feels is appropriate, subject to a basic premise that it will be used to benefit the local community.

Funding Amount: The Fund would provide approximately \$200,000 per year to the local community.

Timing: The Fund would begin once the wind farm commences operation. The Community Trust would be responsible for determining suitable uses for the funds, but these could extend to projects such as:

- 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; and
- Grants for appropriate community projects.

More Information

Please contact: Mt Emerald Wind Farm Project Manager, **Terry Johannesen** on **07 3248 8765** or terry.johannesen@ratchaustralia.com with any questions. A range of information, previous newsletters, studies and reports relating to the Mount Emerald Wind Farm are available through the project website.

www.windfarms.net.au/html/development_portfolio/mount_emerald.php

Mt Emerald Wind Farm

COMMUNITY INFORMATION DAY

Wednesday 19 September 2012

2 - 7pm

**Mareeba Heritage Museum and
Information Centre
345 Byrnes St, Mareeba**

Learn about the benefits for the community

- jobs and increased regional income
 - Community Benefits Fund
 - national, regional and local opportunities

Talk to the experts

- noise and aviation
- visual impacts and shadows
- ecology - flora and fauna
- land values
- engineers and operating regime
- project owners: RATCH and Port Bajool

See what it will look like

- from key viewpoints
- from your house

**Sausage
sizzle
provided!**

What will be built?

- between 70 and 80 turbines (depending on siting studies)
- steel tubular towers approx 80-90m high, with 3 blades approx 50m long
- the turbines will generate up to 225MW of power from 3MW machines
- to provide electricity to approx 75,000 homes per year
- best practice wind farm construction techniques and guidelines will be applied – include meeting noise standards and achieving industry acceptable setbacks from neighbouring residences

Why here?

Wind farms require:

- a constant source of wind – the Arriga site has one of the highest proven wind resources in Australia - identified, mapped and monitored to confirm
- proximity to the grid – the North-South 275kVa (Chalumbin-Woree) transmission line runs through the 7,000 acre property
- an area that will require minimal clearing and have minimal impact on surrounding activities - the Arriga site is a 300m high plateau of mostly sparse natural scrub land, currently not used for a specific purpose. Below the surrounding plains are predominantly used for grazing, agriculture and other industrial purposes like the sugar mill and waste disposal facility
- Onground, the imprint of the turbines and access tracks will only be approx 30 acres of the 7,000 acre property

**STOP
PRESS**

**Book your Mt Emerald Wind Farm site
tour at the information day.
Booked 4WD tours will visit the Test
Tower and view the site from
8am-4.30pm on
Saturday 29 September. Seats limited.**

For more information:

e. info@mtemeraldwindfarm.com.au

Terry Johannesen: 07 3248 8765

Kim Forde: 0448 939 009



An equal partnership between
**RATCH Australia Corporation (RAC)
and Port Bajool Pty Ltd**

Mt Emerald Wind Farm

OUR COMMITMENT TO THE COMMUNITY...

At the recent Mt Emerald Wind Farm Information Day and at the meeting of Tablelands Regional Council we undertook to respond within two weeks to questions. In all, we received questions covering five broad issue areas.

The first responses are already being sent direct to those who asked questions but many responses require a high degree of technical detail if they are to meet the expectations of the enquirer. Please bear with us as we generate this information. Over the next several weeks, broader information will appear in summary form in this newspaper on an 'issue by issue' basis. All responses will be accessible in due course on the new Mt Emerald Wind Farm website.

Our first responses to the five main areas of interest and concern are:

Potential impacts on agricultural activities (especially aerial spraying)

Response: We have already undertaken significant research on this subject, however RATCH Australia is commissioning an additional study into aerial spraying to ensure that all issues of local concern are addressed comprehensively.

Noise

Response: An extensive study on noise has been completed that indicates compliance with all regulatory standards. In addition, RATCH Australia will address in more detail questions received concerning noise mitigation, mapping and monitoring. Individual questioners will also be sent direct responses. In the meantime, some generic noise information is provided in this update report and the accompanying noise table might further help understanding.

Flora and fauna/ecological impacts

Response: Comprehensive studies have been completed over an 18 month period. RATCH Australia is preparing a detailed Environmental Impact Statement. The EIS is required to address all issues relating to animal and plant life on the site as well as landscape impacts resulting from the turbine construction process (and any necessary remediation).

Property Values

Response: A number of global and Australian studies have been undertaken that indicated property values are not affected by wind farm developments, however RATCH Australia has commissioned a more extensive report on the price impacts on properties in the vicinity of wind farms elsewhere in Australia. This will be completed in the near term and made publicly available.

Turbine lights

Response: RATCH Australia will ensure that turbine illumination is kept to the minimum allowed by CASA and other relevant authorities. Some confusion existed around the need for lights on the existing monitoring towers; however this has now been addressed and lights will be installed soon.

Wind Farm Noise

As indicated above, some very specific Mt Emerald questions were asked and the information to address these adequately is being assembled. In the meantime, readers may be interested in this general information relating to wind turbine noise. Wind turbines do produce sound - the main sound being the 'swoosh' of turning blades.

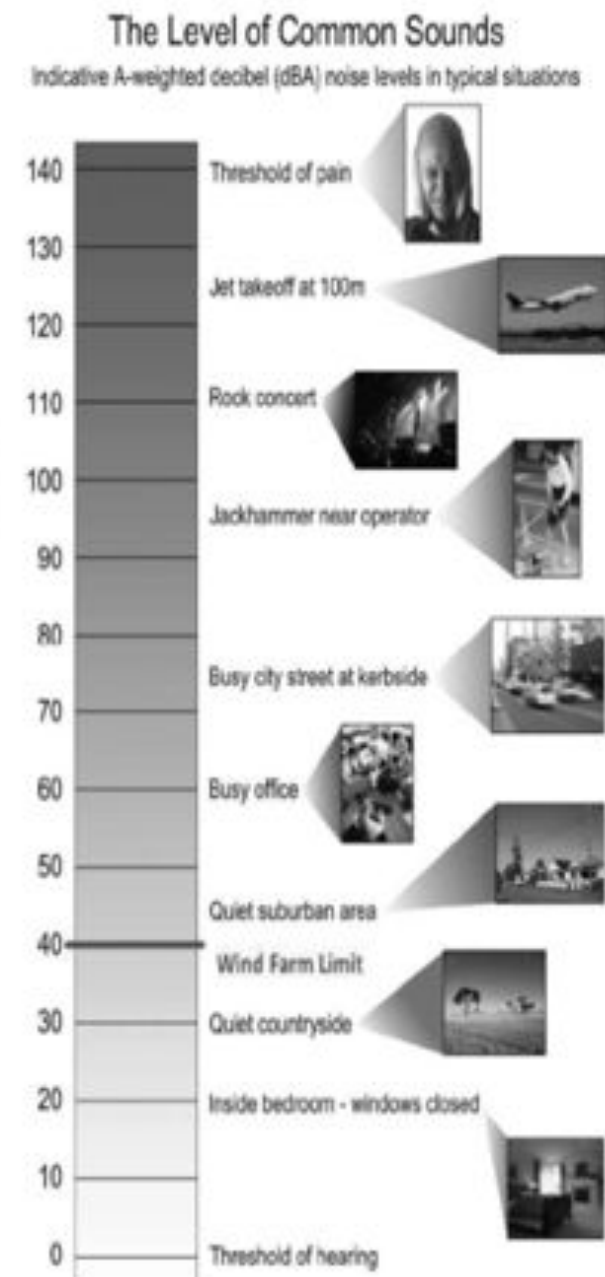
Sound output is measurable, can be modelled, and is regulated by strict guidelines to protect residential amenity. The make and model of the turbines, their location and the number of turbines will all be taken into account to ensure the guidelines are complied with.

Actual data collected at sites surrounding the wind farm show existing background noise to be 27-32dBA for low wind speeds and 30-35dBA at wind speeds where the wind farm would be operating at maximum output. (See graphic).

What this shows is that for the majority of locations the existing background level is often louder than the turbines.

Investigations show few receptors (representing residences or groups of residences) around the wind farm will experience noise levels above background levels. In each of these cases the amount above background is within the allowable limits so as not to cause undue impact.

Wind Farm Noise Comparisons...



Following the tour of the Mt Emerald Wind Farm site conducted on September 29th, RATCH Australia is planning a hosted tour of the Windy Hill Wind Farm. Details to come.



An equal partnership between
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and Port Sajool Pty Ltd

For more information:
e. info@mtemeraldwindfarm.com.au
Kim Forde: 0448 939 009

Mt Emerald Wind Farm

OUR COMMITMENT TO THE COMMUNITY . . .

This is our second Update Report in response to the Information Day on 19 September 2012.

Many people have asked, "Why here? Why not somewhere more remote?"

Every wind farm needs two critical elements to be successful: a plentiful and reliable wind resource and proximity to a high voltage transmission line. Mt Emerald meets both these conditions and, if built, will make a significant difference to the regional power supply picture. At present, most of the region's power comes from Central Queensland. Transmitting electricity over these distances is inefficient and carries power outage risks at various times. Locally generated, clean energy will give the region greater energy security and help manage future electricity costs.

The elevated Mt Emerald site can't be used for much else and certainly not for agriculture. Although the wind farm itself would cover a large area, the turbines, connecting roads and buildings would take up only about 50 hectares on the 2,400 hectare site. Once established, the site's flora and fauna – including weeds and fire control – would be better managed and, in due course, it's hoped to establish walking tracks, mountain bike trails and a visitor interpretive centre.

We believe that Mt Emerald Wind Farm will contribute positively to the region's energy equation, create jobs and diversify the economy.

Here now are the answers to the next tranche of questions under the heading of Noise and Planning.

What kind of turbine?

It's too soon to say. We will not simply install generic turbines; different turbines will be carefully assessed and final selection will be based on all-round performance, noise generation and price. At Council's request, we are updating the existing noise report and this will analyse the impact of a number of different turbines. To be precise about turbine selection and positioning at an early stage is difficult, given the unknowns attached to the planning conditions from Council.

Mitigating Noise – what options are there?

The objective is not to exceed noise level goals. When this is achieved, no mitigation will be necessary. Will turbine noise be heard inside homes? It may be at times, but ultimately the extent of noise allowable within a home from external sources is governed by limits set by Queensland's Environmental Protection Policy. We will adhere to those limits. Can we guarantee that noise will not exceed permitted levels? We must comply with the permit conditions imposed by Council. If we don't, turbines may have to be modified or, in some rare circumstances, shut down for a period.

How accurate are the noise predictions?

Ultimately, the noise predictions can only be validated after the wind farm has been built. If compliance testing shows that the wind farm is not meeting its obligations, the way it operates must be changed until it does comply. This is not negotiable. The suggestion in one question that noise will be double what was predicted is not supportable.

Windy Hill characteristics – how do they relate to Mt Emerald Proposal?

You cannot compare one wind farm with another. Because of topography, turbine location, the model of turbine, the length of blades, prevailing wind direction and speed, each wind farm has individual noise characteristics and these are identified through detailed monitoring.

Infrasound/low frequency sound concern

The Queensland Government has strict requirements in respect of this issue. The Noise Report includes an assessment of infrasound/low frequency sound in accordance with these requirements.

Distance between turbines

The current proposed layout is based on turbines with blades around 50m in length. The distance between turbines is based on this dimension with a minimum separation of some 300m.

In 2000, Mt Emerald Wind Farm partner, Port Bajool, purchased some 13,000 acres of land known as 'Oaky Creek Farms' which adjoins the proposed Mt Emerald Wind Farm site. Port Bajool is proud of the development and welcomes interested visitors.

See an operating wind turbine!

*To see an operating wind turbine at close quarters, the community is invited to drop into Windy Hill Wind Farm car park (Ravenshoe) on **Saturday 13 October**, on their way to the Torimba Festival. RATCH's community engagement staff will conduct escorted walks under a nearby turbine at **10am** and **11am** and be available from **8.30am until 12.30pm** to record any requests for further information.*

Inconsistencies in the Planning Report

The initial Report is confusing when it addresses the number of residences within 5km of the nearest turbine. We will modify the Report to refer to the locations of receptors. A receptor is defined as a location used to represent a single residence or a number of residences closely grouped that can reasonably be expected to experience similar conditions. The modification will also accurately reflect the number of residences.

Effect on Lotus Glen Correctional Centre and Farm

The wind farm is obliged to meet the same noise criteria at the prison as for any other residence.

Mt Emerald Wind Farm

OUR COMMITMENT TO THE COMMUNITY . . .

This is our third Update Report in response to the Information Day on 19 September 2012. In all, 64 questions were asked. We will not spare any effort to address legitimate concerns and we will always engage in a dialogue with the local region – both now and, if built, once the turbines are in operation. We want to be welcomed in the Tablelands region and become regarded as a corporate friend intent on investing in the region for 25 years or longer.

Here now are our answers to a third tranche of questions relating to matters that touch on flora, fauna, ecological and landscape issues. In the meantime, of course, we are also communicating directly with a number of local residents.

Birds and wind turbines

In the natural world, birds must navigate many obstacles, from trees to buildings. Global studies have shown that building strikes cause many more bird deaths than do wind turbines. In addition to work already done, a further detailed investigation is being undertaken as part of a required Environmental Impact Statement (EIS), to be finalised next year. Ultimately, the measures proposed to minimise harm to birds will be assessed by the federal environment department. In general, deaths from birds flying into wind turbines represent only a tiny fraction of those caused by flying into vehicles and buildings or predation by cats.

Quolls – how will the turbines affect them?

Again, this issue must be addressed as part of the EIS and our proposed approach must be assessed by the federal environment department. Our expert advice at this point is that the principal ongoing threats to quoll populations are introduced pest species, including cane toads, feral cats, dogs and pigs; the threat of fire; weeds; and land clearing. It is important to remember that the footprint of the turbines is very small in the overall landscape – only 50ha of a total 2500ha.

Continuing detailed investigation is being undertaken as part of a required EIS, to be finalised in the coming months. Recommended management measures may include weed

control, appropriate fire regimes, predator control, and site construction timing and rehabilitation measures. We firmly believe the wind farm, through the implementation of these appropriate management strategies during the construction and operation phase, has the ability to coexist with the existing quoll population.

Changing the landscape

There were several questions about blasting and grading, and the potential for this to affect the landscape and/or the ecosystem on top of the plateau. Any blasting and grading construction work will be conducted according to Council-imposed conditions and be limited in time and duration. The public will be informed of both timing and what to expect.

In summary, the area of disturbance created by blasting and grading will be kept to a minimum, and there will be a comprehensive revegetation plan developed to restore areas disturbed by the construction process.

Roads to, and on the site, will be designed by a qualified expert to address the transport requirements of the turbine manufacturers, with the objective of achieving minimal disturbance of the landscape. The potential impacts on the plateau's ecosystem must also be addressed in detail in the EIS.

Turbine site size

There was some concern expressed that, during assembly the turbine blades, would extend for 100 metres when resting on the ground and that the 40 x 40 metre base would have to be enlarged.

This is not an issue as each blade can be connected individually to the rotor.



An equal partnership between
**RATCH Australia Corporation (RAC)
and Port Bajool Pty Ltd**

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Mt Emerald Wind Farm

OUR COMMITMENT TO THE COMMUNITY . . .

This is our fourth public response to questions asked at the Mareeba Community Information Day. In all, 64 questions were asked – many, although differently phrased – were seeking similar information. To date, we have responded on aerial spraying and land values (Week 1); noise and planning issues (Week 2) and fauna, flora and landscape impacts (Week 3). This week our responses will address wind energy economics, including decommissioning costs, power prices and employment issues.

Are wind farms viable without subsidies?

It is important to understand there are no direct government grants or subsidies available for the Mount Emerald wind farm or any wind farm project.

The only assistance available comes in the form of the Renewable Energy Target which is available to all forms of renewable energy generation such as wind, hydro, biomass or solar. Under this target, which has been agreed to by all major political parties, 20% of electricity generation in Australia would come from renewable sources by 2020 and requires electricity retailers to purchase a certain number of Renewable Energy Certificates (RECs) from renewable generation each year.

At present coal sourced generation is the cheapest form of energy in this country, with gas fired slightly more expensive while wind powered generation is roughly twice this cost. However, these prices do not include the cost of pollution and wind power is the only pollution-free option of the three. The intent of the RECs is to provide a mechanism where this cost of pollution is taken into account and to provide a level playing field.

New jobs at the wind farm will not compensate for the loss of agricultural jobs: This assumes that there will be jobs lost in the agricultural sector.

We don't believe that will be the case and it is certainly our intention to operate the farm in a way that ensures there are no agricultural jobs lost. Positively, wind turbine construction will create up to 250 jobs while the operating farm will create 15 permanent jobs.

Does wind power impose higher prices on consumers?

Contrary to some recent claims, wind and other large-scale renewable energy sources contribute only a tiny amount to the average power bill – just two per cent. In recent years, power price rises have been mainly driven by increased power grid costs and increasing demand. The cost of power grid upgrades and maintenance are the biggest single driver of power price hikes. Remember too that, over time, polluting technologies will become more expensive and clean technologies will become cheaper.

Wind power electricity cannot be stored.

That's true but wind power is never wasted as it is fed directly into the grid. As an intermittent generator, wind farms form part of a broad mix of energy supply technologies and are not designed to be a sole energy supplier. The power grid is a dynamic system designed to ramp up and down to respond to changing power usage and is sufficiently robust to overcome even the loss of input from the biggest generator to an unexpected fault. Locally produced wind power will enhance the reliability of the region's electricity supply.

Decommissioning

At the completion of the project life, expected to be at least 25 years, options are:

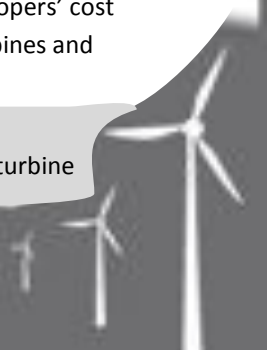
- Consider whether to continue generating from the existing turbines
- Upgrade the turbines
- Decommission the site and remove infrastructure at the developers' cost

This will be determined at that time depending on the condition of turbines and the business case for each option.



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Mt Emerald Wind Farm

OUR COMMITMENT TO THE COMMUNITY . . .

This is the fifth in our series of advertisements summarising responses to the 64 questions asked at the recent Community Information Day on 19 September 2012. This week our focus is on a range of questions – many of them similar in nature – about the proposed wind farm's visual impact, including lighting issues and community opinion.

In reality, how visible will some of the farm's turbines be?

The inescapable reality is that wind turbines, because of their size, are visible. Wind farms must go a) where there is dependable wind, both in strength and direction; and b) where there is a nearby high voltage transmission line. Mt Emerald meets both these non-negotiable requirements.

A general response on the wind farm's visibility is impossible as it is dependent on the observer's location. How a person interprets this view is also difficult, as the perception of their appearance is entirely subjective and what is 'visually intrusive' for one observer, may be acceptable or even majestic to another. Experienced visual consultants have produced images of what a person will see from a range of different vantage points around the wind farm, to allow people to understand what their view may be.

If you would like to see what the wind farm would look like from a location relevant to you please contact the wind farm developers who can arrange for these to be provided.

Specifically, will there be turbines atop Walsh's Bluff and will turbines be visible from the Kennedy Highway?

There will be no turbine located on top of what is generally accepted to be Walsh's Bluff, however we are aware that some people see Walsh's Bluff as a much larger area. So, the answer is; it depends on what area you consider to be the Bluff. For clarity, the distance between the nearest turbine and the peak of Walsh's Bluff is 200m.

Yes, turbines would be visible from the Kennedy Highway – how many will vary as you move along the highway.

Lighting on the towers

At present, it is our understanding there is no specific requirement for lights to be installed on the wind turbines. However, we must be guided by the authorities in respect of this issue, principally those associated with aviation. The safety of aircraft is paramount. If we are required to put obstacle lighting on a number of towers, we will do so and in accordance with the regulations. Please note, these regulations do allow for the lighting to be shielded to an angle of one degree below the horizontal, thus screening neighbours from any lighting impact out to a distance of about 20kms. It's reasonable to suggest that, beyond 20kms, the nuisance from lights will be minimal to non-existent.

Community Support

It has been suggested that most people in the region know little or nothing about the Mt Emerald Wind Farm project and therefore, we could not possibly argue there was community support. Our poll was conducted by AUSPOLL, who are a respected and reputable organisation and conduct a variety of polls for both private and government organisations. In response to the question: "are you aware of the proposed Mt Emerald Wind Farm?" 82% of respondents answered **YES**. As to the issue of support, 31% strongly supported, 45% supported, 11% neither supported nor opposed and 5% strongly opposed. More generally in the nation, the CSIRO has found there is strong community support for the development of wind farms; which increases over time, post construction, as people realise that their initial 'fear of the unknown' was unfounded.



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