



Development Application Material Change of Use Utility Installation

Mt Emerald Wind Farm

August 2011

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Executive Summary

Queensland's Renewable Energy Plan (QREP) is Queensland's approach to clean energy and aims to provide for 2,500 megawatts of renewable energy to contribute to the National Mandatory Renewable Energy Target (MRET) of 20% (COAG, 2008). Further amendments to the expanded national Renewable Energy Target (RET) were passed through Parliament on the 24 June 2010 and now provides for just over 90% of the expanded RET target to be met by efficient large scale renewable energy projects. As a direct result of these past and present initiatives, Transfield Services Infrastructure Fund has a number of wind projects proposed or operating across Australia, one of which is Mt Emerald Wind Farm.

This application, made on behalf of Mt Emerald Wind Farm Pty Ltd ('the applicant'), seeks a Development Permit for a Material Change of Use for the purpose of a 'Utility Installation' (specifically Wind Farm) as defined under the Mareeba Shire Planning Scheme, on land located off Springmount Road, Arriga. The project area consists of a single freehold title (Lot 7 on SP235244) with a total area of over 2,422 hectares.

Mt Emerald Wind Farm will be managed and operated by Mt Emerald Wind Farm Pty Ltd which is a joint venture between Transfield Services Infrastructure Fund and Port Bajool.

The Mt Emerald Wind Farm, at completion, will consist of 75 wind turbines, each with a nominal capacity of between 2-3 MW. While the actual turbine make and model is yet to be confirmed, the typical physical characteristics of the turbines include a tapering steel tower supporting a three blade rotor, which includes blade length up to 50m and a hub height of between 80m-90m. Of the turbines currently being considered the largest has an overall tip height of 131m (hub height of 80m and a blade length of 51m). Adequate setbacks will be established for each turbine to ensure that no part of the turbine overhangs adjacent properties (not part of the application) or gazetted roads. Each turbine will be connected, via a transformer located adjacent to each tower, to the proposed substation via a network of both underground and overhead cables. The substation will ultimately be connected via overhead transmission lines to the existing 275kV transmission corridor which traverses Lot 7.

For the purposes of the Mareeba Shire Planning Scheme, the 'Mt Emerald Wind Farm' is defined as a Utility Installation, which includes *"the use of premises for the purpose of **carrying out any undertaking** in relation to:*

- (a) road, air transport, wharf or river undertakings;*
- (b) the provision of sewerage or drainage services;*
- (c) the supply of water, sewerage treatment, hydraulic power, **electricity** or gas."*

It is considered that this definition adequately encapsulates the proposed development, which includes the establishment of up to 75 wind turbines on the site and ancillary infrastructure necessary to distribute electricity generated at the site, such as access tracks, transformers, underground and overhead cabling and substations, as well as associated facilities including maintenance depot.

For the purposes of the Planning Scheme, the subject site is within the Rural Zone. As such, an application for a Utility Installation is Code Assessable development, as the proposal does not meet the Acceptable Outcomes for self-assessable development.

Given the unique nature of the proposal and significance of the project, there is a lack of detail provided within the existing Mareeba Shire Planning Scheme in terms of specific assessment criteria. Acknowledging these shortcomings of the planning scheme, various specialist assessments have been undertaken which identify and recommend strategies to manage potential impacts during the construction and operational phases of the project. These relate to noise, electromagnetic interference, shadow flicker, visual amenity, flora and fauna and cultural heritage.

The specialist assessments provided and management strategies proposed form the technical elements of the application and the particular design elements of the proposal demonstrate that certain requirements are essential for the efficient functioning of the Wind Farm which can be appropriately managed without undue impact on the area.

It is acknowledged that Council's intention is to adopt a Temporary Local Planning Instrument ('TLPI') which will include a specific definition of a 'wind farm' and associated wind farm code. However, this has not been formally adopted by the State at time of writing this report. It is noted that such a document would not however change the level of assessment of a wind farm in the Rural Zone under the Mareeba Shire Planning Scheme area, although it would provide specific assessment criteria for wind farm developments in the Rural Zone.

Considering this and given the scale and significance of the project, lack of specific assessment criteria within the current Mareeba Shire Planning Scheme and having regard to Council and community concerns raised to date, a Statement of Commitments (SoC) (contained in **Appendix A**) has been prepared, which outlines the mitigation measures proposed to avoid, minimise and manage potential impacts resulting from the construction and operation of the wind farm, based on the elements of the project of which detailed assessment has been undertaken.

Summary Table

| Site Details | | | |
|--|---|-------------------------------------|-----------------------------------|
| Site Address: | Springmount Road and Unnamed Road, Arriga | | |
| Name of Ward/Division: | Division 1 (Cr Alan Pedersen) | | |
| Real Property Description: | Lot 7 on SP235244 | | |
| Site Area: | 2,422 hectares | | |
| Tenure: | Freehold | | |
| Easements: | Easement B on RP906464 – (Easement in Gross to Queensland Electricity Transmission Corporation) Easement D on SP231871 (access to Lots 1 – 3 on SP231871) Easement E on SP231871 (access to Lot 7 over adjoining Lots) Easement A on SP231871 (access to Lot 7 over adjoining Lots) Easement C on SP231871 (access to Lot 7 over adjoining Lots) Easement D on SP231871 (Easement in Gross to Queensland Electricity Transmission Corporation) | | |
| Regional Plan Land Use Designation: | Regional Landscape and Rural Production | | |
| Area Classification/Local Plan: | Rural Area | | |
| Name of Owner: | Port Bajool Pty Ltd | | |
| Type of Application | | | |
| Aspect of Development | Preliminary Approval | Development Permit | |
| Making a Material Change of Use | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| Prelodgement/Consultation | | | |
| Entity | Yes/No | Date | Contact Name |
| Council DA Team and Councillors: | <input checked="" type="checkbox"/> <input type="checkbox"/> | Various | Brett Nancarrow |
| DEEDI | <input checked="" type="checkbox"/> <input type="checkbox"/> | Various | Various |
| DERM: | <input checked="" type="checkbox"/> <input type="checkbox"/> | 12/11/2010 | Kate Cumming |
| Community: | <input checked="" type="checkbox"/> <input type="checkbox"/> | 31/03/2011 | Refer to attached Register |
| CASA: | <input checked="" type="checkbox"/> <input type="checkbox"/> | 05/05/2011 | Russell Dwyer |
| Proposal | | | |
| Brief Description/ Purpose of Proposal: | | | |
| <i>Material Change of Use to establish Utility Installation ('Wind Farm') including ancillary infrastructure and facilities (e.g. substation, transformers, switch yards, access tracks, aboveground and underground cables, maintenance depot etc.)</i> | | | |

| Referral Agencies | | | |
|--|--|-------------------------------------|---|
| Agency | Concurrence Agency | Advice Agency | Pre-lodgement Referral Agency Response |
| Department of Environment and Resource Management (Table 3, item 21) – Wetland | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Department of Environment and Resource Management (Table 3, item 10) – Vegetation matters | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Department of Environment and Resource Management (Table 3, item 11) – Contaminated Land matters | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Powerlink – (Table 3, item 7) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Other | | | |
| Level of Assessment (Material Change of Use): | <input checked="" type="checkbox"/> Code | <input type="checkbox"/> Impact | |
| Public Notification | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (15 b.d.) <input type="checkbox"/> Yes (30 b.d.) | | |
| Superseded Planning Scheme Application: | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | | |
| Applicant Contact Person: | Sera Rohan (Senior Planner) | | |

I Site Information

1.1 Site Details

Key details of the subject site include:

| | |
|----------------------------------|--|
| Address | Springmount Road and Unnamed Road, Arriga <i>(Refer Figure 1 – Locality Plan RPS Drawing No. PR100246-12)</i> |
| Real Property Description | Lot 7 on SP235244 |
| Site Area | 2,422 hectares |
| Land Owner | <i>Port Bajool Refer Appendix B – Certificate of Title</i> |

1.2 Planning Context

The planning context of the site includes:

| | |
|----------------------------------|---|
| Regional Plan designation | Regional Landscape and Rural Production Area |
| Zone: | Rural Zone |
| Relevant Overlays | <ul style="list-style-type: none">▪ Natural and Cultural Heritage Features Overlay (The site is within 500m of a Mining Interest)▪ Natural Disaster Bushfire (Medium Risk)▪ Airport Overlay (13km Buffer) |

1.3 Site Characteristics

Site inspection and searches of local and state government records indicate that key site characteristics include:

| | |
|-------------------|---|
| Topography | Undulating |
| Vegetation | <ul style="list-style-type: none">▪ Remnant Vegetation - Of Concern, Dominant and Essential Habitat▪ Areas of High Ecological Significance <i>Refer Figure 2 – Regional Ecosystems Mapping on RPS Drawing No. PR100246-83 Refer Figure 3 – Areas of Ecological Significance Map</i> |
| Services | Minimal. Direct access to the local road network via Springmount Road. |

Waterways

Various Category 1, 2 and 3 Regrowth Waterways
(Collector Waterways which feed into Granite Creek)

Refer Figure 4 – Regrowth Vegetation Mapping

Wetland Management Area (Trigger Area – only) adjacent
north eastern boundary (generally aligns with Granite
Creek).

Refer to Figure 5 – Referable Wetlands Mapping

Existing use of site

Powerlink Transmission Line traverses the site with the
balance kept in a natural state.

1.4 Site Description and Surrounding Land Uses

The project area comprises a single rural allotment, situated (at its closest point) approximately 3.5km south west of Walkamin, off Springmount Road at Arriga on the Atherton Tablelands. Topographically, the site is situated at the northern most end of the Herberton Range (part of the Great Dividing Range) and has marked differences in elevations of between 540m up to 1089m above sea level, with the north-western section of the site being dominated by Walsh's Bluff. Geographically, the town centre of Mareeba is situated approximately 16.5km to the north of the site and Atherton, approximately 11.5km south east of the site.

Other features of the site include a series of ephemeral drainage lines, including the headwaters of Granite Creek and a Powerlink easement which includes Chalumbin to Woree 275kV transmission line also traverses the site.

Given the current natural state of the site (except where Transmission line and wind monitoring towers occur), site is heavily vegetated with few cleared areas. Vegetation on the site is identified as containing Least of Concern Regional Ecosystems within both Wet Tropics and Einasleigh Uplands bioregions, as identified by *Vegetation Management Act 1999*, as well as a number of rare and threatened species under the *Nature Conservation Act 1992*. Due to the relatively undisturbed nature of the site, and presence of vegetation, inevitably, the site also provides habitat for a number of locally and regionally significant fauna.

The majority of the area surrounding the project site has been extensively cleared and historically used for livestock grazing and agricultural pursuits (e.g. various vegetable and fruit cultivation). Land surrounding the project area generally reflects the rural and natural nature of the area, with grazing and agricultural production continuing to be the predominant land uses. However, a number of recent approvals issued upon adjacent properties, reflect the changing nature of the area, from passive agricultural and pastoral uses to more intensive farming practices and other quasi-industrial practices, (shown on RPS Drawing No. **PR100246-82** included as **Figure 6**) including:

- Outdoor Sport and Entertainment Facility (Drag strip) - Lot 13 on SP103361, Springmount Road, Arriga which includes the potential use of the site for intensive motor racing uses;
- Hard Rock Quarry (greater than 100, 000 tonnes per year) and Concrete Batching Plant approval associated with the existing processing activities which have occurred on site for a number of years - Lot 3 on RP741713, Springmount Road and Borzi Road, Arriga;
- Tablelands Sugar Mill over Lot 1 on SP100452, Springmount Road, Arriga, located approximately 3km from the site;
- Ethanol Distillery (Tablelands Sugar Mill) located on Lot 1 on SP100452, Springmount Road, Arriga; and
- Peanut Shell storage approved over Lot 141 on SP123888, located at Channel/Hansen Road, Walkamin.

In addition, the existing Springmount Waste Management Facility (Lot 13 on SP103361), located to the north-west of the site on Springmount Road, Arriga has been operating for a number of years and contributes significantly to use of the adjacent roads by heavy vehicle traffic.

An increase in the intensity of existing farming operations over a number of Lots on Oakey Creek Road, including change from grazing livestock to sugar cane production, as a direct result of the Arriga Sugar Mill increasing its capacity. This trend is expected to continue and may result in a significant change in the predominant rural uses in this location.

Anecdotal evidence also suggests other uses which are undertaken on Channel Road include large poultry farm and diverse nursery/farming operation with backpacker accommodation (rural workers accommodation), although specific details of such uses are uncertain at the time of writing this report.

The Lotus Glen Correctional Centre is located approximately 1.5km to the north of the project area, on Hansen Road / Chettle Road (site boundary to boundary). However, we note the actual prison facility is located well within the site boundary and therefore we note from the boundary of the project area to the low security facility is approximately 3km and to the high security facility is 3.6km.

These proposals and existing uses highlight the changing nature of the area, with majority of these uses not being typical 'rural' uses, as they have the potential to create urban type noise and other urban nuisances, and contributes to significant traffic (B-doubles and concrete trucks etc) which are not typically consistent with a rural area for which only farming and agricultural activities occur. In this regard, the surrounding area is unique in nature by virtue of the establishing and existing on-rural activities which surround the site and as such, the character of the area is not purely agricultural or rural, but rather an area in transition, with a mix of both traditional farming (including both agriculture and grazing), intensive farming and quasi-industrial uses (marked by presence of Correctional Facility, Drag Strip, Concrete Batching Plant and Ethanol Distillery).

Transfield Services Infrastructure Fund currently own and operate the existing Windy Hill Wind Farm, located 50.5km south south-east of the project area. High Road Wind Farm Pty Ltd, of which Transfield Services Infrastructure Fund is an equity partner, are further progressing a development application for the 'High Road Wind Farm', located approximately 40km south south-east of the site and comprising 17 wind turbines, ancillary infrastructure and facilities.



Cleared farmland for crops of sugarcane with the dominant ridge in the background.

1.5 General Description

| | |
|--------------------------------------|---|
| Aspects of Development Sought | Development Permit for a Material Change of Use for Utility Installation (Wind Farm) including ancillary infrastructure, access and facilities |
| Applicant | Mt Emerald Wind Farm Pty Ltd c/- RPS Australia East Pty Ltd PO Box 1949 CAIRNS QLD 4870 Phone: (07) 4031 1336 Fax: (07) 4031 2942 |
| Contact Persons | Sera Rohan (Senior Planner) |

2 Background

2.1 Wind Resource

The site has been selected as it displays an excellent wind resource and is well placed in terms of access to existing electricity transmission infrastructure. Monitoring of the wind resource at this location has been undertaken at two sites within the project area. Each monitoring tower measures wind speed and direction at various heights above ground, as well as recording other standard weather observations.

Parson Brinckerhoff were engaged to monitor data collected at the Mt Emerald Wind Farm site from May 2010. Two monitoring towers (ID 9530 & 9531) were approved by Council in November 2009 (REF: 09/0042) and subsequently established on site in May 2010 and are located approximately 3.6km apart, at heights of 80m and 50m respectively. Each monitoring tower includes instruments, at varying heights, to obtain representative wind data across the site.

Tower 9530 recorded an average wind speed of 10.03m/s and tower 9531 recorded 8.1m/s (correlated) and long term adjusted average of 9.7m/s and 7.9m/s respectively, which confirms the wind resource available at this location.

An assessment of the expected energy yields of Mt Emerald Wind Farm are included in the Assessment Report prepared by Parsons Brinckerhoff and included for reference in **Appendix C**.

2.2 Pre-Lodgement Meetings

Representatives of Transfield Services Infrastructure Fund met with Mr Brett Nancarrow of Tablelands Regional Council to discuss the approach and details of the proposal required to be submitted. Advice received confirmed Council's intention to include a Temporary Local Planning Instrument within the Mareeba Shire Planning Scheme as an appropriate tool to assess any future application for a Wind Farm. It is understood that a TLPI has been prepared and lodged with the Minister for endorsement. An assessment of the proposed wind farm against the requirements of the Draft Code, as provided to RPS and endorsed by Council at its meeting of 21 July 2011, has been included within the planning report. However, due to time constraints on the project, it was not feasible to delay lodgement until such time as the TLPI comes into effect.

A meeting with Department of Environment and Resource Management was also undertaken prior to lodgement, to discuss information requirements associated with the removal of mapped vegetation on site. Discussions centred on the need to provide an offset, due to removal of mapped 'Of Concern' remnant vegetation. DERM provided a response suggesting that a request for a 'significant community project' designation be submitted, which would potentially enable a lower ratio of offset to be provided for the proposed clearing. Subsequent field investigations have been undertaken which have confirmed that no 'Of Concern' Regional Ecosystems occur on site and as such, no request has been submitted to DERM, as it is our understanding that no offset would be required. Further consultation with DERM will be required during the assessment process to determine the most appropriate process to update current mapping of the site.

A number of presentations and discussions with individuals, community members, government representatives and business groups, such as the Mareeba Chamber of Commerce has occurred directly with Port Bajool over the last 18 month period.

Ongoing discussions have occurred between Transfield Services Infrastructure Fund and Powerlink representatives specifically regarding the proposed connection to the existing transmission line and will continue during the application process.

Officers from the Department of Employment, Economic Development and Innovation have been involved in the project from its inception and provided their support for the project.

Similarly, consultation with Councillors, both individually and collectively have been undertaken by representatives of Mt Emerald Wind Farm Pty Ltd in the form of presentations and informal discussions and will continue throughout the application process to ensure that all Councillors, as representatives of individual communities are kept well informed of the progress of the application.

2.3 Community Consultation

Successful community engagement is an integral component of any project which Transfield Services Infrastructure Fund are involved in. Given the level of community interest in the proposed Mt Emerald Wind Farm shown to date and sensitivities of community with respect to wind farm developments in the area, it is important that community engagement is undertaken both before and throughout the entire project process.

To this end, a public information session was held on 31 March 2011 at the Mareeba Heritage Centre, and attended by approximately 60 residents of the nearby area. The majority of feedback was positive, with many people supporting the overall project. However, there was some concern raised in relation to the location of the wind farm within close proximity to established residences and uncertainty regarding potential impacts from noise, impact on aircraft movements (and thus potential light impacts), blade flicker and visual amenity. Specialist reports have been prepared to address these concerns where possible.

From this information session, a database has been established of interested participants who will be updated regularly as to the progress of the application and any amendments to layout (if required). An additional consultation session will be held post lodgement of the development application to seek further feedback on the overall amended project. Regular updates, in the form of newsletters have been, and will continue to be disseminated throughout the community and on relevant websites to ensure up to date information is available to all members of the community.

Consultation with the Bar Barrum and Muluridji traditional owners will also be undertaken as part of the development of the Cultural Heritage Management Plan process.

3 Proposal

3.1 Overview of Proposal

Mt Emerald Wind Farm proposes to develop a Wind Farm within Springmount Station, upon land described as Lot 7 on SP235244. The subject site is located within the Tableland Regional Council, towards the northern portion of the Atherton Tablelands in North Queensland. The site is located 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 540 to 1089 metres. The location of the subject site is shown on Plan PR100246-12a in **Figure 1**.

The project provides for development of up to 75 wind turbines in various locations, a substation at the base of the eastern flank of the ranges and associated roads and infrastructure as illustrated on Plan PR100246-26C in Figure 7.

A maximum of 75 turbine sites have been identified on a preliminary basis will occupy small 'footprints' of approximately 40m x 40m (where possible) and connected by a network of underground cabling, the disturbance footprint (approximately 10m wide) of which will also serve as access tracks for construction and future maintenance. The substation proposed along the eastern flank of the ranges will feed power generated from the wind farm into the main electricity grid. A future operations and maintenance depot is also likely to be established on site, and include control equipment, maintenance stores, work area and amenity facilities. Although final location can not be determined at this stage, it is anticipated that the location, setbacks, height and floor area limitations will be negotiated and form conditions of any future development approval.

Final location of turbines will be subject to micro siting including consideration of a number of onsite factors, for example consideration of wind flow, terrain, equipment access, geological conditions as well as environmental and visual impact. To accommodate these potential variances, the applicant has allowed for a variance of up to 100m horizontally from the current indicated position of individual turbines.

Access to the site will be primarily via the existing access track, located within Lot 7 on SP235244 which currently provide access to the existing transmission line and monitoring masts on site. Additional internal access tracks of 10m width will be constructed to provide individual access to each turbine.

The land on which the wind farm is proposed is privately owned and takes in approximately 2,422 hectares of natural scrub land, with some elevated rocky outcrops. Appropriate land tenure will be secured which includes a 30 year lease over the entire property and will be effected prior to the development of the site. The site has been selected primarily as it displays an excellent wind resource, there are few residences in close proximity to the site, the site is traversed by existing Powerlink transmission line infrastructure (providing ease of connection) and also on the basis that preliminary environmental studies indicate a low impact on the environment.

3.2 Proposal Detail

The following table includes the Mount Emerald Wind Farm proposal detail:

| Development Aspect | Development Detail |
|---|---|
| Number of Turbines: | up to 75 |
| Wind Turbine Size: | Blade Length of up to 50m Hub Height of between 80m-90m |
| Energy Output: | Approximately 500,000 megawatt hours i.e. sufficient renewable energy to power the equivalent annual needs of approximately 75,000 North Queensland Homes. |
| Site Boundary Setbacks: | Adequate setbacks will be established for each turbine to ensure that no part of the turbine overhangs adjacent properties (not part of the application) or constructed roads. |
| Connection to the Distribution Network: | Each turbine will be connected to the proposed on-site substation via a network of underground and above ground cables. The on-site substation will then be connected via overhead transmission lines to the existing 275 kV Chalumbin to Woree Powerlink electrical network. |

Indicative turbine locations, cabling routes and internal access ways for Mt Emerald Wind Farm are shown in RPS Drawing **PR100246-26C**, included for reference in **Figure 7**. The final turbine locations will ultimately be determined by geotechnical and topographical attributes, having regard to environmental values and efficiency of the potential electricity generation capacity of the site and as such, a typical variance of up to 100m on the ground can be expected is sought.

It is intended that Mt Emerald Wind Farm Pty Ltd will secure a 30 lease over the entire site and therefore, as it is not intended to render areas of the site for separate occupation or use, the lease arrangement will not trigger the requirement for a Development Permit for a 'Reconfiguration of a Lot (by way of lease agreement)' under the *Sustainable Planning Act 2009*.

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 location of centre, access details and details of the built form have not been confirmed and will form part of a future, independent application by Port Bajool.

It is noted that during construction, consideration to establishing a temporary concrete batching plant will be given. However, as a determination is yet to be made, and will not be made until procurement of the construction contractor, no approval is sought for this aspect of the development at this stage. The appointed contractor will be responsible for obtaining all necessary approvals to operate a mobile and temporary concrete batching plant (if required). A recent approval for a concrete batching plant has been given at a nearby location, off Springmount Road which will also be investigated as future procurement activities.

3.2.1 Land Use

The proposed use is defined as a 'Utility Installation' for the purposes of the current Mareeba Shire Planning Scheme 2004, which within the Rural Zone is self assessable.

*“the use of premises for the purpose of **carrying out any undertaking** in relation to:*

- (a) road, air transport, wharf or river undertakings;*
- (b) the provision of sewerage or drainage services;*
- (c) the supply of water, sewerage treatment, hydraulic power, **electricity** or gas.”*

However, as the project is unable to meet self-assessable criteria in terms of height requirements, it is necessary to lodge and assess the development as a code assessable application. By virtue of inclusion of 'carrying out any undertaking' within the planning Scheme land use definition, it is submitted that the above definition includes ancillary infrastructure (such as access tracks, transmission cabling and switch yard) necessary for the operation of the wind farm, as well as the potential to establish an operations and maintenance depot (if required). It is considered these facilities are associated with and incidental to the use and therefore do not require separate applications to be established.

Details such as setbacks, floor area and carparking numbers for the maintenance depot cannot be provided at this stage of the application. Flexibility to construct these facilities in the future is sought and it is suggested the detail can be negotiated with Council and relevant agencies and ultimately controlled through imposition of relevant criteria on the parent application, with the necessary detail to be provided at Building Approval stage.

It is acknowledged that the project is of unique nature and there are a number of community concerns and misconceptions in relation to the proposed development. However, Mt Emerald Wind Farm Pty Ltd are committed to disseminating accurate and up to date information both during and post the assessment process to ensure the community is kept up to date with latest information regarding progress of the project. While no formal appeal rights are provided to the community in terms of submissions, an opportunity to provide comments in respect to the application is welcomed.

It is noted that the Temporary Local Planning Instrument proposed by Council would introduce a specific definition of a wind farm, and include specific criteria within a Code, with wind farms being code assessable within the Rural Zone of the Mareeba Shire Planning Scheme. As such, it is not anticipated that the lodgement of the Development Application is premature or prejudicial, given no change in the level of assessment is proposed, and that the additional assessment criteria has been considered as part of this application. In addition, a Statement of Commitments which addresses all potential impacts has been prepared and forms part of the application material, and will form the basis of future management plans to mitigate and where relevant, avoid impacts based on detailed investigations undertaken as part of the design stage.

3.2.2 Operation and Maintenance

Once operational, the wind farm predominantly operates remotely and does not require full time staff to be in attendance on the site at all times. Rather, a regular maintenance regime, which include maintenance of turbines every six months is undertaken and requires each turbine to be switched off for one or two days at a time. Maintenance of the substation and associated facilities will also be required regularly, but relatively infrequent with no heavy machinery generally required once established.

Where non-scheduled maintenance is carried out due to irregular equipment failures, a hardstand area beside each turbine is proposed to be maintained to ensure access for heavy machinery if required can access the relevant turbine efficiently without further disturbance to the environment.

3.2.3 Decommissioning and Site Restoration

The project economics are based on a wind farm design life of up to 30 years, after which MT Emerald Wind Farm Pty Ltd will either; continue generating power from the existing turbines, upgrade the turbines or remove the infrastructure and decommission the site. Decommissioning the site would involve the following:

- Dismantling the turbines;
- Removing towers and replacing soil over foundations;
- Removing all material from site for recycling;
- Where tracks are of no use to the land owner, the land would be reinstated for agricultural purposes;
- Underground cabling would be removed if at risk of being ploughed/tilled. All above ground lines would be removed; and
- The substation and associated buildings would be removed.

Following the decommissioning phase, it is important that any disturbed areas are rehabilitated as soon as possible and the site is restored to its original condition; to prevent the degrading process such as erosion or the spread of exotic species. A site restoration plan may be prepared to guide the process. It will incorporate the following stages.

- Restore areas where subsurface components have been removed such as underground cabling. Cut off at appropriate depths infrastructure, such as concrete foundations, and grade land to match adjacent contours.
- Sites will be seeded with native and endemic species or restored to agricultural land depending on the location. The use of native vegetation will prevent the spread of invasive and exotic species, and will provide appropriate habitats for the local fauna. Once germinated, this will serve the purpose of stabilising loose soils and reducing exposed topsoils, therefore preventing potential erosion and sediment runoff. Consultation with landholders will be carried out to ascertain whether the proposed species composition is compatible with their plans for the site.

3.2.4 Traffic

Construction of the turbines will generate significant traffic movements to and from the site, which will ultimately be managed through the provision of a Traffic Management component of the Construction Management Plan post approval.

There are two alternative routes being considered for the delivery of turbines and construction materials to the Kennedy Highway and ultimately the site – one inland route via Kennedy Developmental Road and the alternative via the Palmerston highway. The finalised route will be determined by the turbine supplier, who will ultimately be responsible for performing a detailed investigation of transportation requirements to the proposed Mt Emerald Wind Farm site.

Typically, turbines will be imported and delivered to the site in separate loads, consisting of four tower sections and nacelle and blades. An onsite concrete batching plant may be installed to facilitate contiguous pouring of concrete for the turbine foundations and hence reduce the traffic associated with the delivery of concrete from external sites, although this is subject to determination by Mt Emerald Wind Farm Pty Ltd during the procurement stage for construction.

As a result of the 59 vpd (peak 8 vph) expected to be generated during the construction of the proposed MEWF development and the 1398 vpd (peak 168 vph) on Springmount Road, it is warranted to upgrade the Kippen Drive and Springmount Road intersection with treatments that cater specifically for articulated vehicles.

The delivery of the turbines to the site will require special permit from Department of Transport and Main Roads (DTMR) and police escorts, given the size, height and weight of the vehicles required to deliver the turbine components, and will be conducted in consultation with DTMR. Information regarding the capability of the existing road network to safely transport components along designated State Controlled Roads is maintained by the Department, with preliminary indications suggesting that the road network has necessary capability. The balance of the route is maintained by the Tablelands Regional Council, with preliminary advice provided by SKM suggests that capacity and safety of the existing roads, up until Kippen Road and Springmount Road intersection is adequate for the proposal, provided appropriate signage is established to provide advance warning to drivers.

SKM have undertaken an assessment of the safety aspects along proposed routes, and provided recommendations for safety as detailed within the Traffic Impact Report included for reference in **Appendix D**.

3.2.5 Access and Vehicle Movement

In terms of access into the site, there is an existing single access currently along Kippen Road, off Springmount Road. Internally, accesses will be established by construction of maximum 10m wide access tracks for construction phase, and limited to 5m wide roads for ongoing operation and maintenance. To ensure there is minimal disturbance to the project area and to reduce the risk of erosion, only necessary roads will be constructed along ridgelines, with existing tracks and constructed, gazetted roads being utilised as far as practical. A preliminary road layout has been determined with this in mind, and is shown in the proposed site layout (RPS Drawing PR100246-26C) included in **Figure 7** however, ultimately the road layout will be dependent upon the final location of the turbines and subject to engineering, environmental, cultural heritage factors.

While the site is characterised by a number of defined watercourses, the proposed layout is sympathetic to these values, by seeking to minimise the number of waterway crossings by utilising existing crossings where practically possible. It is important to note that all waterways contained within the site are seasonal only and generally flow only during the wet season.

3.2.6 Environmental Values

Various site investigations have been conducted by RPS Environmental Scientists and included:

- an early-dry season fauna and flora survey in May 2010;
- a late-wet season flora and fauna survey in March-April 2011;
- a targeted camera trap survey for the endangered Northern Quoll;
- additional microchiropteran bat surveys in the mid-dry season June-July 2011; and
- Additional vegetation surveys were undertaken in June 2011.

Of the 5 plants and 46 fauna species of conservation significance predicted to occur on the site on the basis of previous records or the confirmed presence of suitable habitat on the site, the presence of a total of 3 plant and 12 fauna species were confirmed during the field surveys.

Significantly, regional ecosystem mapping for the site indicates the presence of an “of concern” vegetation community located predominately within the ridge top areas where wind turbines are proposed to be sited. However, extensive field surveys covering the proposed turbine locations did not confirm the presence of the tree *Syncarpia glomulifera*: the dominant canopy species characterising this ecosystem. The results of numerous vegetation sampling sites indicate a more correctly defined regional ecosystem for the particular ridge environment that is “least concern”, comprising a mosaic of two units: RE 7.12.30b/7.12.65k.

Impacts upon vegetation are likely to be short-term and not result in gross modification of the project area, due to the small footprint required for each turbine and the allowance for access and construction tracks to regenerate to a width of 5 m after their initial 10 m wide construction. This is an important passive mitigation technique that considers landscape and vegetation connectivity and the maintenance of environmental flows. In this respect, it is not expected that ecological function will be adversely affected.

Potential faunal impacts arising from wind farm developments, typically include:

- Rotor strike and barotrauma;
- Habitat alienation caused by avoidance behaviour due to visual or noise disturbance;
- Temporary and permanent habitat modification as a result of clearing, changes to fire regime and weed invasion; and
- Concentration of predation by feral animals along newly constructed access tracks.

In terms of rotor strike and barotrauma (in the case of microchiropteran bats), further studies are required to be conducted to adequately quantify and thus provide appropriate mitigation. It is suggested that appropriate mitigation measures, such as well planned site location, design and construction to ensure that native vegetation and habitats are largely preserved, should ensure that the risk of direct rotor blade strikes on bird and bat species is minimised to the greatest extent possible.

Many of the potential impacts on conservation significant fauna resulting from the construction and operation of the proposed wind farm may be reduced to acceptable levels through the implementation of appropriate management strategies which may include the relocation or micro-siting of turbines away from sensitive areas, weed control, appropriate fire regimes and predator control, site construction timing and rehabilitation measures.

The project may potentially result in limited short term impacts to a range of local common species, however these impacts can also be minimised through the implementation of appropriate construction phase controls and operational phase management. In the longer term, operational impacts on these species are not considered likely to be significant provided the recommended monitoring and management programs are implemented.

Additional investigations are recommended, including targeted surveys for conservation significant flora and fauna species within the proposed infrastructure footprint, and spatially and temporally replicated habitat utilization studies for bird, bats and northern quolls. This additional information will be essential to refine the proposed infrastructure layout and further development of appropriate mitigation strategies.

The results of the detailed surveys will inform strategically appropriate measures required to ameliorate and mitigate the effects of impacts caused during and after the construction phase and will also direct the necessary requirements for the compilation of an Environmental Management Plan.

For detailed assessment, refer to the Fauna, Vegetation and Flora Assessment Report prepared by RPS Australia East Pty Ltd included for reference in **Appendix E**. Further, proposed strategies to accommodate future risks associated with construction and operational stages of the wind farm are outline in the Statement of Commitments, included for reference in **Appendix A**.

3.2.7 Visual

Considering the elevation of the site, size of the structures and prominence of the ridgeline along public viewpoints, Mt Emerald 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. Ultimately, the visual prominence of the towers will be most significant during the ‘journey’ along Channel & Morganbury Roads and also southbound along Chettle Road. The turbines will present only a minor visual impact from along the main regional tourist route, being the Kennedy Highway. The composition of the turbines, being large mechanical structures within an otherwise soft natural landscape will create a distinct and interesting landscape.

A 3D model has been prepared by Truescape Visual Communication, which replicates the anticipated visual impact from the wind farm at completion based on survey accurate photo locations. Refer to the visual assessment undertaken by RPS Australia East Pty Ltd for further information, included for reference in **Appendix F**.

3.2.8 Shadow Flicker

Wind turbines, due to their size, cast shadows on their surrounds. When the shadow of a rotating wind turbine falls on a particular location, for example a house, it can cause a fluctuation in light levels. This phenomenon is referred to as “shadow flicker”.

Using simple geometry incorporating the sun’s path, topography and wind turbine dimensions, it is possible to calculate the annual hours 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.

A review of the general area has identified 78 residences within the vicinity of the wind farm. The relative proximity of these residences to the wind turbines is shown in the table below.

| Distance from WTG (m) | No. of Residences |
|-----------------------|-------------------|
| 500 | 0 |
| 1000 | 0 |
| 2000 | 10 |
| 3000 | 44 |
| 4000 | 69 |
| 5000 | 78 |

When calculating the potential impacts from the MEWF upon the identified sensitive receptors, the following assumptions were made:

- Shadow distance – 2000m
- Receptor – Greenhouse Effect
- Direction – turbine rotor plane is always perpendicular to the line from the WTG and the sun
- Rotor – calculate only when more than 20% of sun is covered by the blade

- Sunshine – sun is shining all day from sunrise to sunset
- Obstacle – no obstacles

The Shadow Flicker investigation concludes that there are three dwellings which it is predicted will experience shadow flicker. Even under the worst case scenario the annual amount of time shadow flicker experienced at these receptors is well below the recommended allowable limit of 30 hours per year thus the impact is within allowable limits for all neighbouring dwellings to the wind farm.

If any dwelling experiences a level of disturbance then this can be mitigated through establishment of screening vegetation close to sensitive receptors. For detailed assessment, refer to Shadow Flicker Report included for reference in **Appendix G**.

3.2.9 Noise

Noise Mapping Australia have undertaken an assessment of the likely noise impacts of the turbines and a copy of their report is included for reference in **Appendix H**.

A noise monitoring survey was conducted at six sensitive receptors over a 14 day period at all locations and a 28 day period at one location, to measure background noise at representative locations adjacent to the wind farm.

These results were further analysed to determine the relationship of the background noise level to wind speed. Generally each of the locations experience an increase in background noise levels with increasing wind speed. However, the data shows a weak increase in the measured background noise level with increasing wind speed. This suggests that due to the topography of the site, when the wind turbines are exposed to prevailing winds, those winds are not experienced at the sensitive receptors on the valley floor.

A wind speed dependent noise profile was developed for each of the noise monitoring locations and these results were generalised to all the residential receptor locations within the vicinity of the site.

The noise level criteria was developed from the South Australian EPA Wind farms noise guidelines of 2009.

Two limits were extracted from the guideline for "predominantly rural" properties namely the $L_{Aeq\ 10\ minute}$ should comply with:

- 40dB(A) at all sensitive receptors; or
- the background noise level ($L_{A90,10}$) by more than 5dBA;

whichever is the greater.

However some receptors to the south east of the site are in a Rural living area; do not function as 'rural' areas due to the absence of primary production on site (R59, R60, R63 and R66 to R76). As a result, they typically experience lower background noise, and therefore lower noise limits to achieve have been considered to apply. As such, for these locations the noise level goals comprises an $L_{Aeq\ 10\ minute}$ of:

- 35dB(A) at all sensitive receptors; or
- the background noise level ($L_{A90,10}$) by more than 5dBA;

whichever is the greater.

South Australian Guidelines have been used in the study as they have been specifically developed for wind farms and are well recognised within the industry. However, it is noted that these levels are similar to the Queensland Environmental Protection Policy (Noise) 2008, acoustic quality objective which is 40 dB(A) (measured outdoors) at night, to protect health and wellbeing indoors. The likely reduction from outside to inside with windows open is typically about 10 decibels. With windows closed the reduction from outside to inside would be much greater. Hence an external noise goal of 40 dB(A) would be equivalent to an indoor level of 30 dB(A).

The results of the modelling show that all the 78 noise monitoring locations comply with the noise goals.

The data from the wind turbine manufacturer indicates that turbine noise is not tonal. There is no reporting of infrasound noise from the manufacturers data. However, based on reported measurements of installed turbines a conservative sound power level was developed. It was found that the turbines readily meet the infrasound noise level goal at all residences. It was also found that the turbines meet the low frequency noise level goal at all residences.

The proposed wind farm therefore meets all noise level goals and is acceptable from a noise perspective.

3.2.10 Electromagnetic Interference

Given the wind turbines have such a large physical structure, there is potential for interference with communication services to occur. The different effects wind farms can have on communication services are summarised below:

1. Near field impact: A property of a transmitting and/or receiving antenna is a “near field” zone that is present around the antenna. Any object that can conduct or absorb radio waves, placed within the near field zone, can alter the behaviour of the antenna.
2. Obstruction impact: If a conductive object is placed within the advancing wavefront of a radio wave, wave energy can be absorbed, detrimentally affecting the signal detected at the receiver.
3. Reflection and scattering impacts: If an object that’s reflective to radio waves exists in the advancing wavefront, it may reflect energy away. The reflected signal may be reflected to the transmitting or receiving antenna which can interfere with the desired signal.
4. Electromagnetic fields / RF interference: The operation of a wind turbine generator, and associated electrical transmission infrastructure, creates an electromagnetic emission that can, theoretically, interact with radio communication.

In assessing radio communication impact by wind farms, radio systems are commonly broken into a number of different categories based on type. For the purposes of electromagnetic impact investigation, the following categories of services are considered:

Point-to-point: Radio links that transmit and receive between two fixed points fall under this category. For example, network backhaul commonly utilises point-to-point communication. These commonly include radio communication services.

Point-to-multipoint: A central location transmits to, and sometimes receives from, a number independent of locations. Television and radio broadcasting and reception, mobile phones (to the cell site mast) and land mobile systems fall under this category.

Radar: Radar transmits a signal which is reflected back to the transmitting station (some systems involve communication between a radar station and a transponder). Services that utilise radar technology include aircraft detection and weather services.

As such, Parson Brinckerhoff (PB) were engaged to investigate any potential impacts to radio wave communication services and radar communication services in the locality as consequence of Mt Emerald Wind Farm. The findings of the investigation are detailed within the Electromagnetic Interference Assessment within **Appendix I**.

For this investigation, PB identified existing radio communication sites and services and their associated paths. This data was obtained from the Australian Communication and Media Authority's database of registered radio communication licenses (RADCOM). 28 radio communication sites were found within a 10 km distance of the wind farm boundary, with an associated 222 registered assignments. This data was mapped against the proposed wind farm layout, provided by Transfield Services Infrastructure Fund. Communication towers and service paths that were within three kilometres of the wind farm were selected for further investigation. To this selected data, standard exclusion zones were calculated and the wind farm was assessed considering these zones. No turbines were assessed to intrude on near field exclusion zones surrounding the identified radio towers.

PB recommends that, to avoid obstruction interference, no turbines intrude on the calculated 2nd Fresnel zone for point-to-point radio links. PB suggests if the consulted licensees verify the RADCOM data is correct and there is agreement over radio path and tower setback distances, Mt Emerald Wind Farm Pty Ltd investigates mitigation options to avoid any interference. PB has determined that one turbine is located 4 m away from a 2nd Fresnel exclusion zone, presenting the possibility of the turbine encroaching on the exclusion zone depending on the orientation of the rotor. PB is in the process of seeking more precise coordinates from the relevant telecommunications tower operators/licensees.

PB believes point-to-multipoint impacts should be minimal. However, PB recommends the position of registered point-to-multipoint license holders is sought with respect to the wind farm development. PB has initiated consultation with these license holders that are located within 3 km of the wind farm.

3.2.11 Aerodrome Operations

Mt Emerald Wind Farm is located within 13km of the Mareeba Aerodrome. While not specifically within the Obstacle Limitation Surface of the Aerodrome, as the turbines could potentially extend up to 129m above ground level, they potentially pose a risk to safe aircraft movements.

Where a proposed structure is greater than 110m or more above ground level, the Civil Aviation Safety Regulation 139.365 requires the proponent of the relevant structure to notify the Civil Aviation Safety Authority of their intention and provide details regarding heights and location of the structure. Only where CASA determines that the structure, building or obstacle is hazardous to aircraft, will CASA direct the proponent to light or mark the hazard.

Rehbein Airport Consulting were engaged to provide an assessment of likely impact upon aircraft operations likely to be undertaken within the vicinity of the site. While their full assessment is included for reference in **Appendix J**, they concluded that the proposed wind farm will not impact upon aircraft operations to and from Cairns Airport or Mareeba and Atherton Aerodromes and radar and radio performance will not be impacted upon. However, low level flying such as aerial spreading and spraying or inspection of transmission lines, will no longer be feasible on the downwind side of the turbines over the subject site and some adjoining properties.

3.2.12 Cultural Heritage

The project area remains largely within a natural state and ground disturbance within the area appears to be confined to various tracks associated with Powerlink's existing transmission line which traverses east west across the southern end of the site. This history of land use reduces the likelihood any features of non aboriginal cultural significance remaining on the site, although it is noted that this area was used extensively for military training during World War II. A due diligence assessment of likely Indigenous cultural heritage significance has been undertaken, including assessment of the preliminary corridor layouts. Given the location of known Aboriginal cultural heritage sites adjacent the project area, it is advised that potential for Aboriginal cultural heritage being present within the study area is moderate. The report therefore recommends adoption of a process whereby consultation with the appropriate Aboriginal parties for the area is initiated. It is expected that the consultation would result in the preparation and implementation of a Cultural Heritage Management Plan to manage areas of significance.

The Bar Barrum People and Muluridji People are regarded as the appropriate Aboriginal Parties for the area.

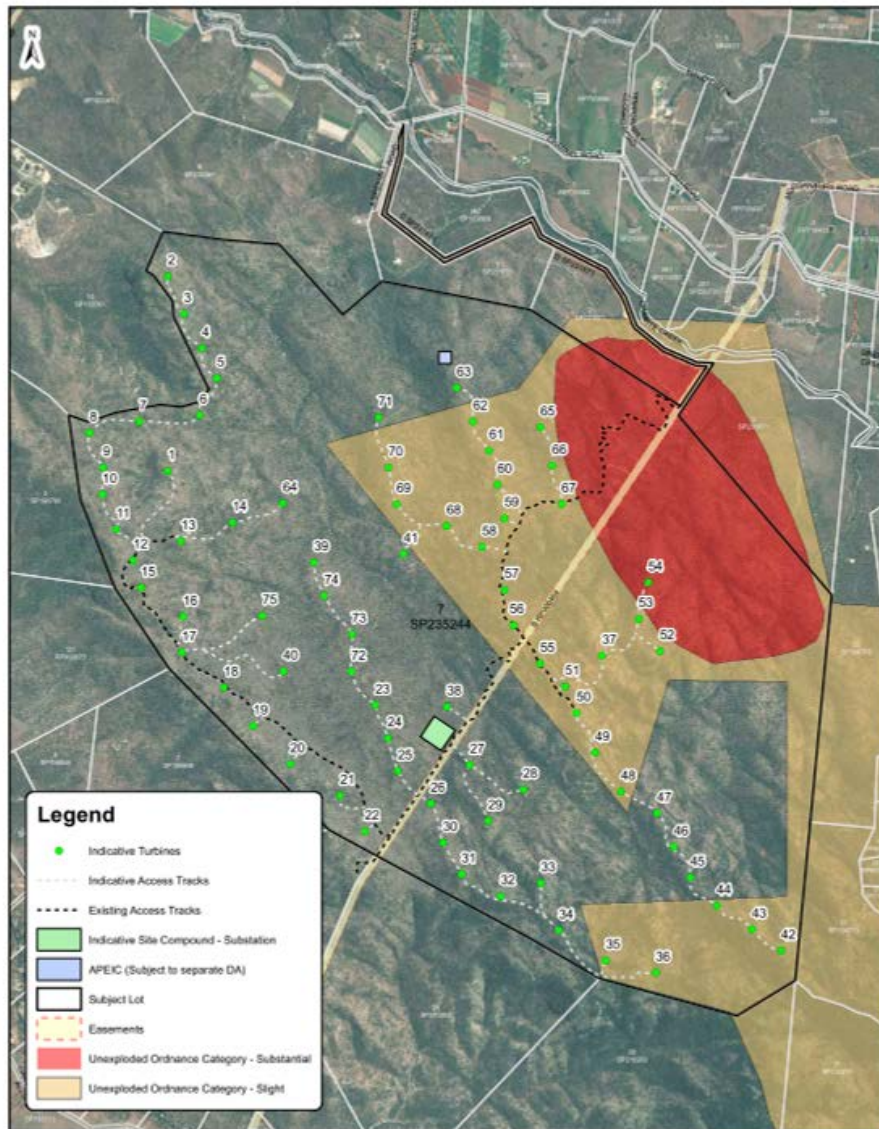
Refer to the Cultural Heritage Assessment undertaken by Converge, which is included for reference in **Appendix K**. It is noted that further detailed assessment of the updated layout is currently being finalised and expected to form the basis for future negotiations.

3.2.13 Unexploded Ordnance

Given the sites history in terms of military training during World War II, there remains a potential that the site contains unexploded ordnance or UXO. A search of the Department of Defence website confirms that the site is included in the 'substantial' category and is also provided as an administrative advice on the Contaminated Land Register Search results (see search results contained in **Appendix L**).

Defence recommends that all existing land uses may continue without specific UXO search or remediation however, any land use proposals upon land parcels considered to be subject to a substantial UXO potential should only proceed following the conduct of UXO investigation and remediation.

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 and exposure to such contaminants.



Mount Emerald Site Layout Unexploded Ordnance

3.2.14 Economic Benefits

It is expected that the proposed wind farm will bring positive benefits (direct and indirect) to the local and regional economies throughout the life-cycle of the project. The phases that will typically see such benefits can be broadly described as the design & development, construction & commissioning, operation and decommissioning phases of the project.

At a direct level, the procurement of local goods and services will be strongly encouraged. It is anticipated that 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 of the project. It is expected that this expenditure will occur in the local community as a proportion of wages paid to employees associated with the construction and operation of the wind farm. Indirect employment opportunities may also be created as a result of meeting potential increased demands for these services as well as in the area of tourism.

The expected overall value of the project is in the order of \$500 million. Further details on the precise breakdown of these costs can be made available as part of a future socio-economic analysis, which will be undertaken as part of the development of the project.

The estimated timeframe for the construction of the proposed Mount Emerald Wind Farm from the commencement date is 24 months.

The estimated maximum number of employees at peak construction is 100 employees.

The estimated number of homes that could be powered by the wind farm is 75 000, which is equivalent to 100% of Tablelands electricity requirements and 61% electricity requirements for the Cairns region and provides ability to achieve Queensland and Australia's renewable energy targets.

4 Legislative Requirements

4.1 Sustainable Planning Act 2009

This section provides an overview of the legislative context of the application under the provisions of the *Sustainable Planning Act 2009 (SPA)*.

4.1.1 Confirmation that the development is not prohibited

The proposed development is not prohibited. This has been established by considering all relevant instruments which can provide prohibitions under SPA including:

- State Planning Regulatory Provisions (Section 21); and
- Prohibited Development defined at Schedule 1 of the *Sustainable Planning Regulations 2009* (Section 234).

4.1.2 Assessable Development

The Development Application is for a Material Change of Use (Utility Installation – Wind Farm), which is made assessable by the Mareeba Shire Planning Scheme 2004. We note that the proposed leasing arrangements do not constitute a Reconfiguration of a Lot as defined by SPA.

4.1.3 Assessment Manager

The Assessment Manager for this development application is Tablelands Regional Council as determined by Schedule 6 of the *Sustainable Planning Regulations 2009*.

4.1.4 Level of Assessment

The table below summarises the assessable development subject to this application and the relevant level of assessment for each aspect of development.

| Aspect of Development | Planning Instrument that determines Level of Assessment | Level of Assessment |
|--|---|------------------------|
| <i>Material Change of Use (Utility Installation – Wind Farm)</i> | <i>Mareeba Shire Planning Scheme</i> | <i>Code Assessable</i> |

4.1.5 Statutory Considerations for Assessable Development

As the development is subject to Code Assessment, the relevant considerations of the Assessment Manager in making the decision pursuant to Sections 313, 324 and 326 of the *Sustainable Planning Act 2009* have been assessed at Section 5 of this Town Planning Report. Inconsistencies and resolution of these inconsistencies has also been addressed within Section 5.

4.1.6 Referral Agencies

Referral Agencies triggered by this proposal and their jurisdictions have been established with reference to Schedule 7 of the *Sustainable Planning Regulations 2009*, as follows:

- **Powerlink** is identified as an 'Advice Agency' due to the project area containing an easement for the purpose of electricity transmission, within which works are also proposed (*table 3, item 7*);

- **Department of Environment and Resource Management** is identified as a 'Concurrence Agency' for vegetation matters (*table 3, item 10*);
- **Department of Environment and Resource Management** is identified as a 'Concurrence Agency' for unexploded ordinance matters (*table 3, item 11*); and
- **Department of Environment and Resource Management** is identified as an 'Advice Agency' due to the location of the land within a Wetland Management Area (Trigger Area) (*table 3, item 21*).

4.1.7 State Resource

The proposal does not involve any State Resources.

4.1.8 Subsequent Approval Requirements

We highlight that the applicant has considered all likely approvals which will be necessarily required to proceed with construction of the wind farm. It is considered premature at this stage to prepare and lodge such applications for components of the wind farm required for construction (such as mobile and temporary ERA's for concrete batching), if necessary.

4.2 Environmental Protection and Biodiversity Conservation Act 1999

A concurrent referral will be made to the Department of the Environment, Water, Heritage and the Arts under the *Environmental Protection and Biodiversity Conservation Act 1999* to determine whether the proposal constitutes a controlled action.

5 Statutory Planning Assessment

5.1 Overview

This section assesses the application against relevant statutory planning provisions for the application.

5.2 Far North Queensland Regional Plan Regulatory Provisions

The project area is included in the “Regional Landscape and Rural Production Area” designation under the Far North Queensland Regional Plan and is subject to Division 2 of the Regulatory Provisions, particularly in relation to a Material Change of Use Outside the Urban Footprint.

It is noted that the development constitutes “electricity infrastructure”, being the generation of electricity through harnessing energy from the wind, and includes ancillary facilities to ensure its distribution (such as switch yards and transmission lines) and is not considered an ‘urban activity’, and therefore not regulated by the Far North Queensland Regulatory Provisions.

Similarly, as the proposed leasing arrangements include the entire site, and therefore do not divide land into parts by agreement, the proposal does not constitute a ‘subdivision’ and is therefore not regulated by the Far North Queensland Regulatory Provisions.

5.3 Far North Queensland Regional Plan 2009-2031

The assessment of the proposal against the Regional Plan is relevant to aspects which are not appropriately included within the current Planning Scheme, pursuant to Section 314(2) of the *Sustainable Planning Act 2009*.

The Planning Scheme does not identify that the Regional Plan has been appropriately addressed. The statutory provisions in the Regional Plan which are relevant to this application are:

1.1 Biodiversity Conservation

Figure 3 shows that entire project area contains Terrestrial Areas of High Ecological Significance which is based on current designations of the site under the Vegetation Management Act as containing both Of Concern and Least Concern Regional Ecosystems, and the relatively undisturbed nature of the site.

Policies relating to these areas restrict ‘urban development’ in these areas. Despite the Regulatory Provisions excluding ‘electricity infrastructure’ from the definition of ‘urban activity’, the Regional Plan uses the term ‘urban development’ and does not exclude infrastructure items. However, page 40 of the Regional Plan states that *‘Essential community infrastructure, such as power lines and telecommunications towers may be permitted in areas of high ecological significance, subject to adverse impacts being avoided or mitigated, including the use of offsets’*.

An assessment of the flora and fauna characteristics of the site was undertaken via desktop and a number of field assessments, the findings of which are included in **Appendix E**. These findings have ultimately informed the location and layout of the turbines to a practical extent, although the locational attributes of the turbines inevitably require vegetation to be removed. Essentially, the field assessment concluded that the vegetation contained on site did not represent nor meet the criteria for ‘Of Concern’ Regional Ecosystems, notwithstanding the existence of species listed under the *Nature Conservation Act*.

Impacts upon vegetation are likely to be short-term and not result in gross modification of the project area due to the small footprint approximately (40m x 40m) required for each turbine and the allowance for access and construction tracks to regenerate to a width of 5 m after their initial 10 m wide construction. This is an important passive mitigation technique that considers landscape and vegetation connectivity and the maintenance of environmental flows.

Faunal impacts can be categorised by the direct impacts as a result of both temporary and permanent habitat modification from clearing, rotor strike and barotrauma, as well as indirect impacts associated with the habitat alienation from avoidance behaviour of susceptible species as a result of noise or visual disturbance.

Those direct impacts associated with the clearing can be appropriately managed and mitigated through firstly identifying and siting turbines outside of important habitats and where this is not possible, a capturing and releasing programme is to be employed to ensure impacts are minimised. Further studies are required to further quantify expected impacts in relation to bird and bat strike, habitat avoidance and Northern Quoll population. Various techniques in respect to dealing with rotor strike are considered and discussed within the attached Flora, Vegetation & Flora Assessment Report, included in **Appendix E**.

Generally, all impacts identified are considered manageable, with the implementation of construction mitigation techniques and operational management. All management and mitigation strategies proposed to be employed during construction, operation and decommissioning are outlined in the attached Statement of Commitments, included in **Appendix A**.

It is submitted that the proposal is considered generally consistent and the use of offsets is not considered necessary in this instance, as the long term and cumulative benefits of green power and mitigation techniques proposed to be employed are considered to appropriately 'offset' any impacts as a result of the construction and operation of the wind farm.

1.3 Air and Acoustic Environment Protection

Given the nature of the use and potential noise impacts, Noise Mapping Australia conducted on-site investigations and modelling which confirms that the proposal will be able to comply with *Environmental Protection Policy (Air) 2008*. A copy of this report is included in **Appendix H**.

2.1 Regional Landscape Values

The project area includes areas identified as being Terrestrial Areas of High Ecological Significance. All 75 turbines sites, currently being considered, are proposed to be located in remnant vegetation habitats, as defined under the *Vegetation Management Act 1999*. The regional landscape value of the site, which forms the vegetated hill slope background of this part of the Tablelands, is recognised.

In this respect, it is not expected that the sustainability of ecological functions of the site will be adversely affected. In order to minimise and offset impacts, micro-siting wind turbines is the primary preferred option being adopted, which will consider site specific characteristics, including, environmental, geological, etc.

Where clearing is required for access tracks and turbines, this has been limited as far as practical to ensure significant vegetation can be maintained. As the majority of turbines are located at or near the ridgelines, the vegetation is relatively sparse within these locations and can be accommodated once the turbines are established given the height of the turbines.

A detailed assessment considering the flora and fauna values of the project area and likely impacts of the wind farm is included for reference in **Appendix E**.

Given the site topography, and geological characteristics, the land is not considered Good Quality Agricultural Land under the Mareeba Shire Planning Scheme. No cultivation activities are undertaken on site and only limited stock grazing would be possible. Importantly, the establishment of the turbines will not prejudice the ongoing operation of the existing farmlands in proximity to the site due to their relatively benign physical impacts upon landscape and location upon ridgelines.

Additionally, the subject site is not located within or adjacent to any areas of World Heritage significance (such as Wet Tropics Area), which forms the majority of the landscape values referred to, nor does it impact upon cultural heritage values (European or Indigenous) with no significant sites being recorded. Notwithstanding this, a Cultural Heritage Management Plan will be prepared prior to construction to ensure appropriate management strategies are employed to preserve any areas of cultural significance. Preliminary advice regarding Indigenous Cultural Heritage prepared by Converge is included for reference in **Appendix K**.

On the other hand, the Regional Plan also recognises the value of the landscape for renewable energy projects (refer to land use policy 2.1.1) and dictates that such projects should be given '*appropriate recognition in land use planning and development assessment*'. This is an important aspect to consider in providing a balanced assessment of the expected impacts upon the environment through vegetation clearing. This policy essentially recognises that, although inevitably, such uses are required to be located in areas of forested hill slopes, which form part of the regional landscape of the area, provided that these impacts can be minimised and managed through construction techniques etc, and the sustainability of fauna populations and important ecosystems are not adversely affected, wind farms are a legitimate land use in these areas.

2.3 Scenic Amenity, Outdoor Recreation and Inter-urban Breaks

Land use policies relating to scenic amenity within the Regional Plan recognise that the rural landscape and natural areas are a major economic asset of the region, containing culturally significant landscapes, and importantly, contributes to the way of life. Again, having regard to land use policy 2.1.1 which recognises the value of the landscape for renewable energy, section 2.3 also recognises that public utilities and infrastructure should be appropriately managed to protect the natural values of the region.

Inevitably, the turbines will have a strong visual presence within and external to the site, given that 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 590 to 1089 metres. Impacts associated with the juxtaposition of such industrial grand structures within soft natural landscape impacts remains relatively subjective and based on individual perceptions. By locating the turbines along existing ridgelines and separation of the turbines over large areas, adverse impacts are somewhat minimised by being uniform and repetitive. It can even be suggested that the establishment of the turbines will add to the scenic amenity of the landscape at this location, and provide a 'landmark' within the existing landscape.

For further information regarding visual amenity, refer to the assessment included for reference in **Appendix F**.

6.1 Infrastructure Planning and Coordination

Overall, the project represents a collaborative partnership between Mt Emerald Wind Farm, landowners and Powerlink to produce additional energy in a renewable form and is consistent with the aligned policy 6.1C which encourages collaboration in the design and provisions of infrastructure within a chosen corridor.

6.3 Energy

Land use policy 6.3.1 encourages the establishment of viable renewable energy sources such as wind farms, which are *'recognised as a legitimate land use and supported for their contribution to reducing greenhouse emissions'*.

The Mount Emerald Wind Farm is intended to compliment the existing Windy Hill Wind Farm and proposed High Road Wind Farm, to create a wind farm node within the Tablelands which will enhance the security of renewable energy supply for residents of the region. Cumulatively, these wind farms will contribute to meeting Queensland's renewable energy targets and ultimately, assist in reducing greenhouse gas emissions, which will have positive impact upon sustainability of ecosystems.

5.4 State Planning Policies

State Planning Policies are relevant to the assessment of this application where they are not appropriately reflected in either a Regional Plan or Planning Scheme relevant to the site. The applicability of relevant State Planning Policies is identified in the table below. Compliance with relevant provisions from State Planning Policies is also addressed in the table below.

| State Planning Policy | Applicability to Application |
|--|---|
| SPP1/92 Development and the Conservation of Agricultural Land | Applicable however this policy has been adequately reflected in the Mareeba Shire Planning Scheme and does not require separate assessment |
| SPP2/02 Planning and Managing Development Involving Acid Sulfate Soils | Not Applicable – project area is not subject to Acid Sulfate Soils |
| SPP1/02 Development in the Vicinity of Certain Airports and Aviation Facilities | Applicable however this policy has been adequately reflected in the Mareeba Shire Planning Scheme and does not require separate assessment |
| SPP1/03 Mitigating the Adverse Impacts of Flood, Bushfire and Landslide | Applicable – project area contains medium and high hazard areas however this policy has been adequately reflected in the Mareeba Shire Planning Scheme and does not require separate assessment |
| SPP1/07 Housing and Residential Development | Not Applicable – SPP applies to Local governments when preparing planning schemes |
| SPP2/07 Protection of Extractive Resources | Not Applicable – No identified KRA's are in the project area |
| SPP1/09 Acceleration of Compliance Assessment | Not Applicable – proposal does not require compliance assessment |
| SPP2/09 Reconfiguration of a Lot Code for land in indigenous local government areas to which a local planning scheme does not apply | Not Applicable – project area is not in an indigenous local government area |
| SPP2/10 South East Queensland Koala Conservation | Not Applicable – project area is not located in SEQ |
| State and Regional Coastal Management Plans – Queensland's Coastal Policy | Not Applicable – project area is not located in a Coastal Area |

| | |
|---|---|
| Draft Queensland Coastal Plan 2009 | Not Applicable – project area is not located in a Coastal Area |
| Draft State Policy Coastal Management 2009 | Not Applicable – project area is not located in a Coastal Area |
| Draft State Planning Policy Coastal Protection 2009 | Not Applicable – project area is not located in a Coastal Area |
| Draft SEQ Koala Conservation State Planning Policy 2009 | Not Applicable – project area is not located in SEQ |
| Draft State Planning Policy Guideline for Healthy Waters 2009 | Not Applicable – not a subdivision |
| Draft State Planning Policy: Air, Noise and Hazardous Substances 2009 | Not Applicable – proposal does not include a ‘sensitive use’ or reconfiguration within or adjacent to an identified Management Area or Industrial Planning Area |
| SPP1/10 (Temporary) Protecting Wetlands of High Ecological Significance in Great Barrier Reef Catchments | Not Applicable – site is not within an area identified on Map shown to be within a Great Barrier Reef Catchment |

In the compliance assessment above no inconsistencies were identified.

5.5 Mareeba Shire Planning Scheme

Despite the current planning scheme omitting specific reference to renewable energy projects, such as wind farms, it has essentially included relevant requirements to assess such a project, by virtue of broader planning statements contained in the Desired Environmental Outcomes, and aspects of the Rural Zone Code (which presumably considered ‘Utility Installation’ aspects).

5.5.1 Desired Environmental Outcomes

An assessment of the proposal in respect to the relevant Desired Environmental Outcomes sought by the scheme is provided below:

- (a) *Significant natural features such as the dense tropical rainforest adjoining the Wet Tropics area, the savannas, the major river systems, wetlands and wildlife corridors, areas identified in the Areas of Regional significance for the Conservation of Biodiversity under the FNQ Regional Plan are protected.*

Comment

Given the natural state of the project area, the majority of the site has been identified as containing significant vegetation, regrowth corridors and watercourses under the *Vegetation Management Act 1999*, *Vegetation Management (Regrowth) Act 2009* which is reflected in the designation of the site as containing areas of High Ecological Significance under *Far North Queensland Regional Plan 2009-2031*. Current Regional Ecosystem Mapping is depicted in RPS Drawings PR100246-82, included for reference in **Figure 3**. It is noted however that the site does not contain or border areas of dense tropical rainforest adjoining Wet Tropics area or major river systems.

Despite the current mapping, field assessment undertaken of the site confirms that no areas on site contain attributes which meet the criteria for 'Of Concern' vegetation and instead, reflect 'Least of Concern' regional ecosystems. In this respect, the vegetation proposed to be cleared as a result of the project will effectively be of lesser impact due to the presence of 'Least of Concern' vegetation. As stated previously, the disturbance footprints will allow natural re-vegetation to occur post construction, which will conversely, provide favourable environments for specific species nominated under the *Nature Conservation Act 1992* to establish.

While turbines are relatively fixed in location the large project area provides the ability to site individual turbines in areas of least ecological significance. The final location of each turbine will be determined through contour survey and geotechnical assessment, in conjunction with an assessment of the ecological attributes of each location. Sustainability of existing flora and fauna on site is not expected to be adversely affected by the project thereby protecting those properties which are defined as significant natural features.

It is anticipated that all impacts known or predicted to occur on site as a result of the construction, operation and decommissioning of the wind farm are manageable, with the implementation of construction mitigation techniques and operational management strategies, which are outlined in the attached Statement of Commitments in **Appendix A**.

- (b) *The values of significant cultural heritage features and heritage conservation, the components of which include aesthetic, architectural, historic, social or spiritual significance are conserved and protected.*

Comment

Converge Heritage + Community were commissioned to undertake an assessment of Indigenous Cultural Heritage values of the project area. A copy of their findings is provided for reference in **Appendix K**. Essentially, a search of the all relevant heritage databases and registers for former Lot 7 on SP181543 from which the subject land has been excised identified two sites of heritage significance, although these are not physically located within the current area identified as Lot 7 on SP235244, but given proximity, may be located close to the project area.

Given the location of known Aboriginal cultural heritage sites adjacent the project area, it is advised that potential for Aboriginal cultural heritage being present within the study area is moderate. The report therefore recommends adoption of a process whereby consultation with appropriate Aboriginal parties for the area is initiated. It is expected that this consultation would result in the preparation and negotiation of a cultural heritage management plan to manage any areas of significance that may be found to exist.

- (c) *Adverse effects from development on the natural environment are minimised with respect to the loss of natural vegetation, soil degradation, air and water pollution due to erosion, dust and chemical contamination, dispersal of pollutants, effluent disposal and the like.*

Comment

Mt Emerald Wind Farm has been designed, as far as practical, to ensure that existing landscape values, and significant natural features are not compromised by the establishment of the wind turbines. This has been achieved by designing a layout which respects existing features, ensuring that all operational impacts are managed appropriately, and ensuring that the facility can be operated with minimal input from natural resources such as water and extractive materials.

In order to minimise and offset impacts, micro-site locating wind turbines is the primary preferred option being adopted. Specific construction footprints will be chosen according to the presence or otherwise of a range of biophysical and landscape factors. Final selection of sites for wind turbines will be based on the findings of detailed field investigations.

The results of the detailed surveys will inform strategically appropriate measures required to ameliorate and mitigate the effects of impacts caused during and after the construction phase. This information will also direct the necessary requirements for the compilation of an Environmental Management Plan, which will contain environmental management elements dealing with:

- Erosion and Sediment Control;
- Storm and Waste Water Management;
- Weed and pest management;
- Fauna management; and
- Vegetation and flora management (including the management of plants of conservation interest).

Please refer to Mt Emerald Wind Farm Pty Ltd's Statement of Commitments, contained in **Appendix A**, which further detail mitigation methods of all anticipated impacts of the wind farm.

(d) Good quality agricultural land is conserved and protected from fragmentation and alienation.

Comment

Review of Council's Agricultural Land Quality (Arriga) mapping, confirms the eastern portion of the site is included within the 'Not Good Quality Agricultural Land' designation, while no data is available for the balance of the site. Inclusion of the land within these designations is assumed to be due to site topography and other characteristics. It is submitted that the proposed development will not result in the loss of, including fragmentation of and alienation of, good quality agricultural land.

(e) Agricultural and forestry resources, mining, extractive activity in the rural sector are encouraged, facilitated and protected.

Comment

While not directly applicable to the subject site or development proposal, as no such uses are proposed, it is noted for comparison that the physical change to the landscape as a result of a wind farm would be minimal when compared with mining and extractive activities, which are encouraged in the rural area. This is an important consideration given the long term impacts upon vegetation and displacement of fauna generally associated with mining and extractive activities, large cleared areas required for agricultural and forestry, which essentially change the habitats of such areas.

(f) The amenity and safety of land uses adjoining industrial estates and agricultural areas adjoining urban centres are protected from potential noise and air pollution.

Comment

Again, while not specifically relevant to the proposal as the wind farm is neither an industrial estate nor an agricultural area, by extension, the impacts associated with potential noise impacts upon adjoining areas is considered relevant to the wind farm.

Noise Mapping Australia has prepared a noise assessment of the anticipated impacts of the Mt Emerald Wind Farm, which is included for reference in **Appendix H**. A summary of the conclusions contained within Noise Assessment is included in section 3.2.9 of this report.

- (g) *The standard and location of the built environment, particularly in Mareeba and Kuranda, minimise the use of non-renewable resources, having regard to associated wastewater and effluent disposal infrastructure.*

Comment

Not applicable to the subject site or development proposal.

- (h) *All members of the community have appropriate access to relevant services and facilities that meet their needs and create a sense of community satisfaction*

Comment

Not applicable to the subject site or development proposal.

- (i) *The efficient use, extension and safe operation of infrastructure are maximised, including roads, rail, aerodromes, water and sewerage systems.*

Comment

Essentially, Mt Emerald Wind Farm facilitates the achievement of this outcome by efficiently using existing transmission line infrastructure to distribute clean energy, utilising existing road networks for the transportation and delivery of turbines during construction, whilst not impacting upon aerodrome operations (confirmed by Rehbein Aeronautical assessment included in **Appendix J**); nor impacting upon water and sewerage systems.

- (j) *Threats to public safety and health associated with the natural and built environments, including flooding in the catchments of the Barron River and Mitchell River are minimised.*

Comment

Risks to public safety and health are limited to noise and shadow flicker impacts. Specialist assessments of the anticipated impacts have been undertaken by appropriately qualified individuals with experience in wind farms.

Noise Mapping Australia have undertaken an assessment of the likely noise impacts (including audible, infrasound and low frequency noise) of the turbines and a copy of the report is included in **Appendix H**. The report concludes that noise goals outlined in *Environmental Protection Policy (Noise) 2008* are met at all locations. Maximum noise limits are set within the EPP, that are intended to ensure human health and wellbeing is not affected.

The Shadow Flicker Report prepared by **Transfield Services Infrastructure Fund**, concludes impacts will be within allowable limits for all neighbouring dwellings to the wind farm. If any dwelling experiences a level of disturbance then this can be mitigated through establishment of screening vegetation close to sensitive receptors. For detailed assessment, refer to **Appendix G**.

In addition, it is anticipated that conditions of any approval attaching to Mt Emerald Wind Farm development would include limits relating to noise and blade flicker, based on scientific guidelines that have been established with reference to appropriate limits that are intended to maintain human health and amenity.

- (k) *Communities of Biboohra, Chillagoe, Dimbulah, Irvinebank, and Julatten, Mount Molloy, and Watsonville will continue to be maintained and provided with appropriate levels of services and facilities, as secondary to the primary residential settlements of Mareeba and Kuranda.*

Comment

Not applicable to the subject site or development proposal.

- (l) *Residential uses are consolidated in identified urban nodes, including the existing townships and settlements and the rural landscape is protected from encroachment of urban uses.*

Comment

Not applicable to the subject site or development proposal, as not urban land or land uses are proposed by the development. However, we note that the site is not bordered by any future residential or rural residential settlements and will not impact upon the preferred settlement pattern of the area.

- (m) *Integrated Open Space networks comprising of national parks, botanical gardens river esplanades, pedestrian and bicycle pathways and wetlands provide a pleasant and safe public environment for aesthetic enjoyment, cultural, recreational and social interaction. Natural public open space areas are integrated into a network with conservation and natural resources areas such as State Forests to maximise habitat and corridor protection.*

Comment

The land over which development is proposed will remain under freehold tenure, with the land to be leased to Mt Emerald Wind Farm Pty Ltd. Public access to the site will be restricted due to safety issues. Although not part of this Development Application, it is intended that an information centre will be established on site, although a separate application for this aspect of development will be made by Port Bajool.

- (n) *Mareeba's role and identity as the main business, economic centre and regional service centre and gateway to the Cape is consolidated.*

Comment

Development of the site does not detract from Mareeba as the main business / economic centre. It is expected that the proposed wind farm will bring positive benefits (direct and indirect) to the local and regional economies throughout the life-cycle of the project. The phases that will typically see such benefits can be broadly described as the design & development, construction & commissioning, operation and decommissioning phases of the project.

The project will provide opportunities for local employment and will rely on various local inputs which will directly improve economic well being of those involved in the construction phase of the project. Indirectly, the increased expenditure during construction will aid in increasing the social well being of the local community. It represents the coordinated provision of utility infrastructure while ensuring protection of natural features of the site which reflects a socially responsible development, refer to section 3.2.11 of this report for further discussion.

Post construction, there is opportunity for continued injection of jobs throughout the region through the increase in tourism generated by the wind farm. Previous experience with Windy Hill Wind Farm and from other wind farms established throughout Australia and New Zealand indicate genuine interest in such proposals, given that they are not as common in other International cities.

- (o) *The Mareeba township and the Myola district, as identified by the Myola Feasibility Study are the primary residential nodes to accommodate future urban growth in accordance with the FNQ Regional Plan.*

Comment

Not applicable to the subject site or development proposal.

- (p) *The Kuranda Village's role and identity not only as an international tourist destination but as a residential centre and a functional service location for the wider district is protected and enhanced whilst ensuring the community's harmony and a sense of place is maximised through ensuring that the mix between tourists and residents meets the needs of both groups.*

Comment

Not applicable to the subject site or development proposal.

- (q) *The establishment of new industries such as value adding agricultural industries as well as ecotourism and tradeable services beyond agriculture.*

Comment

The proposal serves an essential community need by aiding the delivery of cleaner electricity to the local and regional community and that the direct and indirect economic and social benefits to the local area are significant.

There is demonstrated support in State government policies towards provisions of renewable energy such as wind and solar power. Energy generated by the wind represents an environmentally friendly, readily available natural resource and, ultimately, the proposal will have both direct and indirect economic, social and environmental outcomes for the area and region. The proposed development is a logical extension beyond the existing established agricultural industries within the region.

- (r) *The identification and protection of the amenity of noise sensitive development and liveability of residential areas.*

Comment

Noise sensitive development surrounding the wind farm is limited to those existing residences which are mostly isolated farm houses on agricultural land on the valley floor. Noise Mapping Australia have undertaken an assessment of the likely noise impacts of the turbines upon these receptors and a copy of their report is included in **Appendix H**.

This report concludes that noise goals are met at all locations in accordance with relevant policies. Such policies include noise goals which are intended to ensure that human health and amenity impacts are maintained. Refer to section 3.2.9 of this report for further discussion.

- (s) *The provision of pedestrian and bicycle facilities in urban areas.*

Comment

Not applicable to the subject site or development proposal.

- (t) *The protection of exiting heavy vehicle routes as shown on Maps R1 and R2 and existing and proposed extraction haulage routes from incompatible land use.*

Comment

The project site gains access to the local road network via Springmount Road, which is identified as a road utilised by existing and future hard rock quarry located off Springmount Road. SKM have undertaken an assessment of the likely traffic impacts during and post-construction and provided recommendations for safety as detail within the Traffic Impact Report within **Appendix D**.

5.5.2 Zoning

The project area is included within the Rural Zoning of the Mareeba Shire Planning Scheme 2004.

The overall outcomes sought for the Rural Zone code are to achieve an area:

- (a) *that caters for a range of primary industries including forestry and aquaculture to contribute to the economic well being of the Mareeba Shire;*
- (b) *where agricultural production and the raising of animals are protected from incompatible land uses;*
- (c) *where Good quality agricultural land is protected from fragmentation and alienation, not developed for purposes other than agricultural and support uses, and is protected from incompatible land uses in accordance with SPP1/92;*
- (d) *in which agricultural uses and works are located, designed and managed to maximise the efficient use and operation of infrastructure including the MDIA channel infrastructure;*
- (e) *that allows tourist uses that are ecologically sustainable and dependent on the values of the cultural heritage and natural resource or features located in the rural zone;*
- (f) *that excludes residential uses unless these uses are primarily ancillary and necessary to agricultural uses;*
- (g) *where a distinct boundary between the towns of Mareeba, Kuranda and Dimbulah is clear so that those towns do not extend beyond identified boundaries;*
- (h) *where provides adequate services to cater for the needs of industry are provided whilst ensuring likely environmental and social impacts of industrial developments and activities (e.g. both construction and operational impacts) and the cumulative impacts of trucks/transportation to and from industrial sites are minimised;*
- (i) *impacts on development on the natural values and water quality are minimised;*
- (j) *that allows for rural value adding industries where appropriately located;*
- (k) *where GQAL is conserved for agricultural uses that are dependent on the quality of agricultural land;*
- (l) *where the scenic values of the Shire are maintained;*
- (m) *where, in the Southedge Potential Tourist Area (as shown on Strategic Framework Maps SP1 & SP2) allows for tourist facilities directly associated with the natural attributes of the Southedge site, provided there is a demonstrable need for the facilities and adequate support systems are in place;*
- (n) *where, in Preferred area No 3 (as shown on Maps Z8, Z9 and Z10) the Clohesy River Area is protected for future long term urban development as identified by the FNQ Regional Plan;*
- (o) *where uses and works are located, designed and managed to avoid significant effect on the environment;*

- (p) where, in Preferred Area No 2 (as shown on Map Z10) the Mona Mona Reserve is planned for its continued development in accordance with an approved Plan of Development and Land Management and the Supplementary Table of zones;
- (q) makes effective use of the land and of the services provided to enable the functioning of the zone.

It is considered that the Rural Zone is the most appropriate designation to site development of the type proposed, given separation of the towers within the site from sensitive receptors and inconsistency of the farm with other 'urban' style development. Further, establishing a wind farm at this location will not prejudice the continuation of rural pursuits surrounding the site nor fragment or alienate agricultural land as such, the proposal is consistent with existing rural uses within the region. It is anticipated that the community has a certain level of acceptance of such proposals, given established Windy Hill Wind Farm, greater public knowledge of the need for renewable energy sources generally and policy direction of the State and Federal government which encourage development of renewable energy.

The Development Principles outlined in the Rural Zone Code address built form requirements, such as setbacks and heights, which are not relevant to the proposal. Given the nature of the proposal, wind turbines necessitate an overall height far beyond any existing built structure likely to be established in the Rural Locality. However, turbines will be setback from roads and existing dwellings appropriately, to ensure no overhanging of rotor blades on adjoining properties or constructed roads.

As stated above, turbines have certain locational requirements which necessitate the removal of vegetation to ensure maximum efficiency and allow safe construction. Where practically possible the turbines will be located to minimise vegetation clearing and other ecological impacts.

Typical impacts during operation relating to noise impacts have been addressed by Noise Mapping Australia, with the results of their modelling being included for reference in **Appendix H**. The report concludes that the wind farm has been designed and can operate within acceptable levels of noise criteria to ensure rural amenity of the area is maintained.

Other typical impacts, such as noise, electromagnetic interference, shadow flicker, aeronautical impacts, traffic, visual, environmental and cultural heritage have been considered and can be appropriately managed through the imposition of reasonable and relevant conditions.

5.5.3 Relevant Overlays

The project area is located within the 8km – 13km Mareeba Aerodrome Buffer Zone.

The site is not included within the Obstacle Height Limitation Overlay

The project area is subject to the Bushfire Hazard overlay and is identified as containing medium and high bushfire hazard. Given that the proposal relates to structures which do not increase the amount of people working or residing on the land, the proposal complies with the intent of the code. The potential for the structures themselves to ignite (from malfunctions of internal equipment) is extremely low, but will be managed through consistent and regular maintenance program, complemented by a specific Fire Management Plan (refer to **Appendix M**) for all operation and maintenance activities which will be included in the site Environmental Management Plan.

5.5.4 Planning Scheme Policies

No Planning Scheme Policies are directly applicable, although it is noted that Council may make a request for further information in relation to particular aspects of the proposal.

5.5.5 Planning Scheme Conflicts

In the compliance assessment detailed above, no inconsistencies have been identified. We note however that there is potential that, because the planning scheme did not specifically address or anticipate such development (despite broad application of Utility Installation definition), there may be conflict by omission. In this instance, it is considered there are sufficient grounds for approving the development, despite the conflict having regard to:

- State government policies, notably the Far North Queensland Regional Plan Statutory Policy 6.3 which states that developments sourcing energy from the wind are '*recognised as legitimate land uses and supported for their contribution to reducing greenhouse emissions*';
- Underpinning this support are higher level policies of the Queensland Government such as ClimateSmart Strategy 2050, as well as numerous national and international commitments to reduce greenhouse gas emissions and impacts of climate change;
- Wind farms represent a safe and clean form of electricity generation with relatively benign impacts when compared with traditional sources of energy production, such as coal;
- Significance of the project to the energy industry in Far North Queensland is recognised due to the scale of the project and being the second project of this type in the area, which provides the potential to create a wind energy node;
- The short term economic benefits during construction phase, through support for local industry/suppliers and construction labour, and long term job placements from tourism resulting from the wind farm;
- Importantly, the proposal does not prejudice establishment of rural uses post construction nor result in fragmentation of rural land holdings;
- While the locational attributes of wind turbines necessitate the removal of some identified significant vegetation, any such impacts can be managed through micro-siting of the turbines;
- Sustainability of fauna populations at the location are not adversely affected and appropriate construction techniques can be employed to minimise disturbance during construction;
- Operational impacts can be appropriately managed through limiting noise emissions and blade flicker impacts
- Minimal impact on Cultural Heritage values by limiting the majority of the development to existing cleared areas;
- Visual impact is considered to enhance the existing landscape and will ultimately create a distinct character for the area; and
- It is anticipated that given the existence of Windy Hill, and public knowledge of the need for renewable energy in Queensland, that there is greater community acceptance and knowledge of the benefits of such proposals.

In summary, if there is considered to be any conflict by omission, it is considered minor given that the Planning Scheme had not specifically anticipated such development. This report has demonstrated that the proposal does not offend or compromise the achievement of the outcomes sought for the Rural Area or Planning Scheme area generally. In any event, any conflict with the Planning Scheme is resolved by overriding policies contained within the Far North Queensland Regional Plan, which encourage the proposed development.

5.6 Referral Agency Response

No referral agency responses have been obtained prior to the lodgement of this development application. This will be obtained as part of the information and referral stage at Chapter 6, Part 3 of the *Sustainable Planning Act 2009*.

6 Conclusion

This report forms the supporting information for a development application to obtain a Development Permit for a Material Change of Use, for the purpose of a 'Utility Installation' (Wind Farm) under Mareeba Shire Planning Scheme.

The report has included an assessment of the proposal against relevant planning considerations at both State and Local level and is considered to be in compliance with these documents. The proposal is consistent with land use designations and it has been demonstrated that operational impacts can be appropriately managed.

There is demonstrated support in State government policies towards provisions of renewable energy such as wind and solar power. Energy generated by the wind represents an environmentally friendly, readily available natural resource which can provide electricity cheaper and more cost effectively than traditional alternatives such as coal and gas fired plants.

Ultimately, the proposal will have both direct and indirect economic, social and environmental outcomes for the area and region.

Environmentally, the design of the turbine layout has been carefully considered to ensure clearing of vegetation is minimised without compromising the effective operation of the wind farm. In addition, sustainability of fauna populations will not be adversely affected where relevant strategies are employed during and post construction. By utilising a renewal energy source that does not contribute to greenhouse gas emissions, extrapolation of the proposal will have a positive cumulative impact by contributing to the reduction greenhouse targets generally.

The project will provide opportunities for local employment and will rely on various local inputs which will directly improve economic well being of those involved in the construction phase of the project. It represents the coordinated provision of utility infrastructure while ensuring protection of natural features of the site which reflects a socially responsible development.

In summary the proposal is considered to advance the principle of ecological sustainability by meeting the energy needs of today through environmentally benign structures that do not contribute to greenhouse gas emissions, so as not to compromise the ability of future generations to meet their energy needs.

We therefore commend the application to Council for approval.