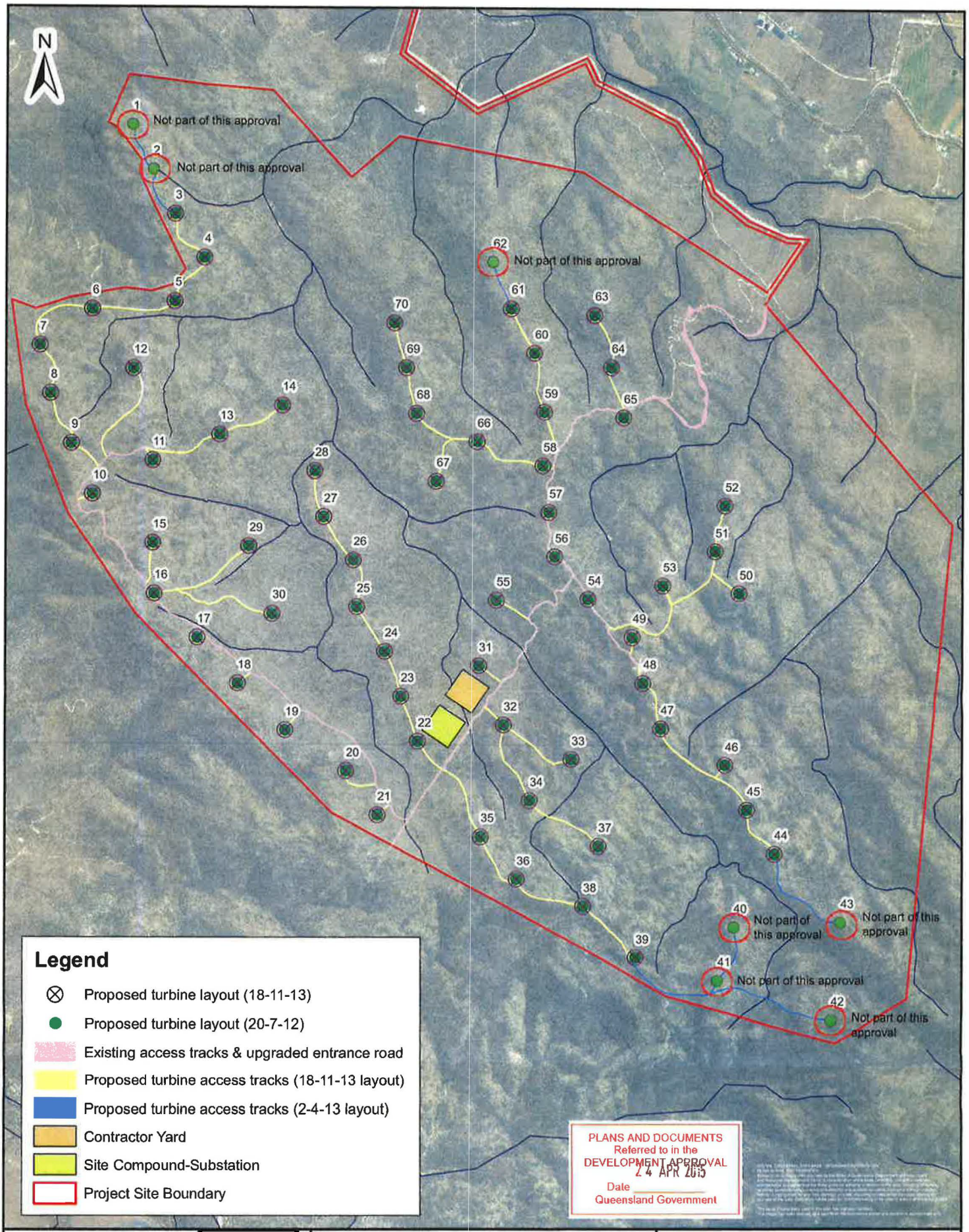

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Client: RACL

Title: Mount Emerald Wind Farm
Turbine locations and development footprint

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Appendix A

Statement of Commitments

1 Statement of Commitments

The following statements form commitments of Mt Emerald Wind Farm Pty Ltd in terms of environmental management and monitoring to mitigate the potential adverse environmental impacts and to gain a net environmental benefit from the establishment of Mt Emerald Wind Farm. The draft Statement of Commitments (SoC) is a compilation of the various mitigation measures developed after the detailed impact assessment of the Proposal on identified key environmental issues. It is presented as a set of measures arranged according to environmental issues by project phases, with the desired environmental outcomes, and responsibilities for implementation clearly identified.

This SoC will inform the preparation of a Project Environmental Management Plan (PEMP); the Construction Environmental Management Plan (CEMP); and Operational Environmental Management Plan (OEMP); and associated sub-plans that provide more site and project phase-specific details regarding the environmental management and monitoring measures to be implemented.

1.1 Project Environmental Management Plan:

The PEMP is a management document prepared by the Proponent that expands on the final SoC and other project approval conditions into more detailed outcomes. The PEMP will provide the basis for:

- meeting all environmental requirements;
- assignment of environmental management responsibilities between the Proponent and contractors;
- inclusion of environmental requirements into tender documents; and
- continuing management and evaluation of the environmental performance of the project.

The PEMP will be an integral element of the detailed design phase and will form part of any contractual requirements. The PEMP will identify or describe:

- processes for the environmental evaluation of the Proposal;
- environmental risks which may be managed respectively by the Proponent and the contractor;
- the promotion of environmental awareness among employees, contractors and the community;
- the requirements for review and/or audit of environmental documents such as contractors' Environmental Management Plans.

1.2 Construction Environmental Management Plan

The CEMP will be prepared by the primary contractor, in consultation with the Proponent, based on the former's proposed work methods and the environmental outcomes required for the Proposal.

The main aim of the CEMP will be to avoid, minimise and manage any potential environmental impacts arising from construction activities for the Proposal. It will describe in a more detailed and site-specific manner the management measures to be carried out for the activities at various stages of construction. This will include the definition and allotment of responsibilities among the Proponent, the primary contractor and its sub-contractors. It will also cover the conduct of ongoing stakeholder engagement, system of notification and complaints management during construction.

The CEMP will contain a suite of sub-plans to describe detailed management procedures for key environmental issues. Among the sub-plans projected for development for the construction phase are the following:

- **Threatened Species Management Plan (TSMP)** – this plan will describe measures to minimise the impacts on threatened species of flora and fauna, including identification and marking of exclusion zones on site;
- **Weed and Pest Management Plan (WPMP)** – This plan will detail the protocols for the management of noxious and environmental weed species on the site, with the objective of minimising the potential of risk of introducing such weeds and pests into the site or spreading them across and/or beyond the development footprint;
- **Rehabilitation Plan** – this plan will provide guidelines to integrate appropriate landscape rehabilitation strategies and methods into the management of disturbed land. The Rehabilitation Plan will complement the WPMP (above), and outline recommendations for incorporating rare and threatened plants and the reinstatement of groundlayer and other fauna habitats;
- **Habitat Clearing and Management Plan** – this plan will provide management strategies involved in mitigating the impacts of habitat clearing on susceptible fauna, including the induction of all workers and for wildlife spotters and catchers in involved in habitat clearing;
- **Cultural Heritage Management Plan –** this plan documents the procedures to be followed for impact avoidance or mitigation, and will be developed in consultation with an archaeologist, and the traditional owners of the land, being the Bar Barrum People and Muluridji People;
- **Traffic Management Plan (TMP)** – the TMP, to be prepared in consultation with Department of Transport and Main Roads, will outline traffic movements to and from the site as well as within the construction zones. The TMP will describe measures that promote traffic safety for local and regional traffic, construction personnel and landowners who may need to access the project site. The TMP will also establish protocols for construction deliveries, especially of large loads (*e.g.* cranes, turbine infrastructure);
- **Bushfire Risk Management Plan** – this plan, to be prepared in consultation with the Queensland Fire and Rescue Service and will identify and manage bushfire risks which may arise due to construction activities on site, and will describe protocols for responding to a fire during the construction phase. The plan will also identify regulatory requirements relating to fire safety in accordance with relevant Workplace Health and Safety Requirements (*e.g.* relevant specifications for chemical storage and refuelling) and will be based upon the draft Fire Management Plan submitted with the Development Application;
- **Ecological Fire Management Plan** – this plan will detail the management strategies to be implemented in order to maintain an appropriate fire regime (extent, intensity, frequency) for the various faunal and flora habitats represented on the site;
- **Emergency Evacuation Plan (EEP) –** this plan will outline site protocols in the event of an emergency (*e.g.* chemical spill), including lines of communications among construction personnel and affected residents, safe evacuation routes and muster points, and coordination procedures with State Emergency Response personnel who may respond on site;
- **Erosion and Sediment Control Plan (ESCP)** – prepared in accordance with the Institute of Engineers Australia Queensland ESC Guidelines, the ESCP will describe temporary and permanent sediment control procedures and methods to minimise erosion during the construction of the project, covering discrete construction areas and which will account for the changing surface configuration at various stages of construction;
- **Construction Waste Management Plan (CWMP)** – this plan will describe measures to minimise waste generation onsite and maximising opportunities for recycling and reuse;
- **Construction Dust Management Plan** – this plan will describe measures for dust mitigation, control and monitoring using dust gauges; and
- **Stormwater Manangement Plan (SWMP) –** related to Erosion and Sediment Control Plan, the SWMP will prepared in accordance with Queensland Urban Drainage Manual, with specific reference to waterway crossings and stormwater outlets for all turbine pads and access tracks (where applicable) to ensure water quality is maintained.

1.3 Operation Environmental Management Plan

An Operational Environmental Management Plan (OEMP) will be prepared by the Proponent to describe the environmental management measures to be implemented during the operational phase of the project. This plan will cover not only the operational and maintenance requirements of the wind farm but will also address ongoing monitoring and maintenance of the project site to minimise ecological impacts and to promptly respond to potential community amenity issues.

The OEMP will include the following:

- key operational and maintenance activities;
- identification of statutory obligations and planning approval commitments;
- description of the roles and responsibility of site personnel and visiting contractors;
- monitoring of the following key environmental issues:
  - noise;
  - fauna impacts;
  - flora and vegetation impacts;
  - dust emissions (from bare ground within the development footprint);
  - stormwater quality and sedimentation
  - fire risks; and
  - operational traffic impacts.

The OEMP will be prepared and submitted for approval to the Council no later than one month prior to the commencement of operation of the wind farm.

1.4 Statement of Commitments

The Proponent has voluntarily prepared a draft Statement of Commitments (SoC) outlining the suite of mitigation measures to avoid, minimise and manage potential environmental impacts resulting from the construction (C), operation (O) and decommissioning (D) of the Proposal.

The elements of the Proponent's draft SoC which have been described throughout the Development Application, after the detailed assessment of the key issues are compiled in **Table 1**.

Table 1 Draft Statement of Commitments

Item	Impact	Objectives	Mitigation Task	Responsibility	Project Phase		
					C	O	D
1.0	**Visual & Landscape**						
1.01	**Visual impact from contrast between turbines and rural landscape**	Reduce visual contrast	An off-white or grey colour for the structures will be considered to reduce visual contrast between turbines and the viewing background (this is subject to final turbine selection).	Proponent		✓	
1.02	**Visual impact**	Provide screening through landscape planting	The Proponent will undertake landscape planting where screening is deemed appropriate and in accordance with the outcomes of the assessment process and in consultation with landowners, taking into consideration that the location and design of screen planting used as a mitigation measure is very site specific and requires detailed analysis of potential views.	Proponent		✓	
1.03	**Visual impact from scarring of landscape**	Reduce occurrences and extent of landscape scarring	• Disturbed soil areas will be reinstated immediately after completion of construction, including re-contouring and re-seeding with appropriate plant species. • Tracks have been designed to follow contour lines and existing roads will be used as much as possible, which will minimise cut-and-fill and the potential landscape scarring. • Revegetation and offset planting will be undertaken on site in consultation and agreement with landholders.	Contractor and Proponent	✓	✓	
1.04	**Visual impact from construction activities**	Reduce visibility of construction activities from outside the site.	• Safeguards will be enforced to minimise dust emissions during construction. • Height of stockpiles will be restricted.	Contractor	✓		
1.05	**Visual impact from night-time lighting**	Minimise light spill from project site	Activities (such as aviation lighting) that may require night-time lighting will be minimised and, if necessary, low lux (intensity) lighting designed to be mounted with the light inwards to the site will be used to minimise glare.	Proponent	✓	✓	
1.06	**Visual impact from contrast between site infrastructure and the rural landscape**	Site infrastructure sympathetically with the nature of the locality	• Substation and other ancillary infrastructure will be sited sympathetically with the nature of the locality and away from major roads and residences where possible to mitigate visual impact. • The majority of electrical connections within the site (i.e. cables between the turbines) have been designed to be located underground (where possible), in order to further reduce potential visual impacts.	Proponent	✓	✓	

Item	Impact	Objectives	Mitigation Task	Responsibility	Project Phase		
					C	O	D
1.07	**Visual impact from contrast between site infrastructure and the rural landscape**	Select appropriate materials and colours	Appropriate materials and colours, together with consideration of their reflective properties, will be selected for ancillary structures and built elements associated with the Proposal.	Proponent	✓		
2.0	**Noise**						
2.01	**Construction Noise**	Minimise noise impact on receivers	Construction and decommissioning activities will be carried out within the following periods only: • Monday – Saturday– 6am to 6pm, Work or deliveries will be carried out on Sundays and public holidays, except for the following activities, associated with the construction and decommissioning, which may need to occur outside standard working hours such as: • delivery of oversize loads or materials as requested by Police or other authorities for safety reasons; • completion of concrete pouring past the standard hours of work due to climatic considerations; • Any works that do not cause a noise nuisance at nearby dwellings; • Emergency work to avoid injury, property damage and/or to prevent environmental harm.	Contractor	✓		✓
2.02	**Construction Noise**	Minimise noise impact on receivers	In accordance with the, *Environmental Protection Policy (Noise) 2009* and relevant Local Laws; all the feasible and reasonable standard work practices will be employed to minimise construction noise impacts.	Contractor	✓		✓
2.03	**Construction Noise**	Minimise noise impact on receivers	Notification and ongoing consultation with potentially affected receivers will be carried out, especially where potentially noisy works are anticipated.	Proponent and Contractor	✓		✓
2.04	**Noise from Construction Traffic**	Minimise noise impact on receivers	The timing of deliveries will be regulated and notification to residents carried out when deliveries of large loads are scheduled.	Proponent and Contractor	✓		✓
2.05	**Construction Noise**	Minimise risk	Construction plant will be selected on the basis of low inherent potential to generate noise and vibration. Regular and ongoing maintenance of plant equipment and machinery will be undertaken to ensure operational noise do not exceed typical levels.	Contractor	✓		✓

Item	Impact	Objectives	Mitigation Task	Responsibility	Project Phase		
					C	O	D
2.06	**Construction Noise**	Minimise noise emission from construction plant	Construction vehicles will be fitted with mufflers and low noise emission reversing alarms.	Contractor	✓		✓
2.07	**Construction and Operational Noise**	Management of Noise Impacts	Establishment of Complaints Hotline to allow affected residents to register noise complaints and response within reasonable timeframe.	Proponent	✓	✓	✓
2.08	**Construction Noise**	Monitoring of noise levels at affected receivers	When noise complaints are received, the affected resident will be contacted to identify the source of noise and any remedial measures that may be required.	Proponent and Contractor	✓		✓
2.09	**Operational Noise**	Manage noise impact on specific Receiver/s	The Proponent proposes to acquire this property or alternatively to negotiate relocation arrangements with the owner to mitigate this noise exceedence. Augment existing buildings to alleviate noise and ensure compliance with relevant noise policy base criterion (if required)	Proponent		✓	
2.10	**Operational Noise**	Reduction of turbine numbers as required to ensure compliance with noise criteria	The wind farm layout will be determined by the chosen turbine model. Turbine locations will be removed from the layout in the vicinity of any residence where necessary to achieve compliance with the relevant noise policy base criterion if required.	Proponent	✓	✓	
2.11	**Operational Noise**	Monitor compliance with noise criteria	Within the first twelve months of operation, monitoring of wind farm noise emissions will be undertaken at representative residences including the closest non-involved residences to assess compliance with noise criteria. The monitoring will cover all prevailing wind conditions.	Proponent		✓	
2.12	**Operational Noise**	Address any non-compliance with noise criteria	Where operational noise monitoring indicates the Proposal exceeds noise limits set in the development approval conditions, the following noise mitigation measures shall be implemented: • using active noise control functions of turbines; • rectify any manufacturing defects or control settings so that noise can be reduced to the in accordance with the contracted specifications; or • if excesses still occur, acoustic treatment of non-involved receiver dwellings.	Proponent		✓	

Item	Impact	Objectives	Mitigation Task	Responsibility	Project Phase		
					C	O	D
2.13	**Operational Noise**	Monitoring the effectiveness of operational noise mitigation measures	Should any of the measures in item 2.12 be adopted, their effectiveness will be verified through noise monitoring during the first 12 months of operation.			✓	
3.0	**Flora and Fauna**						
3.01	**Reduction in local biodiversity**	Protect and conserve areas of high conservation value	At the design stage: • Infrastructure will be micro-sited in areas of least ecological significance with site-specific input from fauna and vegetation ecologists; • Location of infrastructure in areas of important habitats and conservation significant flora will be avoided in the first instance; • Clearing is limited to the development footprint; • Aligning access tracks and cabling along existing tracks; • Clearing of overstorey and mature and native riparian vegetation will be minimised. Infrastructure will be preferentially sited in previously cleared and disturbed areas; • Access track widths will be kept to a minimum wherever practicable, and when in areas containing rare and threatened plants; • Detailed hollow-bearing tree surveys will be undertaken in areas of woodland where hollow-bearing trees may be removed, with the results used in micro-siting infrastructure to avoid trees where possible and provide buffers around trees identified as having significance; • A detailed management plan for the removal of hollow-bearing trees will be prepared by an ecologist to minimise impacts to resident fauna; • Threatened Plant Management Plan to be developed including strategies for translocation or propagation and planting where removal can not be avoided; • Identification of rare and threatened plants in areas to be cleared prior to vegetation removal.	Proponent	✓		

Item	Impact	Objectives	Mitigation Task	Responsibility	Project Phase		
					C	O	D
3.02	**Reduction in local biodiversity from the construction footprint**	Minimise extent of construction impact and ensure vegetation integrity and connectivity	The total area of the construction footprint will be minimised through the following measures: • where possible, cabling will be laid underground, within or adjacent to the road corridor to minimise additional impacts; • where required, cabling in drainage lines will be under-bored. If under-boring is not feasible, rehabilitation and stabilisation works will be undertaken immediately following works within drainage lines; • trenches will be filled as soon as possible; • any trench left open overnight will be adequately covered or inspected at first light for any trapped fauna which should be released in an appropriate location nearby; • disturbance will be kept to a minimum at creek crossings; • appropriate erosion and sedimentation controls will be put in place prior to works, particularly when working in or near drainage lines; • creek works will not be undertaken when rain is forecast and will be avoided where possible when there is flow; • materials laydown and stockpiling will make use of existing areas of disturbance or other areas of low biodiversity value, where possible; • all construction vehicles necessary for physical construction will be restricted to within designated tracks, within the construction zones; • care will be taken when working within drip lines and within proximity to tree roots in order to prevent damage; • all onsite staff are to undergo a site induction to ensure understanding of on-site flora and fauna issues; • areas proposed for construction will be inspected for wildlife prior to the commencement of works. Any species found will be relocated by a trained wildlife handler; and • revegetation of areas not required for construction and operation will be undertaken to maximise seasonal growth and establishment of plantings in accordance with a site-specific Rehabilitation Plan which includes monitoring to assess the success or otherwise of such works.	Proponent and Contractor	✓		

Item	Impact	Objectives	Mitigation Task	Responsibility	Project Phase		
					C	O	D
3.03	**Reduction in local biodiversity through loss of habitat**	Retain habitat and biodiversity elements	Impacts on critical habitat features and flora and fauna species will attempt to be be minimised through the following measures: • Wildlife spotter-catchers will be engaged to oversee construction work at each site where clearing of vegetation (such as mature trees and hollows) is required to attempt capture and relocation of any fauna where possible; • Clearing will be staged to allow fauna adequate time to relocate; • Creation of artificial habitats (e.g. nest boxes, boulder piles) adjacent to sites and identification of a appropriate release areas; • impacts to hollow-bearing trees that have not been specifically identified for removal will be avoided; • fallen timber will be left in place or moved to a nearby area to retain fauna habitat (without increasing fire hazards); • where destruction of rocky outcrops can not be avoided, a preclearance survey to find and relocate captured reptiles and other ground-dwelling fauna will be conducted; • removed rocks will be replaced in nearby areas, in consultation with an ecologist; • instream habitat along creeklines such as snags, bedrock and emergent vegetation will be retained, avoided or relocated as a last option.	Proponent and Contractor	✓	✓	✓
3.04	**Reduction in local biodiversity through introduction and spread of noxious weeds**	Control the introduction and/or spread of noxious weeds	Introduction and/or spread of noxious weeds will be controlled through the following measures: • noxious weeds within the development envelope will be controlled according to Weed and Pest Management Plan and other control plans and measures recommended by the Tablelands Regional Council; • A regulated weed washdown bay for machinery and vehicles will be constructed and maintained at the entrance to the project area; • Noxious weeds currently lining the access will be controlled and eradicated prior to construction commencing; • Pre-construction and post-construction weed survey will be conducted to to identify the location and severity of weeds infestations within development footprint;	Proponent and Contractor	✓	✓	✓

Item	Impact	Objectives	Mitigation Task	Responsibility	Project Phase		
					C	O	D
			• where a specific weed risk has been identified, all machinery, equipment and vehicles are to be inspected and washed down as required before entering and leaving the project site; • soil from soil disturbance and vegetation clearance which may contain exotic species will be placed at least 50 m away from any water source; • weed-contaminated soil will not be allowed into the project site for fill or other purposes; • topsoil that is limited in weeds and harvested to salvage the native soil seed bank will be used to reintroduce the seed bank back into disturbed areas; • onsite staff and contractors will be educated on noxious weeds occurring at the site and ways to prevent their spread; • revegetation will be carried out using locally native endemic species characteristic of the cleared vegetation type; • control of invasive weed grasses within the disturbance zone will be conducted as soon as they are detected.				
3.05	**Reduction in local biodiversity through degradation of disturbed areas**	Progressively rehabilitate disturbed areas	• Rehabilitation will be undertaken progressively in all areas disturbed by the works; • Local native species will be sourced for all revegetation works within native vegetation. Selected species will be common to the vegetation community in which works occur and may include rare and threatened plant species; • Re-use of topsoil and matter from the upper horizon will be used, where practical, to assist the natural regeneration process; • Seed collection of plant species from localised provenance prior to vegetation clearing to accumulate suitable stock for rehabilitation work.		✓		
3.06	**Reduction in local biodiversity through impact on the aquatic environment**	Manage potential impacts on creeks	Upgrades to existing creek crossings will be designed in accordance with Queensland Urban Drainage Manual and Far North Queensland ROC Development Manual; and Disturbed bank areas will be rehabilitated using native species only as soon as practical after completion of construction.		✓		

Item	Impact	Objectives	Mitigation Task	Responsibility	Project Phase		
					C	O	D
3.07	**Reduction in regionally and nationally significant species**	Threatened Species Management	A Threatened Species Management Plan (TSMP) will be prepared to outline measures to minimise impacts on significant species throughout the area during all project phases. The TSMP will incorporate provisions for the following: • pre-clearance surveying and monitoring; • handling and relocation of wildlife (if found); • regular site inspections for injured/damaged species; • consultation with local government, DERM, SEWPAC and other relevant stakeholders regarding the implementation of management strategies; • rehabilitation of areas of high significance; • monitoring and control programme for introduced predators species to minimise impacts of susceptible native fauna; • the abundance and distribution of threatened species will be monitored during the operation phase to ensure that populations are not being adversely impacted by the project.	Proponent and Contractor	✓	✓	✓
3.08	**Bird and Bat Mortality and Turbine Avoidance Monitoring**	Monitoring of Bird and Bat Strike	Validation of the required turbine strike/barotrauma risk modelling will require mortality monitoring to be conducted during the operation phase and observations of bird and bat avoidance behaviour. Mortality monitoring is likely to incorporate the following methods: • carcass searches utilising trained sniffer dogs and visual searches; • carcass removal studies to calibrate mortality monitoring data. Spatially and temporally replicated surveys of bat and bird flight behaviour and habitat utilisations will be conducted to validate assumed avoidance rates used in the mortality risk models. Regular reporting will be undertaken to identify any trends in the data and will recommend appropriate management actions.	Proponent in consultation with technical specialists		✓	

Item	Impact	Objectives	Mitigation Task	Responsibility	Project Phase		
					C	O	D
3.09	**Reduction in local biodiversity**	Management of biodiversity during decommissioning	• A biodiversity assessment will be undertaken prior to decommissioning, to update the knowledge of site attributes and evaluate specific impact types (given the life span of the project is in the order of 30 years); • Relevant mitigation measures implemented during the construction phase to contain impacts will also be applied to decommissioning works; • New measures to avoid and mitigate impacts will be developed depending on the results of the assessment.	Proponent in consultation with technical specialists		✓	✓
4.0	**Indigenous Heritage**						
4.01	**Damage or disturbance to sites or items of Indigenous heritage significance**	Minimisation of potential impacts on sites or items of potential indigenous heritage significance	While no sites have been found to occur to date within the project area, the assessment of likely occurrence is moderate and as such, a strategy of avoidance of impacts will be adopted. In regard to the previously recorded Aboriginal objects identified in previous studies which are located within the study area, but outside areas of proposed impact, these areas will be avoided during construction, operation and decommissioning of the wind farm. Steps will be taken to ensure that inadvertent impacts to these locales do not occur.	Proponent and contractor in consultation with technical specialists and the local Aboriginal Community	✓		
4.02	**Damage or disturbance to sites or items of Indigenous heritage significance**	Minimisation of potential impacts on sites or items of potential indigenous heritage significance	Ground disturbance impacts associated with the Proposal will be kept to a minimum and that areas of work will be defined so as to ensure as little impact as possible to objects of Aboriginal cultural and heritage value which may occur on site.	Proponent and Contractor	✓		
4.03	**Damage or disturbance to sites or items of Indigenous heritage significance**	Assess the potential Indigenous heritage impacts in development areas which have not been previously assessed	Additional archaeological assessment will be conducted in any areas proposed to be disturbed which have not been surveyed during the assessment completed to date prior to work commencing.	Proponent in consultation with Technical Specialists	✓		

Item	Impact	Objectives	Mitigation Task	Responsibility	Project Phase		
					C	O	D
4.04	**Damage or disturbance to sites or items of Indigenous heritage significance**	Minimisation of potential impacts on sites or items of potential indigenous heritage significance	In consultation with an archaeologist, the relevant Aboriginal communities, an Indigenous Heritage Management Plan (IHMP) will be prepared as a component of the CHMP to document the procedures to be followed for impact avoidance or mitigation to ensure that all recorded Aboriginal objects identified in previous studies, which are located in the development envelope, but outside areas of proposed impact, are avoided during construction and operation of the wind farm.	Proponent in consultation with Technical Specialists	✓	✓	
4.05	**Damage or disturb areas/items of Indigenous Heritage**	Management of undiscovered items of Aboriginal and/or archaeological significance	If during the course of the construction works any items of aboriginal cultural heritage or significance (i.e. archaeological items) are uncovered, works shall cease (within vicinity to the item) and DERM notified of the findings. An appropriate assessment and salvage strategy will be determined and implemented prior to the recommencement of construction works within the area. Should human remains be found during the proposed earthworks works will cease and the police notified immediately.	Contractor in consultation with the Proponent and DECCW	✓		✓
4.06	**Damage or disturb areas/items of Indigenous Heritage**	Management of Aboriginal Cultural Heritage	Personnel involved in the construction management phases of the project will be trained in procedures to implement recommendations relating to cultural heritage where necessary.	Proponent and Contractor	✓		
5.0	**European Heritage**						

4.07	**Damage or disturb areas/items potentially involving unexploded Ordnance**	Management of European History (specifically World War II)	• Prior to construction, undertake an investigation of presence of unexploded ordnance within the project site in accordance with Department of Defence and DERM requirements;
			• Undertake remediation measures in accordance with findings of the investigation report;
			• Personnel involved in the construction phase of the project will be trained in appropriate procedures to report findings of UXO which include:
			  • Ensuring the object is left in situ;
			  • Marking the general area to ensure no further disturbance can occur;
			  • Note appearance, dimensions and location of object;
			  • Notify the police immediately.
				Proponent and Contractor	✓		

Item	Impact	Objectives	Mitigation Task	Responsibility	Project Phase		
					C	O	D
	Damage or disturbance to sites and areas of European Cultural Heritage	Minimisation of potential impacts on sites or items of potential european heritage significance	Ground disturbance impacts associated with the proposal will be kept to a minimum and that areas of work will be defined so as to ensure as little impact as possible to objects of European cultural and heritage value which may occur on site.	Proponent and Contractor	✓		
	Damage or disturbance to sites or items of Eurpoean heritage significance	Assess the potential Indigenous heritage impacts in development areas which have not been previously assessed	Additional archaeological assessment will be conducted in any areas proposed to be disturbed which have not been surveyed during the assessment completed to date prior to work commencing.	Proponent in consultation with Technical Specialists	✓		
	Damage or disturbance to sites or items of European heritage significance	Minimisation of potential impacts on sites or items of potential indigenous heritage significance	Prepare CHMP to document the procedures to be followed for impact avoidance or mitigation to ensure that European objects found during investigations are avoided during construction and operation of the wind farm.	Proponent in consultation with Technical Specialists	✓	✓	
	Damage or disturb areas/items of European Heritage	Management of undiscovered European Cultural Heritage	If during the course of the construction works any items of European cultural heritage or significance (i.e. archaeological items) are uncovered, works shall cease (within vicinity to the item) and DERM notified of the findings. An appropriate assessment and salvage strategy will be determined and implemented prior to the recommencement of construction works within the area.		✓		
5.0	**Traffic and Transport**						
5.01	**Adverse impact on local and regional traffic during the construction and decommissioning phases**	Minimisation of impact to local and regional traffic	• Large oversize materials will be transported overnight to reduce impacts on road network (subject to DTMR approval); • No oversize or large trucks associated with the construction will operate on the Kennedy Highway or Channel/Springmount Roads during the school bus hours of 7:30am and 8:50am, and between 3:20pm and 4:30pm on school days;	Contractor in consultation with Traffic Management Specialists, RTA and ULSC	✓		✓

Item	Impact	Objectives	Mitigation Task	Responsibility	Project Phase		
					C	O	D
			• Once more detail is known about the exact type of transport vehicles and routing for the delivery of turbine components to site, more detailed swept path analysis will be undertaken along the truck route to identify any road widening and road furniture relocation works that may be required.				
5.02	**Traffic safety risks from construction vehicles**	Minimise traffic safety risks from movement of construction vehicles	• Upgrade Kippin Drive and Springmount Road intersection, to accommodate oversize vehicles during the construction phase; • Upgrade of Kippin Drive to a standard required to accommodate expected vehicle types; • Traffic controllers on Kippin Drive and Springmount/Channel Road intersection will be provided to help assist large trucks exiting the site and manage any safety risks. Advance warning signs will be placed on each approach, 200 metres from the access road with "Prepare to stop" warnings when traffic controllers are present; • A relatively significant increase of traffic volume on Kippin Drive, Channel and Springmount Roads could increase the risk of accidents with vehicles. Therefore, lower speed limits will be enforced on Springmount and Channel Roads and internal access roads at all times during construction.	Contractor	✓		
5.03	**Damage to existing road infrastructure**	Protect existing road infrastructure	• Road and intersection conditions will be established by the use of field surveys and regular site inspections. When required, rehabilitation of the pavement and/or edges of seal, shoulders and verges will be carried out. At the completion of the works the access roads will be in the same or superior condition than at the commencement of the works; • Regular road dilapidation surveys will be carried out during construction and decommissioning; • Internal roads and turns in the project site are required to be widened up to 10m in order to transport the construction materials and the large turbines to the desired location, and will require surfacing upgrade through grading; and • A procedure will be established to ensure the ongoing maintenance of access roads during the operation phase.	Proponent / Contractor	✓	✓	✓

Item	Impact	Objectives	Mitigation Task	Responsibility	Project Phase		
					C	O	D
5.04	**Amenity impacts from construction and operation traffic**	Minimise potential amenity impacts from traffic from the Proposal	• Procedures will be established to monitor traffic impacts on public and internal access tracks during construction, including noise, dust and travel times, and to implement modified work methods to reduce such impacts where possible.	Proponent, Contractor and Technical Specialists	✓	✓	✓
5.05	**Loss of internal access roads**	Retain and handover internal access roads	Internal access roads will be retained and handed over to the landowners after decommissioning.				✓
6.0	**Aeronautical**						
6.01	**Disruption of flight paths and local aeronautical activities**	Minimise risk	Prior to the commencement of construction and operation the following information shall be provided to the CASA and DoD: • as constructed coordinates in latitude and longitude of each WTG (WGS84 or MGA94); • final height of each WTG in m AHD; and • elevation at the base of each WTG in m AHD.	Proponent in consultation with technical specialists	✓		
7.0	**Telecommunications**						
7.01	**Potential interference**	Minimise potential of Proposal infrastructure to interfere with existing telecommunications facilities	Once the final models and locations of wind turbines are known, the locations of communications towers and requirements of licence holders will be confirmed and input into the micro-siting of individual turbines to minimise potential for telecommunications interference.	Proponent and Contractor	✓		
7.02	**Prolonged Interference or disturbance of communication links**	Manage and minimise impacts	At the commencement of operation, the Proponent shall offer to undertake a monitoring program of houses within 5km of the wind farm to determine any loss in television signal strength. If loss of signal occurs and the source of interference can be reasonably attributed to the Proposal, the Proponent shall put in place mitigation measures at each of the affected receivers in consultation and agreement with the landowners.	Proponent		✓	
8.0	**Fire and Bushfire**						
8.01	**Bushfire risk during construction**	Manage bushfire risk	A Bushfire Risk Management Plan will be prepared in consultation with the Rural Fire Service and QLD Fire and Rescue Service. The mitigation measures will include: • Construction personnel will be inducted on bushfire risk management and other fire risks that could be present at the project site.	Contractor	✓	✓	✓

Item	Impact	Objectives	Mitigation Task	Responsibility	Project Phase		
					C	O	D
			• On total fire ban days, restrictions will be placed on certain activities with the potential to cause fires. • Basic fire fighting equipment at each active site will be provided, including fire extinguishers, knapsacks and other equipment suitable for initial response actions with a minimum of one trained person on-site				
8.02	**Bushfire risk during construction**	Maintain coordination with RFS	The QFRS will be provided with the final wind turbine locations, ancillary infrastructure, construction work schedule and locations of additional water supplies for construction, potential landing pads for fire fighting aircrafts and helicopters and access gates for fire fighting services.	Proponent and Contractor	✓		
8.03	**Ignition of fire due to mechanical malfunction**	Minimise risk	• Dedicated monitoring systems (e.g. SCADA) enable wind turbines to be automatically shut down if ambient temperatures exceed the safe operating range, or if components overheat; • Other remote alarming and maintenance procedures are required for electrical faults, which can still occur within the tower or nacelle and create a fire; • Wind turbines will be shut down if directed by the QFRS in the event of nearby wildfire.	Turbine Manufacturer		✓	
8.04	**Spreading of fire away from wind farm infrastructure**	Minimise risk	• The substation will be surrounded by a gravel and concrete area free of vegetation to prevent the spread of fire from the substation and to reduce the impact of any bushfire on the structure; • An Asset Protection Zone (APZ) will be maintained around the control room and substation buildings, compliant with the RFS guidelines; • Areas around each WTG will be managed for fire risk (e.g. regular vegetation clearing and reduction of any fuel loads).	Proponent and Contractor		✓	
8.05	**Ignition of fire due to lightning strike on turbines**	Minimise risk	Lightening arresters will be built into each of the turbines to minimise the potential impacts of fire caused by lightening.	Turbine Manufacture		✓	
8.06	**Restricted movement of fire response vehicles and personnel**	Manage fire vehicle movement	Access roads will be constructed and maintained with suitable width and specifications for the movement of fire management vehicles.	Proponent and Contractor	✓	✓	✓

Item	Impact	Objectives	Mitigation Task	Responsibility	Project Phase		
					C	O	D
9.0	**Health and Safety**						
9.01	**Wind farm noise**	Manage community concerns with respect to wind farm noise	The Proponent will establish a complaints management system to be implemented prior to the construction phase and maintained throughout the operation phase of the development to register noise and other health complaints and concerns about the Proposal from the community.	Proponent		✓	
10.0	**Electromagnetic Fields**						
10.01	**Exposure to EMF**	Minimise unnecessary exposure to EMF	To ensure there will be no unnecessary exposure to EMF from the Proposal, the following mitigation and management measures will be implemented: • electrical cables will be placed below ground where possible to shield electrical fields; • wires will be bundled where possible to reduce the magnetic field emissions; • appropriate security will be placed around emitting structures (e.g. substation) to restrict public access and limit potential exposure; and • non-staff that need to go near the emitting structures will be accompanied by a trained and qualified staff member.	Proponent and Contractor		✓	
11.0	**Water Quality**						
11.01	**Pollution or contamination of aquifers**	Minimisation of pollution or contamination risk to surface and ground water quality	An Erosion and Sediment Control Plan and Stormwater Management Plan will be prepared in line with the FNQROC Development Manual, Institute of Engineers Australia Queensland ESC Guidelines and Queensland Urban Drainage Manual, as part of the CEMP. Both the ESCP and SWMP will address the requirements for: • water retardation and diversion devices around construction areas, including devices to manage surface runoff from hardstand areas and surfaced access tracks; • design of appropriately sized sedimentation basins to capture and treat runoff from construction areas; and • monitoring and maintenance procedures for erosion and sediment control structures.	Proponent and Contractor	✓		

Item	Impact	Objectives	Mitigation Task	Responsibility	Project Phase		
					C	O	D
11.02	**Pollution or contamination of local water ways and aquifers**	Minimising risk to groundwater quality and wind farm infrastructure	• Where rock anchor foundations are the first choice solution but the resulting risks posed to groundwater could be too high as may be shown in detailed geotechnical studies, alternative footings such as gravity foundations will be designed and implemented; • Suitable perimeter protection and bunding will be provided to the substation transformers to minimise the risk of transformer oil leaks or spills during operation and maintenance.	Proponent in consultation with technical specialists, Contractors and Turbine Manufacturer	✓	✓	
11.03	**Pollution of local water ways and aquifers**	Minimising risk to groundwater quality	• In the instance that belowground infrastructure intercepts the groundwater table, a suitable protective casing (for example a plastic pipe sleeve) will be used to pass through the ground water zone. This sleeve will allow the foundation/pile material to pass through and form a solid foundation without affecting the groundwater zone; • Spill kits will be provided at or near the location of oil and fuel storage to contain potential spills and leaks; • Concrete and cement carrying vehicles will only be washed out in appropriate wash down facilities; • Hazardous material, waste and sewage will be managed in accordance with regulatory requirements; • Wastewater produced from temporary on site toilets during construction will be disposed off site.	Contractor and Proponent	✓	✓	✓
11.04	**Alteration to local hydrology**	Minimising adverse impacts on local hydrology	The construction of hardstands and sealed roads may cause minor alterations to drainage patterns due to localised reduction in infiltration resulting in increased runoff. The appropriate drainage structures and erosion controls will be incorporated in hardstands, access roads and tracks to manage run-off and reduce the risk erosion and scour from concentrated flows. Outlet structures will be designed in accordance with the DERM guidelines to minimise construction and operation impacts on watercourse and riparian corridors. Considerations include, but are not limited to: • Any stormwater outlets should aim to be 'natural', yet provide a stable transition from a constructed drainage system to a natural flow regime;	Proponent, designers and Contractor	✓	✓	✓

Item	Impact	Objectives	Mitigation Task	Responsibility	Project Phase		
					C	O	D
			• All ancillary drainage infrastructure, e.g. sediment and litter traps, should be located outside the riparian corridor. Runoff should be of an appropriate water quality and quantity before discharge into a riparian corridor or watercourse is allowed; • Discharge from an outlet should not cause bed or bank instability.				
11.05	**Pollution or contamination of local water ways**	Minimising pollution or contamination risk to surface water quality	• Except for drainage line crossings of access tracks and cable trenches, ground disturbance activities, including road construction and track upgrades and the excavation of footings for turbines, crane pads, control buildings and substation, will be located away from natural drainage features where possible; • The storage of oils, fuels and other hazardous chemicals will be appropriately bunded and located away from watercourses; • All trenching works will be rehabilitated immediately following completion and works within drainage lines will be confined to a minimal timeframe to reduce the risk of release of discharge of and accidental spills of oil or fuel from construction plant; • Any spoil stockpiles from foundation excavation and access road construction will be located away from drainage lines, natural watercourses, road surfaces and trees, Stockpiles will be protected against erosion and sedimentation until the material is carted away for reuse or offsite disposal. Stockpiles to be retained longer than four weeks on site will be stabilised; • The extra width of construction roads not required for operational phase access will be stabilised and rehabilitated to reduce the extent of bare ground; • Sediment and erosion controls during various phases of construction will be developed in accordance with the requirements of the Institute of Engineers Australia Queensland ESC Guidelines; • Water quality and erosion and sedimentation control devices will be regularly inspected and maintained to ensure functionality. If erosion is detected as a result of inadequate maintenance of drainage control devices, remedial action will be carried out immediately to avoid reoccurrence of the event.	Contractor	✓	✓	✓

Item	Impact	Objectives	Mitigation Task	Responsibility	Project Phase		
					C	O	D
11.06	**Pollution of local water ways**	Manage the disturbance of riparian vegetation throughout the site	Any access tracks (with the exception of creek crossings) and all other works and disturbances will avoid any core riparian zone to avoid impacting on the integrity of the riparian corridors.	Proponent and Contractor	✓		✓
12.0	**Soils and Landform**						
12.01	**Ground disturbance**	Minimise alteration to soils and landform especially where beneficial land use post-decommissioning may be restricted	• Detailed geotechnical investigations will be undertaken to assess ground conditions and determine the most suitable foundation design for the turbine sites; • The foundation design will consider the volume of excavation spoil that will be generated and any opportunities for reuse of the spoil in the construction of other site infrastructure and any constraints in stockpiling the material; • Soil compaction resulting from vehicle access and laying of materials will be remediated after construction activities have been completed in the affected area; • Where possible, access routes and tracks will be confined to already disturbed areas.	Proponent and Contractor	✓		✓
12.02	**Creation of unstable landforms and loss of topsoil from construction activities and infrastructure layout**	Stabilise steep slopes	• Subsoil will be separated from topsoil for reinstatement purposes. On steep slopes, topsoil will be stabilised; • Any spoil stockpiles from foundation excavation and access road construction will be protected against erosion and sedimentation until the material is carted away for reuse or offsite disposal. Stockpiles to be retained longer than four weeks on site will be stabilised.	Contractor	✓		
12.03	**Soil Contamination**	Manage any contaminated material from past land uses	• The involved property owners will be consulted to identify any potential areas of contamination resulting from past land use; • An unexpected finds protocol will be prepared to outline the procedures to manage any contamination identified or disturbed during excavation works.	Contractor and Proponent	✓		
13.0	**Waste**						
13.01	**Inefficient resource use and waste generation**	Promote waste hierarchy	Waste will be managed according to a Waste Management Plan based on the hierarchy principles of resource management as follows: • as a priority, unnecessary resource consumption will be avoided;	Contractor and Proponent	✓	✓	

Item	Impact	Objectives	Mitigation Task	Responsibility	Project Phase		
					C	O	D
			• avoidance will be followed by resource recovery (including reuse of materials, reprocessing, recycling, and energy recovery); and • disposal will be undertaken as a last resort.				
13.02	**Inefficient resource use**	Promote efficient use of water and energy	Energy and water conservation will be promoted through training and use of appropriate signage.	Contractor and Proponent	✓	✓	
13.03	**Missed opportunities for recycling and reuse**	Maximise opportunities for recycling and reuse	• Purchasing decisions will be made in consideration of recycled content and increased opportunities for reuse (for example, refillable printer cartridges); • Cleared vegetation will be chipped and used as mulch for revegetation works where practical; • Bins will be provided in construction and office areas for the collection and segregation at source of wastes and recyclables.	Contractor and Proponent	✓	✓	
13.04	**Potential contamination and OHS risk from improper waste disposal**	Control waste disposal procedures	• Liquid and solid waste generated from the wind farm will classified and disposed of in accordance with a construction waste management plan; • Any hazardous waste, including unwashed empty, containers will be stored in appropriate containers on site prior to collection by licensed contractors for disposal to a licensed facility; • All noxious weeds and exotic plant species removed will be disposed of at a licensed facility.	Contractor and Proponent	✓	✓	
13.05	**Loss of amenity and potential contamination from waste generation**	Minimise risks from waste generation and waste handling	• All working areas will be kept free of rubbish and cleaned up at the end of each work day; • Any contaminated waste will be contained then disposed of according to regulatory requirements; • Waste generated outside of the project site will not be stored, treated, processed or disposed in the project site.	Proponent and Contractor	✓	✓	
14.0	**Community**						
14.01	**Regional community impacts as a result of the wind farm development, operation and decommissioning.**	Community enhancement and benefit	The Proponent is proposing to establish a Community Investment Fund and contribute approximately $180,000 to the fund each year. The fund would be maintained throughout the operational life of the project for investment in community infrastructure and services, sustainability initiatives, local economic and tourist developments, community groups and events etc.	Proponent		✓	

Item	Impact	Objectives	Mitigation Task	Responsibility	Project Phase		
					C	O	D
14.02	**Community information and project knowledge**	Dissemination of project information	With the exception of confidential documents, the Proponent will make all documents under this Development Application available for public inspection on request.	Proponent	✓	✓	✓
14.03	**Community information and project knowledge**	Dissemination of project information	Regular newsletters and newspaper articles will be disseminated to all relevant parties (including those who have registered as part of our community information sessions), together with information on Ratch Australia Corporation LTD Website (windfarms.net.au) regarding the progress of the application through to construction	Proponent	✓	✓	✓
14.04	**Community information and project knowledge**	Dissemination of project information	The Proponent will issue newsletters on a quarterly basis throughout the planning approvals and design phase providing information regarding the progression of the project. Detailed newsletters will also be prepared throughout the duration of the construction period up to the operational phase.	Proponent	✓	✓	
15.0	**Land Use**						
15.03	**Risk of degradation of previously inaccessible environmentally sensitive areas**	Minimise degradation of environmentally sensitive areas	Access to previously inaccessible environmentally sensitive locations will be restricted to landowners and authorised personnel only through measures such as the installation of lockable gates on access tracks.	Proponent in coordination with landowners	✓	✓	
15.04	**Impact on amenity of residents and visitors to the area**	Minimise visual, noise and traffic impacts	The design, construction, operation and decommissioning of the Proposal will incorporate the mitigation measures recommended in the visual, noise and other technical assessments so as to minimise any potential impacts on local amenity.	Proponent and Contractor	✓	✓	✓
16.0	**Air Quality**						
	Generation of fugitive dust	Monitor and minimise the generation of dust from ground disturbance, spoil stockpiles and construction traffic	• A Construction Dust Management Plan (CDMP) will be prepared as part of the CEMP; • Dust deposition gauges will be installed to monitor dust emissions and ensure emissions do not exceed 4 grams per metre squared per month, in accordance with DERM and WPH&S guidelines; • Dust levels will be visually monitored and dust suppression (*e.g.,* water sprays) will be implemented if required; • During dry and windy conditions a water cart or alternative chemical dust suppression will be made available and applied to access tracks and ground disturbance areas; • Set appropriate speed limits for construction traffic on internal roads.	Proponent and Contractor	✓		✓

RPS

Mount Emerald Wind Farm

Preliminary Environmental Management Plan

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Document Status

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Approval for Issue

Name	Signature	Date
[redacted]	[redacted]	29.11.2013

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1.0 Introduction

This Preliminary Environmental Management Plan (EMP) has been prepared for RATCH Australia Corporation Ltd (RACL) for construction, operational and decommissioning activities proposed to be carried out on the Mount Emerald Wind Farm (MEWF), in response to the EIS Guidelines of April 2012. It should be noted the document presents a framework for further development following the outcomes of the EIS/EPBCA referral and Queensland Development Application processes. Similarly, commercial details of the construction and operation phases are yet to be finalised, therefore many system and operational details are not available. Nonetheless, the EMP aims to identify sources of actual and potential environmental harm identified through the EIS process and what actions, processes and/or strategies will be adopted to avoid, prevent or minimise the likelihood of environmental harm being caused. The EMP aims to provide for the review and 'continual improvement' in the overall environmental performance of the MEWF operations.

This EMP will form the basis from which detailed EMPs will be prepared by the construction, operational and decommissioning entities. The detailed EMPs to follow the project approval may contain project design modifications; however, basic elements will be adopted and presented in the form of the following stand alone plans:

- Construction Environmental Management Plan (CEMP);
- Operational Environmental Management Plans (OEMPs); and
- Decommissioning Management Plan (DEMP).

These plans will be subject to approval by RACL and various approval agencies, including Department of the Environment (DotE).

A plan indicating the site layout (current at November 2013) is provided in **Appendix A**. This layout may be subject to modification as a result of outcomes from the approval and detailed design process.

The EMP aims to address the following matters:

(a) Identification of environmental issues and potential impacts.

(b) Environmental commitments - a commitment by senior management to achieve specified and relevant environmental goals.

(c) Control measures for routine operations to minimise likelihood of environmental harm.

(d) Contingency plans and emergency procedures for non-routine situations.

(e) Organisational structure and responsibility.

(f) Effective communication.

(g) Monitoring of mitigation measures and residual impacts.

(h) Conducting ongoing environmental impact assessments.

(i) Staff training.

(j) Record keeping.

(k) Periodic review of environmental performance and continual improvement.

2.0 Management Systems

This section provides an outline of the proposed elements of an Environmental Management System to be adopted for the project.

2.1 Environmental Policy

As a developer of renewable energy in Australia, implementing sustainable measures and ensuring the protection of the environment are fundamental to RACL's long term objectives and philosophy. Investments in renewable energy are both environmentally and commercially sustainable and RACL currently owns three wind farms that are significantly reducing Australia's greenhouse emissions. In addition, RACL continues to improve the environmental ratings of its other power generation assets by continuously revising for economically possible ways of reducing its carbon emissions.

As RACL continues to grow, it strives to promote preservation and restoration of the environment, by managing and minimising the environmental impact of its operations and activities and fully respecting environmental laws and regulations.

RACL encourages employees to take care and demonstrate responsibility towards the environment and to report any incident that may have a hazardous effect. RACL continuously strives to ensure its employees are aware of how they can reduce the consumption of energy and resources and implement strategies focused on waste minimisation and recycling where possible. Ensuring the protection of the environment and implementing sustainable solutions are paramount to the success of RACL, its people and the communities in which it serves.

2.2 Implementation Responsibilities

A draft Site Organisation Chart outlining responsibilities for environmental design and management is presented in **Error! Reference source not found.** below.

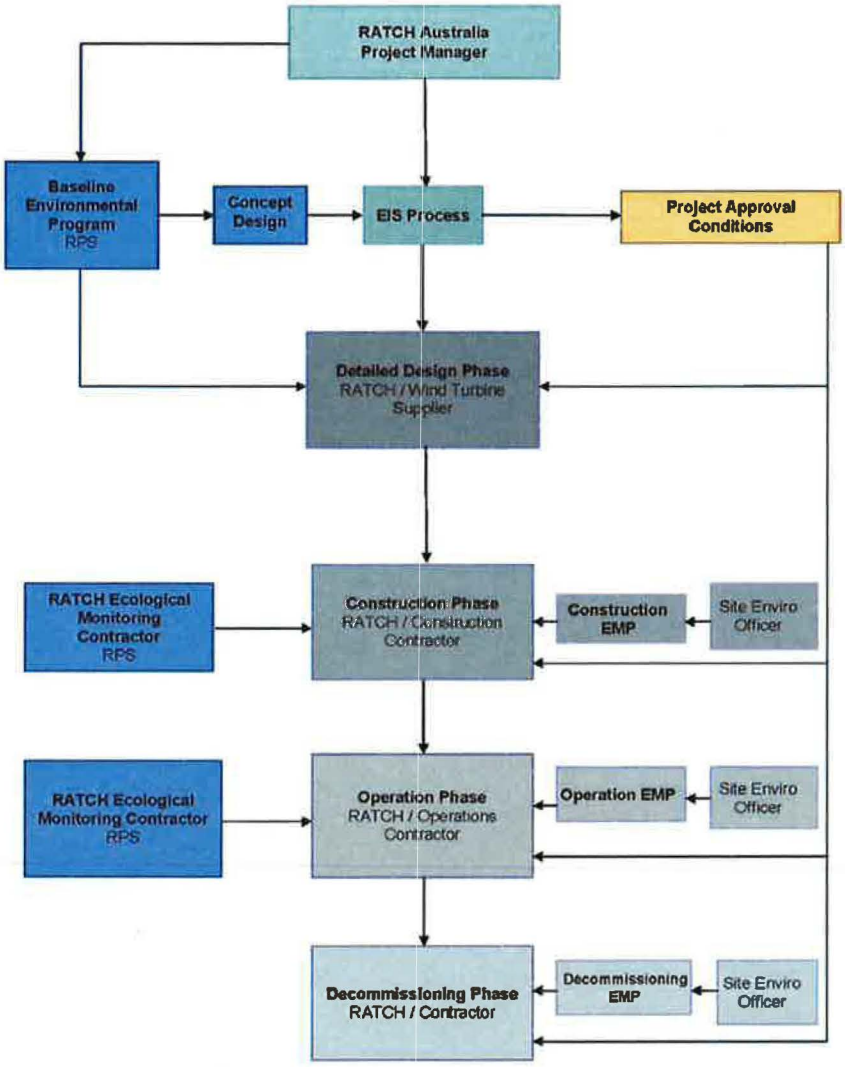

Figure 1 Draft Site Organisation Flowchart

2.2.1 RACL Australia Project Manager

RACL will provide a Project Manager to oversee compliance with EMPs covering construction, operation and decommissioning phases. The Project Manager will also be responsible for integration of outcomes of the EIS / approvals processes into final designs, operational plans and contractual documentation, including facilitating any preconstruction environmental programs, regular review of operational performance reports, facilitation of external environmental compliance audits. In addition the Project Manager will continually review environmental performance against all EIS/EMP commitments, conditions and audit outcomes and drive any necessary operational changes as required to maintain regulatory compliance via the Construction, Operations and Decommissioning Phase Managers. The Project Manager will also be responsible for commissioning any external environmental expertise, particularly in relation to ecological research and monitoring programs and incorporation of outputs into a range of environmental programs identified in the EMPs, in consultation with regulatory agencies as required.

2.2.2 Construction, Operations and Decommissioning Phase Managers

The phase managers will direct work in a manner that complies with;

- all relevant environmental procedures,
- adheres to all legislative requirements and
- ensures that the requirements of this EMP, the EIS, CEMP, OEMP and DEMP are implemented.

The phase managers will have 'stop task' and 'stop work' authority and will report to the Project Manager. They will also be responsible for initiating and managing external system audits.

2.2.3 Environmental Officers

The Environmental Officers (EO) will be responsible for monitoring and reporting the implementation of EMPs for all project phases. It is likely that Environmental Officers will be appointed by the Construction, Operation and Decommissioning phase entities and will report to the phase managers. Jurisdictional responsibilities between RACL and these entities will be incorporated in contractual documentation.

The Environmental Officers will also be responsible for implementation of environmental programs such as species management plans, Cultural Heritage Management Plan (CHMP), the Complaints Register and for setting up compliance audits and monitoring programs. Construction compliance auditing will be conducted against the requirements of this EMP, CEMP, OEMP, DEMP, Construction Safe Work Method Statements, License and Permit Conditions.

2.2.4 Ecological Monitoring Contractor

RACL will appoint an external ecological contractor to assist with all phases of the project commencing with input into the detailed design process which will be informed by a number of preconstruction ecological surveys identified below. A key function will be the preparation of detailed Significant Species Management Plans which will set out key impact management strategies including further baseline programs, design, construction and operational measures and protocols, monitoring regimes, management targets, corrective actions, timeframes and responsibilities. Elements of these plans are listed below, with details to be provided in the specific plans.

2.3 Training

The success of the EMP depends on all those responsible for implementation and review being thoroughly conversant with its contents, interpretation and performance measurements. RACL and its contractors will be responsible for ensuring that project personnel have sufficient knowledge and awareness to identify potential environmental issues, and that they are trained to take appropriate corrective action.

It is essential all personnel are familiar with the procedures for reporting on issues that may result in environmental degradation. This includes informing key personnel within RACL its contractors and relevant regulatory authorities.

2.4 Induction

All staff, including field staff, will complete a comprehensive Project induction prior to commencing work on the Project. The induction will include safety, access and a comprehensive review of environmental requirements. All Project personnel from supervisory to managerial level will have an additional detailed

training session on the use and implementation of the EMPs. It is the responsibility of the phase managers to ensure records of training are maintained.

2.5 Toolbox Meetings

The phase Manager will ensure supervisors hold at least weekly toolbox talks with staff and crews to discuss issues associated with the scheduled work.

This will include highlighting and discussing relevant environmental and safety issues as required. The sessions will include discussion of strategies to be implemented as identified in Job Hazard Analysis (JHA) of current work activities.

2.6 Job Hazard Meetings

A JHA is a simple tool that is used in helping personnel identify, analyse and manage the hazards that exist in the work they undertake. It formalises the process of hazard identification and risk management most people follow when working. The JHA requires personnel to examine the task they are about to undertake and:

- Break the job down into separate, defined steps;
- For each step identify the potential hazards (including potential environmental or cultural heritage hazards) that could occur within that job step; and
- For each potential hazard list the method to be followed to prevent the hazard causing an injury, loss, damage or environmental incident.

Weekly job hazard meetings will be held in conjunction with the Toolbox meetings.

2.7 Reporting and Auditing

During construction, operations and decommissioning phases there will be continuous review of the project area and individuals and work crews will be required to demonstrate the pertinent requirements of the EMPs are being adhered to. Each supervisor will be required to record daily activities including monitoring data, on which relevant EMP requirements will be addressed (daily, weekly, monthly check sheets to be prepared by the construction contractor).

RACL commissioned external audits will include as a minimum, two annual construction audits (the first within 2 months of commencement) and two annual operation phase audits for the first three years, reverting to an annual audit thereafter assuming high levels of compliance; frequency of auditing will be revised following receipt of approval conditions. Where compliance levels are unacceptable to the regulatory authorities auditing and reporting schedules may be reviewed.

The results of other environmental programs directly commissioned by RACL including any additional preconstruction baseline and construction / operation phase ecological impact monitoring will be provided to DEHP and DOTE as requested.

2.7.1 Incident Reporting and Non-conformance

Incident reporting will be implemented to record any safety or environmental non-conformances, incidents or complaints. These shall be recorded on an incident report form and forwarded to the relevant phase Manager for reporting within the RACL system and for a process of continuous improvement to be implemented.

All such incidents shall be investigated in a timely manner and any necessary steps implemented to minimise likelihood of recurrence. If required, the EMP shall be reviewed and updated in accordance with Section 2.9.

2.7.2 Reporting

Section 320 of the EP Act requires any person who becomes aware of an event that may or has caused environmental harm, reports the event / incident to their employer. Details of the nature and circumstances of the event must be provided.

Any such incidents must be immediately reported to the phase manager and recorded on an Incident Report Form. The phase manager will ensure the appropriate external agencies are notified within the appropriate timeframe.

All such incidents shall be investigated in a timely manner and any necessary steps implemented to minimise likelihood of recurrence. If required, the EMP shall be reviewed and updated in accordance with Section 2.9, in consultation with RACL and the relevant regulatory agencies.

The RACL Project Manager will be responsible for the preparation of project phase reporting as identified in approval conditions; this may include compliance reporting and the status of ongoing research and monitoring programs.

2.8 Complaints Procedure

All complaints about the Project will be directed to, and recorded by, the Community Liaison Officer for each phase. Contact details for the Community Liaison Officer will be provided to all affected landowners. A Register will be kept recording details of all complaints received, the action taken in response (where necessary), and any corrective actions or procedural changes implemented to prevent recurrence.

The initiator of the complaint will be advised of the results of all actions taken.

The Community Liaison Officer will review the register daily and advise the Environmental Officer of any relevant complaints. The Environmental Officer will then investigate the complaint and instigate any corrective action required.

The register will be regularly audited by the Construction Manager to ensure adequate and timely response to any verified complaint is occurring.

2.9 Review and Update

The EMPs will be reviewed as required (at least annually) to ensure they address environmental issues and changes in legislation, policies and guidelines including work practices.

As details of design, construction methodology and access needs are refined, so too will the EMP and site and phase specific plans. The 'living' nature of the document means it will progressively improve and will continue to provide appropriate direction for environmental protection. A key review milestone will be following project approvals.

As a number of adaptive management strategies and programs are proposed in the EIS and this EMP, ongoing review of EMP success (or otherwise) in consultation with various regulatory agencies will dictate the frequency of EMP review and modification.

2.10 Legislative and Other Considerations

The legislation and standards listed in Environmental legislation, policies and standards relevant to the Project has been be used to guide preparation of this EMP and will form the basis for ongoing decision-making and complaint resolution in respect of the EMP.

Table 1 Environmental legislation, policies and standards relevant to the Project

Element	Legislative and Other Requirements
Construction—General	*Environmental Protection Act 1994 (Qld)* *Environmental Protection Regulation 2008 (Qld)* *Workplace Health and Safety Act 1995 (Qld)* *Workplace Health and Safety Regulation 1997 (Qld)*
Noise and Vibration	*Environmental Protection (Noise) Policy 2008 (Qld)* *Workplace Health and Safety Act 1995 (Qld)* AS 1055.1 & .2: Acoustics—Description and measurement of environmental noise AS 2436: Guide to noise control on construction, maintenance and demolition NZS 6808:2010 Acoustics – Wind farm noise
Air Quality	*Environmental Protection (Air) Policy 2008 (Qld)* National Health and Medical Research Council Guidelines 1985(Cwth) Draft National Environmental Protection Measures and Impact Statement for Ambient Air Quality 1997(Cwth)
Water Quality	*Environmental Protection (Water) Policy 1997 (Qld)* Australian Water Quality Guidelines for Fresh and Marine Waters, ANZECC 2002 *Water Act 2000 (Qld)*
Erosion and Sedimentation Control	Soil Erosion and Sediment Control, Engineering Guidelines for Queensland Construction Sites—IEAust (Qld) 1996
Contaminated Land	*Environmental Protection Act 1994 (Qld)*
Storage and Handling of Dangerous Goods	*Environmental Protection Act 1994 (Qld)* *Environmental Protection Regulation 2008 (Qld)* *Workplace Health and Safety Act 1995 (Qld)* AS1940 – The Storage and Handling of Flammable and Combustible Liquids
Transport of Dangerous Goods	Australian Code for Transport of Dangerous Goods by Road and Rail
Waste Management	*Environmental Protection (Waste Management) Policy 2000 (Qld)* *Environmental Protection (Waste Management) Regulation 2000 (Qld)*
Flora and Fauna	*Environment Protection and Biodiversity Conservation Act 1999 (Cwth)* *Nature Conservation Act 1992 (Qld)* *Nature Conservation Regulation 1994 (Qld)* *Vegetation Management Act 1999 (Qld)* *Environmental Protection Act (Qld)* *Land Protection (Pest and Stock Route Management) Act 2002 (Qld)*

Element	Legislative and Other Requirements
Cultural Heritage	*Native Title Act 1993 (Cwlth)* *Native Title (Queensland) Act 1993* *Queensland Heritage Act 1992* *Queensland Heritage Regulation 2003* *Aboriginal Cultural Heritage Act 2003 (Qld)*
Land Use	*Integrated Planning Act 1997(Qld)* *Land Protection (Pest and Stock Route Management) Act 2002 (Qld)*

2.11 Related Documentation

The operation will be carried out generally in accordance with the following documents:

- MEWF - Environmental Impact Assessment – RPS Australia 2013 (Volumes 1-3);
- this EMP, CEMP, EOMP, DEMP documents;
- National Wind farm Guidelines
- Consolidated Conditions of Project Approval;
- Weed Management Plan
- Rehabilitation Management Plan
- Fire Management Plan
- Translocation Plans
- Significant Species Management Plans

If there is any inconsistency between the Conditions of Approval and a document listed above, the Conditions of Approval shall prevail to the extent of the inconsistency. If there is any inconsistency between documents listed above (other than the Conditions of Approval) then the most recent document shall prevail to the extent of the inconsistency.

All persons involved with the operational phase of the MEWF shall undertake their respective activities in accordance with the relevant requirements of the OEMP. The OEMP shall also be read in conjunction with the following related RACL documents which exist as separate documents:

- Site Induction Handbook (Service);
- Policies and procedures contained within RACL's Environmental Management System

3.0 Detailed Design (Pre Construction) EMP

The Pre-construction EMP contains a program of works aimed at avoiding, minimising or mitigating impacts through closing information gaps and preparation of a number of detailed management plans which will guide operations through subsequent construction, operation and decommissioning phases.

Species	Potential Impact	Impacting Phase	Proposed Mitigation Strategy	Essential Information Gaps	Management Actions Required	Monitoring, Reporting	Timing	Responsibilities	Relevant Agency
Fauna									
Bare-rumped Sheathtail Bat	Turbine Collision & Barotrauma	Operation	Turbine operation curtailment (increased cut-in speed & targeted turbine shut-down during high risk conditions or detected collision mortality	1. Relationship between environmental factors (weather, insect abundance) and call activity. 2. Utilisation of the turbine rotor sweep area (RSA) (abundance and flight height data)	1. Continue and expand ultrasonic call surveys; sample within Rotor Swept Area (RSA) (higher towers & balloons) 2. Collect weather and insect abundance/height data 3. Identify high-risk conditions/times and seasons 4. Conduct radar utilisation at call survey locations sampling at RSA; quantify abundance and flight heights 5. Conduct numerical risk modelling (for *S. saccolaimus only* or for entire microchiropteran bat community – depending on radar data quality)	Prepare Microchiropteran Bat Management Plan	Pre-construction	External Ecologist / Specialist (inc. Biostatistician)	DotE DERM
Spectacled Flying-fox / Grey-headed Flying Fox	Turbine Collision	Operational Phase	Turbine curtailment during high-risk conditions (active) or excessive mortality events (reactive)	1.Utitlisation of the RSA (abundance and flight height data) 2. Population Viability Analysis (PVA) to determine sustainable collision mortality levels	1. Conduct radar utilisation surveys 2. Support CSIRO researchers to conduct satellite telemetry of more individuals from nearest colonies to site (Mareeba and Tolga Scrub) 3. Conduct numerical collision risk modelling (using radar/telemetry data)	Prepare Flying Fox Management Plan	Pre-construction	External Ecological/Specialist	DotE DERM
Northern Quoll	Habitat Loss	Construction	Avoid clearing high-quality denning and foraging habitats	1. Denning and foraging habitat preferences especially of breeding females 2. Estimates of dispersion for PVA model	Preconstruction 1. Undertake additional telemetry studies on the project site to determine whether proposed turbine ridge habitats are used preferentially, particularly females with young; and offsite, to collect data on dispersion rates to refine the PVA (to assess the significance of potential impacts) 2. Redesign infrastructure layout to avoid high quality foraging or maternal denning habitat and/or inform Quoll Management Plan	Prepare Quoll Management Plan	Pre-construction	External Specialist	DotE DERM
	Habitat Degradation (late dry season wild fires and weed invasion)	Construction and Operation	1. Weed monitoring and control 2. Implementation of Ecological Fire Management (to avoid extensive wild fire in late dry season)	1. Long-term fine-scale fire history of site	1. Fire-scale mapping using Landsat imagery 2. Control of existing weed infestations (especially invasive grasses along Kippen Drive and access tracks)	Prepare Weed Management Plan and Fire Management Plan	Pre-construction	External Specialist	DotE DERM
Sarus Crane	Turbine Collision	Operational Phase	Turbine curtailment during high-risk conditions (active) or excessive mortality events (reactive)	1.Utitlisation of the RSA (abundance and flight height data) 2. Population Viability Analysis (PVA) to determine sustainable collision mortality levels	1. Conduct radar utilisation surveys 2. Support CSIRO researchers to conduct satellite telemetry of more individuals from nearest colonies flocks 3. Conduct numerical collision risk modelling (using radar/telemetry data) - updated	Prepare Bird Adaptive Management Plan	Pre-construction	External Ecological / Specialist	DotE DERM
Flora									
Significant Plants	Clearing of Conservation Significant Plants	Construction	Avoidance and micro-siting of turbines.	Detailed distribution of significant plants Relocation and translocation strategies.	Avoidance of disturbance to key plant habitats (see next point). Detailed plant survey of south-west montane heath habitat - GPS mapping of avoidance patches. Micro positioning of turbines to minimise clearing and disturbance to conservation significant plants and important vegetation types.	Final site-based floristic records. Records of seed collections as per Rehabilitation Plan.	Preconstruction and ongoing throughout construction phase. Seed collection every 3 months after construction	External Botanist	DotE DERM

Species	Potential Impact	Impacting Phase	Proposed Mitigation Strategy	Essential Information Gaps	Management Actions Required	Monitoring, Reporting	Timing	Responsibilities	Relevant Agency
					Presence of Botanical advisor in pre clearance team. Instigate site-based seed and propagule collection for future rehabilitation work.	Conservation Significant Plant Management Plan	for at least 5 years.		
	Clearing of Conservation Significant Plants	Operation / Decommissioning	Translocation and revegetation strategies	Propagation viability of significant plants. Plant successional traits.	Prepare Significant Plant Management Plans including : Research propagation of *Homoranthus porteri, Melaleuca uxorum, Plectranthus amoenus and Grevillea glossadenia.* Conduct Revegetation trials. Investigate plant successional traits.	Conservation Significant Plant Management Plan Annual Revegetation Trial report	Preconstruction and ongoing as required First 3 years of operation	External botanist/ Nursery External Specialist	DotE DERM
Water Quality									
Aquatic Flora and Fauna	Reduced downstream water quality	Construction / Decommissioning and Operation	Maintenance of downstream water quality through water monitoring and management in accordance with a detailed Erosion and Sediment Control Plan	Background Water Quality(pH, Electrical Conductivity, Turbidity)	Conduct preconstruction water quality monitoring to inform construction water quality targets Prepare Detailed Erosion And Sediment Control Plan (ESCP)	as per Approval Conditions and CEMP Annual Baseline Water Quality Assessment Report Monthly reporting against approval conditions	preconstruction and event based during construction and first year of operation	Pre-construction - External Specialist Construction- Environmental Officer	DEHP DotE

4.0 Construction EMP

4.1 Flora

Policy	To minimise the effect on vegetation and habitat for flora, and to promote regeneration of native vegetation on the WTG access tracks and turbine sites.
Performance Objectives	▪ Minimise impacts to native vegetation and disturbance to important plant habitats. ▪ Rehabilitation with native plants of available cleared areas ▪ Where practicable, avoid disturbance to significant species (endangered, vulnerable and rare flora species). ▪ Minimise habitat fragmentation and maintain absolute minimum width clearing along ridges. ▪ Prevent weeds and plant pest diseases spreading as a result of construction activities. ▪ Offset of any rare, endangered or vulnerable plants disturbed by construction by translocating species where practicable, and providing additional rehabilitation areas where revegetation trials can be established.
Management Strategies	▪ Conduct activities in accordance with Conservation Significant Plant Management Plan. ▪ Preconstruction survey (early works package) undertaken to identify locations of rare and threatened species and other significant plants (including habitat trees) along the preferred WTG access tracks/turbine sites will be undertaken to allow designers to avoid and minimise clearing of these species and communities during construction. Any seed or plant propagules should be collected, stored and labelled by a botanist or qualified person to accumulate a seed bank for future rehabilitation. ▪ Topsoil is a rare commodity on the site and soil and rock spoil should be stockpiled separately and adjacent to where the material was taken, or the very nearest suitable storage area. Stockpiles of material (particularly soil) will not exceed a height of 1 (one) metre. ▪ Placement of physical barriers around significant vegetation areas in order to restrict access and prevent disturbance. ▪ Transplanting trials of suitable plants to be practiced as a rehabilitation/conservation measure if feasible. Transplanting will occur when ground conditions are best suited to plant growth (i.e. some longer term moisture is available in the soil). ▪ Windrowed vegetation should not be burnt. Respreading of cleared native vegetation over areas available for rehabilitation (i.e. laydown areas, track batters, temporary crane pads) to occur following construction. ▪ Conduct rehabilitation success trials particularly in relation to significant species and trials as per Conservation Significant Plant Management Plan ▪ Preconstruction survey (early works package) to identify location of weeds along the proposed WTG access tracks and turbine sites and existing tracks. ▪ Control environmental weeds by approved methods and in accordance with the Weed Management Plan along the WTG access tracks and turbine sites prior to clearing and grading. This should be undertaken at least 2 weeks prior to construction work commencing in the respective areas. ▪ Declared weeds to be controlled by an approved method prior to clearing and grading. ▪ All soil and rock material is to be stockpiled *in situ*. All imported construction material (road base, sand, rock-fill etc.) is to be free of weed seed and propagules, and be sourced from clean suppliers in the local region. ▪ All vehicles and machinery to be washed down and certified weed free prior to entering site and in accordance with the Weed Management Plan. Vehicles and machinery is to be monitored at the site entry point (washdown bay). ▪ Vehicles, plant and equipment is to be washed down following work in areas affected by weeds. ▪ Vehicles and machinery working in internal weed infested areas are not to continue work in weed-free zones unless certified clean and weed free. Mobile washdown facilities will be established.

Performance Indicators	▪ Minimum impact to ecosystems and plant species of National Environmental Significance and species known to be of interest to conservation. ▪ Minimal disturbance of flora during construction of the WTG access tracks and turbine sites and associated camp sites. ▪ Achievement of Conservation Significant Plant Management Plan targets ▪ No damage to protected species without relevant permit and approval. ▪ No presence of environmental and declared weeds (e.g. grader grass, sicklepod, Lantana, thatch grass etc. - refer to Weed Management Plan). ▪ Survival and persistence of species planted for the offset programme and Translocation Plan.
Monitoring, Reporting and Corrective Action	▪ Photographic records are to be maintained throughout the year (monthly basis). Fixed photo monitoring points are to be established. ▪ Daily Check Sheets to include weed presence – completed and reviewed by manager/supervisor, and supervising botanist when on site ▪ Regular inspections, third party audits and reviews (non-compliance and incident reporting) undertaken in accordance with EMP and recommendations and corrective actions implemented. ▪ Prepare Annual Conservation Significant Plant Management Plan and Rehabilitation Plan reports. ▪ Additional weed control as required with supplementary weed surveys within 14 days following rainfall events. ▪ Offset rehabilitation planting to be monitored for a period of 3 years following rehabilitation to ensure survival, persistence and performance, as well as replacement of mortalities.
Responsible Person	▪ Environmental Officer and supervising botanist ▪ Annual site rehabilitation assessment by supervising botanist
Associated Documentation	▪ Conservation Significant Plant Management Plan ▪ Rehabilitation Plan ▪ Weed Management Plan ▪ Translocation Plan ▪ Offset Programme ▪ EIS technical reports

4.2 Fauna

Policy	To minimise the effect on fauna and habitat.
Performance Objectives	▪ Minimise impacts to native fauna. ▪ Where practicable, avoid disturbance to endangered, vulnerable and rare fauna species. ▪ Minimise habitat fragmentation and promote habitat regeneration where practicable. ▪ Pest animals and animal pest diseases not spread as a result of construction activities.

Management Strategies	▪ Spotter catcher present prior to and during all clearing activities.
	▪ Implementation of Quoll Management Plan Construction Phase Protocols. Key draft elements include:
	  ▪ Saturation trapping and collaring of all quolls prior to commencement of section clearing and daily radio tracking/sniffer dog surveys to confirm absence of quolls in proposed clearing area. Trapping to confirm stage of reproduction cycle as this can vary from year to year.
	  ▪ Daily clearing to commence only once all tracked animals are confirmed clear of the area.
	  ▪ Carry out primary earthworks during February to October period to avoid mortality of dependant juveniles (left in den sites). If earthworks is to occur during November to January period conduct sniffer dog searches in advance of clearing to confirm presence/ absence. If present delay clearing in that area until maternal removal. This is dependent on trapping activities.
	▪ Implementation of Bird Management Plan Construction Phase Protocols. Key draft elements to include:
	  ▪ Avoidance of clearing of any roosting trees identified during preconstruction surveys and micro siting of turbine and track location.
	  ▪ Minimizing area of cleared vegetation
	  ▪ Implementation of Micro bat Management Plan Construction Phase protocols. Key draft elements to include:
	  ▪ Avoidance of clearing of any roosting trees identified during preconstruction surveys and micro siting of turbine and track location.
	▪ Minimizing area of cleared vegetation
	▪ Avoid vehicular use of site at night where possible
	▪ Restrict speed limits at night
	▪ Weed monitoring and control
	▪ Develop and implement ecological burning regime

Performance Indicators	▪ Mortality of endangered species within approved limits; and ▪ Compliance with species management plans
Monitoring, Reporting and Corrective Action	▪ Photographic records are to be maintained throughout the year (monthly basis). Fixed photo monitoring points are to be established. ▪ Daily Spotter Catcher records including quoll tracking records – reviewed by manager / supervisor, and supervising botanist when on site ▪ Clearing scheduling to be determined by Construction Manager in consultation with Spotter Catcher and External Ecological Contractor ▪ Regular inspections, third party audits and reviews (non-compliance and incident reporting) undertaken in accordance with EMP and recommendations and corrective actions implemented. ▪ Prepare Annual Conservation Significant Plant Management Plan and Rehabilitation Plan reports. ▪ Additional weed control as required with supplementary weed surveys within 14 days following rainfall events. ▪ Offset rehabilitation planting to be monitored for a period of 3 years following rehabilitation to ensure survival, persistence and performance, as well as replacement of mortalities.
Responsible Person	▪ Environmental Officer

	▪ External Ecological Contractor / Spotter Catcher ▪ Construction Manger to authorize clearance only
Associated Documentation	▪ Species Management Plans ▪ Approval permits

4.3 Erosion and Sediment Control

Policy	To provide effective erosion and sediment practices to mitigate the potential effects of construction on watercourses, land use and the general environment.
Performance Objectives	▪ Minimise soil erosion. ▪ Minimise sedimentation of land. ▪ Minimise modification to drainage patterns. ▪ Prevent as far as practical, sediment transport to adjacent watercourses.
Management Strategies	▪ Conduct all earthworks in accordance with a detailed Erosion and Sediment Control Plan prepared by a suitably experienced professional (e.g. Certified Professional in Erosion and Sediment Control) ▪ Minimise the quantity and duration of soil exposure. ▪ Protect topsoil, root and seed stock. ▪ Protect critical areas during and after construction by reducing the velocity of stormwater flow and redirecting runoff onto undisturbed areas. ▪ Install and maintain temporary erosion and sediment control measures during construction. ▪ Replace topsoil and seed stock on turbine laydown pads and track verges to facilitate revegetation as soon as practicable following construction. ▪ Inspect disturbed areas and maintain erosion and sediment controls as necessary during and after construction until stabilisation is achieved. ▪ Should the cabling trench require dewatering in wet weather, then this is to be pumped out and disposed across grass and not directly discharged to any stormwater drain or creek. ▪ Strict implementation of permanent stormwater diversion drains on all hilly slopes (approximately 20 m intervals, depending on slope). ▪ Strict implementation of silt mesh fencing, and stormwater diversion drains on the banks of all waterways containing flowing water during construction. ▪ Highly erodible soils are identified by visual inspection of the site to identify the extent and location of existing soil erosion. ▪ Where highly erodible soils are identified, and if the area cannot be reasonably avoided, the following controls should be implemented: ▪ Keep the work area to a minimum so that the smallest possible ground area is disturbed. ▪ Place erosion control structures such as diversion drains and silt fences at key locations to capture the suspended sediment. ▪ Divert stormwater away from the exposed soil to reduce overland flow or channel flow on the vulnerable soils. ▪ Stormwater Diversion ▪ In areas which are subject to erosion potential (slopes >5%), stormwater diversion banks / drains (whoa-boys) should be placed diagonally across the tracks to divert stormwater to adjacent undisturbed grassed areas following completion of construction. Spacing of such diversion drains can be approximately 50 m to 70 m apart. Where slopes are >5%, then more frequent spacing is required. ▪ Adequate monitoring and follow-up work following construction to ensure any initiated erosion is arrested early.
Performance Indicators	▪ Achievement of downstream water quality targets (Turbidity, TSS) ▪ No large scale erosion or sedimentation caused to adjacent land uses as a result of construction activities. ▪ No evidence of additional sedimentation in watercourses as a result of erosion from construction activities. ▪ Reinstatement of watercourses to original profile. ▪ Adequate spacing of stormwater diversion drains in areas of erosion potential
Monitoring, Reporting and Corrective Action	▪ Photographic Records ▪ Daily Check Sheets – completed and reviewed by manager / supervisor. ▪ Regular inspections, audits and reviews (non-compliance and incident reporting)

	undertaken in accordance with EMP and recommendations and corrective actions implemented. ▪ Construction audits will include all watercourse crossings. ▪ A post-construction audit which will evaluate revegetation, erosion control, weed control, water course bank stability will be conducted annually for two years following completion of construction.
Responsible Person	▪ Environmental Officer ▪ Construction Superintendant ▪ Construction Manager
Associated Documentation	▪ Detailed Erosion and Sediment Control Plan

4.4 Management of Flammable and Combustible Substances

Policy	To ensure storage and handling of flammable and combustible substances onsite does not cause environmental harm or harm to persons.
Performance Objectives	▪ To minimise potential for land contamination. ▪ To ensure the on-going safety of construction personnel.
Management Strategies	▪ An Emergency Response Plan shall be in place and employees inducted in its application. ▪ Flammable and combustible substances are stored, handled, separated and signed as required by the Flammable and Combustible Liquids Regulations and AS1940. ▪ Transportation of dangerous goods will be in accordance with the Regulations and with AS 1678, AS 2809 and AS 2931. ▪ A qualified person will be appointed as Site Safety Officer. ▪ An on-site set of the relevant MSDS for all flammable and combustible substances and dangerous goods used during construction will be maintained and available. ▪ Waste flammable and combustible substances which cannot be recycled will be transported to a designated disposal site as approved by Local Government. ▪ No refuelling of plant and equipment over or within 100m of watercourses. ▪ Spill kits containing absorbent and containment material (e.g. absorbent matting) will be available where hazardous materials are used and stored and personnel trained in their correct use. ▪ Spills of flammable and combustible substances will be rendered harmless and collected for treatment and / or remediation or disposal at a designated site, including cleaning materials, absorbents and contaminated soils and reinstatement made to the affected area. ▪ Personal protective equipment (PPE) appropriate to the materials in use will be provided. ▪ Relevant Local Government permits will be held and conditions of permits met.
Performance Indicators	▪ No hazardous goods contamination of the environment.. ▪ Ensure appropriate remedial action has been implemented for any spills. ▪ Major incidents reported to relevant authorities and their directions followed. ▪ Spill kits and PPE available and used as appropriate.
Monitoring, Reporting and Corrective Action	▪ Photographic Records ▪ Regular inspection of storage facilities and work practices in the handling of flammable and combustible substances or other dangerous substances. ▪ Daily Check Sheets – completed and reviewed by manager / supervisor. ▪ Regular inspections, audits and reviews (non-compliance and incident reporting) undertaken in accordance with EMP and recommendations and corrective actions implemented.
Responsible Person	▪ Construction Manager ▪ Environmental Officer
Associated Documentation	▪ Nil

4.5 Noise and Vibration

Policy	To minimise the impact of construction noise nuisance and vibration to nearby residences.
Performance Objectives	▪ Minimise noise nuisance generated by construction activities. ▪ Minimise any vibration nuisance to nearby residences.
Management Strategy	▪ Provide advance notice of any scheduled atypical noise events to nearby residents. ▪ equipment maintained in accordance with manufacturer's specifications. ▪ Schedule atypical noise events for appropriate times. ▪ Any blasting is to be carried out in accordance with current practice standards with particular reference to AS 2187. ▪ Maintain liaison with nearby residents. ▪ Noisy construction activities in proximity to residences to be limited to 7.00 am to 6.00 pm Monday to Saturday or in accordance with local permits.
Performance Indicators	▪ Number of noise related complaints received from residents during construction. ▪ Evidence of repair and replacement of faulty equipment as soon as possible. ▪ Evidence of condition surveys.
Monitoring, Reporting and Corrective Action	▪ Photographic Records ▪ Complaints Register – recorded and closed out. ▪ Noise survey in the event of complaint. ▪ Check Sheets – completed and reviewed by manager / supervisor. ▪ Regular inspections, audits and reviews (non-compliance and incident reporting) undertaken in accordance with EMP and recommendations and corrective actions implemented.
Responsible Person	▪ Construction Manager
Associated Documentation	▪ Complaints Register ▪ Marshall Day Accoustics Report November 2013

4.6 Air Emissions

Policy	To complete the installation of each WTG line in a manner to maintain ambient air quality of the local area.
Performance Objectives	▪ To maintain acceptable limits of vehicular and machinery operating emissions and to receive zero complaints from local landholders regarding air quality. ▪ To minimise the generation of fugitive dust emissions produced during construction.
Management Strategies	▪ Vehicles and machinery shall be maintained in accordance with manufacturer's specifications. ▪ Watering of construction site and access tracks will be carried out on an as required basis, particularly on dry and windy days and especially near residences. ▪ Avoid smoke generation by a strict no burning policy. ▪ Implement fire control measures during welding operations.
Performance Indicators	▪ Visual observations of dust emissions during windy / dry periods ▪ Receipt of dust nuisance complaints from nearby residents ▪ Excessive visual dust cloud during construction activities.
Monitoring, Reporting and Corrective Action	▪ Photographic Records ▪ Complaints Register – recorded and closed out. ▪ Daily Check Sheets – completed and reviewed by manager / supervisor. ▪ Regular inspections, audits and reviews (non-compliance and incident reporting) undertaken in accordance with EMP and recommendations and corrective actions implemented.
Responsible Person	▪ Construction Manager ▪ Environmental Officer
Associated Documentation	▪ Nil

4.7 Waste Management

Policy	To minimise waste generation and maximise reuse and recycling of construction waste products.
Performance Objectives	▪ Minimise impacts related to waste management. ▪ No evidence of litter or refuse generated from construction related activities.
Management Strategies	▪ Stockpiling and salvaging reusable and recyclable wastes, such as timber skids, pallets, drums and scrap metals. ▪ Collecting and removing waste oil and solvents from site for recycling, reuse or disposal at approved locations. ▪ Disposing of sewage and sullage from camp site via a packaged mini sewerage treatment plant (greywater may be discharged to land in accordance with local approvals). ▪ Collection of chemical wastes in 200 L drums (or similar sealed container), appropriately labelled, for safe transport to an approved chemical waste depot or collection by a liquid waste treatment service. ▪ All binding material and dunnage from transport vehicles and unloading areas is to be collected and transported off the easement to designated disposal areas. ▪ Collecting and transporting general refuse to a Local Government approved disposal site. ▪ Ensure wastes are not accessible by stock or wildlife. ▪ Refuse containers will be located at each worksite. ▪ Where practical, wastes will be segregated and reused / recycled (e.g. scrap metal). ▪ All personnel shall be instructed in project waste management practices as a component of the environmental induction process. ▪ Spraying of declared plants and disposal to regulated landfill.
Performance Indicators	▪ Clean and waste-efficient construction site ▪ Percentage of waste recycled ▪ Litter left onsite during construction
Monitoring, Reporting and Corrective Action	▪ Photographic Records ▪ Complaints Register – recorded and closed out. ▪ Daily Check Sheets – completed and reviewed by manager / supervisor. ▪ Regular housekeeping checks and a waste audit to be conducted. The camp site area is to be inspected after relocation. ▪ Regular inspections, audits and reviews (non-compliance and incident reporting) undertaken in accordance with EMP and recommendations and corrective actions implemented.
Responsible Person	▪ Construction Manager ▪ Environmental Officer
Associated Documentation	▪ Material Safety Data Sheets

4.8 Fire Management

Policy	To minimise the potential for vegetation to catch fire from construction activities.
Performance Objectives	▪ No fires deliberately lit or allowed to remain alight along the WTG line or other project related worksites. ▪ No build-up of flammable material during construction near hot work areas.
Management Strategies	▪ Open fires will be banned on the project. Fires include open barbeques, billy fires, brush burning and rubbish burning. ▪ Adoption of lightning protection measures for both turbines and substations. ▪ Unnecessary build-up of flammable material near working areas will be prevented, with vegetation and other flammable material being stockpiled well clear of hot work activities. ▪ Water trucks (also used for dust suppression) will be available for use as fire trucks in the event of fire. ▪ All vehicles will be equipped with portable fire extinguishers. ▪ Fire extinguishers and a water cart will be available to the welding crew. All appropriate crew members will be trained in the use of fire fighting equipment. ▪ Emergency Response Plan shall include details on local contacts for fire fighting assistance. ▪ Construction management liaison with local Rural Fire Service personnel during high fire periods.
Performance Indicators	▪ Fire frequency. ▪ Ignition from lightning strikes ▪ Build-up of flammable material near hot work areas. ▪ Emergency Response Plan in place. ▪ Permits and approvals as required.
Monitoring, Reporting and Corrective Action	▪ Daily Check Sheets – completed and reviewed by manager / supervisor. ▪ Regular inspections, audits and reviews (non-compliance and incident reporting) undertaken in accordance with EMP and recommendations and corrective actions implemented.
Responsible Person	▪ Environmental Officer ▪ Construction Supervisor
Associated Documentation	▪ RACL Fire Management Plan

5.0 Operational EMP

5.1 Access and Landholder Relationships

Policy	To minimise the impact on surrounding landholders.
Performance Objectives	▪ Minimise impacts to adjoining native flora and fauna ▪ Eliminate the likelihood of the spread of weeds off site ▪ Minimise disruption to landholder activities along Kippin Drive ▪ Maintain regular liaison with landholders along the route
Management Strategies	▪ Restrict site entry to designated access track ▪ Maintain regular liaison with landholders ▪ Landholder concerns are addressed promptly ▪ Erosion and sediment control measures will be maintained as required. ▪ Ensure gates are locked where access can be obtained from a road (to ensure unauthorised users are excluded).
Performance Indicators	▪ Complaints from land owners minimised ▪ Erosion and sediment control in place
Monitoring & Reporting	▪ Complaint Register ▪ Easement inspection check sheet ▪ Independent audit every two years
Responsible Person	▪ Site Manager
Associated Documentation	▪

5.2 Flora Management

Policy	To promote vegetation re-establishment, and promote a stable landform.
Performance Objectives	▪ Promote the establishment of ground cover plants and zones of native vegetation (including shrubs and trees) on all areas of disturbance. ▪ Promote natural regeneration of native plant communities on temporarily cleared areas. ▪ In addition to typical regenerating vegetation, planting and transplanting of conservation significant plant species in appropriate areas wherever possible. ▪ Maintenance of revegetation and rehabilitation areas in accordance with the Rehabilitation Plan and Conservation Significant Plant Management Plan. ▪ Ensure that weeds are not spread along WTG access tracks, particularly environmental weeds, declared plants and invasive grasses.
Management Strategies	▪ Promote low regrowth of native plants along access track verges. Pads required for crane access during maintenance may be grassed with native species or a species certified to be sterile and non-weed forming. This may require spreading native grass seed following rain. ▪ Monthly weed survey by supervising botanist (monthly during wet season for first 2 years after construction); control of weeds along the WTG access tracks, turbine pads and contractors yard implemented.
Performance Indicators	▪ Track verges, turbine pads stabilized and revegetated or rehabilitated according to Rehabilitation Plan. ▪ Nil declared, invasive or environmental weeds present. All outbreaks controlled before setting flowers and seeds.
Responsible Person	▪ Site Manager and supervising botanist.
Monitoring & Reporting	▪ Monthly and weekly inspection check sheets ▪ Independent audit every year ▪ Weed records to be maintained according to Weed Management Plan.

Responsible Person	▪ Site Manager and supervising botanist ▪ Ratch Project Manager
Associated Documentation	▪

5.3 Fauna Management

Policy	To minimise the effect on fauna and habitat.
Performance Objectives	▪ Minimise impacts to native fauna. ▪ Where practicable, avoid disturbance to endangered, vulnerable and rare fauna species. ▪ Minimise habitat fragmentation and promote habitat regeneration where practicable. ▪ Pest animals and animal pest diseases not spread as a result of construction activities. ▪ Prevent introduction and spread of declared and invasive weeds
Management Strategies	▪ Adaptive management strategies in accordance with Significant Species management Plans. Key elements of these plans to include: ▪ Trial visual and acoustic automated collision detection systems (TADS/WT-Bird etc.) ▪ Conduct carcass searches (calibrated for scavenger removal and detectability); validate collision risk model. ▪ Conduct call activity surveys at turbines within RSA ▪ Curtail operation of all/some of turbines during high-risk conditions or in response to detected excessive collision mortality ▪ Operate avian and bat radar SCADA system to implement automatic turbine shut-down
Performance Indicators	▪ Mortality of endangered species within approved limits; and ▪ Compliance with species management plans
Monitoring & Reporting	▪ Annual (quarterly for first 2 years) reports in accordance with Significant Species Management Plans and approval conditions, including mortality surveys
Responsible Person	▪ Site Manager ▪ RACL Project Manager
Associated Documentation	▪

5.4 Erosion and Sediment Control

Policy	To ensure erosion and sediment control measures along access tracks and turbine pads are effectively maintained.
Performance Objectives	▪ Minimise soil erosion ▪ Minimise sedimentation of land ▪ Minimise modification to drainage patterns ▪ Prevent as far as practical, sediment transport to adjacent watercourses.
Management Strategies	▪ Inspect all disturbed areas monthly and maintain erosion and sediment controls as necessary. ▪ Place additional erosion control structures such as diversion banks / drains, rock check dams, rock armouring, whoa-boys) at key locations if additional erosion is detected along tracks. ▪ Divert stormwater away from tracks if necessary. ▪ Ensure replacement of any erosion control measures as required. ▪ Monitor downs stream water quality (turbidity) for first 12 months after construction.
Performance Indicators	▪ No large scale erosion or sedimentation caused to adjacent land uses as a result of construction activities. ▪ No evidence of additional sedimentation in watercourses as a result of erosion from operational activities.

	▪ Compliance with water quality targets
Monitoring & Reporting	▪ inspection check sheets ▪ Independent audit every two years
Responsible Person	▪ Site Manager
Associated Documentation	▪

5.5 Management of Flammable and Combustible Substances

Policy	To ensure that storage and handling of flammable and combustible substances onsite Does not cause environmental harm or harm to persons.
Performance Objectives	▪ To minimise potential for land contamination. ▪ To ensure the on-going safety of operational personnel.
Management Strategies	▪ An Emergency Response Plan in place and employees inducted in its application. ▪ Flammable and combustible substances are stored, handled, separated and signed as required by the Flammable and Combustible Liquids Regulations and AS 1940. ▪ Relevant MSDS for all flammable and combustible substances and dangerous goods maintained. ▪ Waste flammable and combustible substances which cannot be recycled will be transported to a designated disposal site as approved by Local Government. ▪ Spill kits containing absorbent and containment material (e.g. absorbent matting) will be available where hazardous materials are used and stored and personnel trained in their correct use. ▪ Spills of flammable and combustible substances will be rendered harmless and collected for treatment and / or remediation or disposal at a designated site, including cleaning materials, absorbents and contaminated soils and affected area reinstated. ▪ Personal protective equipment (PPE) appropriate to the materials in use, will be provided. ▪ Relevant Local Government permits will be held and conditions of permits met.
Performance Indicators	▪ No hazardous goods contamination of the environment. ▪ Ensure appropriate remedial action has been implemented for any spills. ▪ Spill kits and PPE available for use.
Monitoring & Reporting	▪ HSE check list and annual audit
Responsible Person	▪ Site Manager
Associated Documentation	▪

5.6 Noise

Policy	To minimise the impact of noise nuisance from wind farm maintenance activities to nearby residences.
Performance Objectives	▪ Minimise noise nuisance generated by operation and maintenance activities.
Management Strategy	▪ Provide advance notice of any scheduled maintenance activities to nearby residents. ▪ Schedule noisy maintenance activities to appropriate times. ▪ Maintain liaison with nearby residents. ▪ Advise nearby residents in advance if any planned venting or other noisy activities are to be undertaken. ▪ Conduct Noise impact monitoring of operation within three months of commencement and review mitigation measures as necessary
Performance Indicators	▪ Number of noise related complaints received from residents.
Monitoring & Reporting	▪ Complaint Register ▪ Independent audit every year (years 1-3) then every two years
Responsible Person	▪ Site Manger ▪ RACL Project Manager
Associated Documentation	▪

5.7 Waste Management

Policy	To minimise waste generation and maximise reuse and recycling of waste products.
Performance Objectives	▪ Minimise impacts related to waste management. ▪ No evidence of litter or refuse generated from maintenance activities.
Management Strategies	▪ Collecting and removing waste oil and solvents for recycling, reuse or disposal at approved locations. ▪ Where practical, wastes will be segregated and reused / recycled (e.g. scrap metal). ▪ All maintenance personnel shall be instructed in waste management practices as a component of their induction process.
Performance Indicators	▪ Percentage of waste recycled ▪ Litter left onsite after maintenance activities
Monitoring & Reporting	▪ Easement inspection check sheet
Responsible Person	▪ Site Manager
Associated Documentation	▪

6.0 Decommissioning EMP

6.1 Access

Policy	Existing cleared areas and access tracks shall be used to access the WTG's so as to minimise the impact on vegetation and existing land use and minimise potential for weed invasion. Safely manage the transportation of wind turbine components in accordance with the Traffic Management Plan.
Performance Objectives	▪ Minimise impacts to native flora and fauna. ▪ Minimise impacts to soil and water. ▪ Avoid adverse impacts on cultural and historic heritage sites. ▪ Reduce the likelihood of the spread of weeds and fauna pests. ▪ As far as reasonably practicable, prevent movement of pest animals across declared barrier fences. ▪ Safely manage the transportation of WTG elements. ▪ Minimise any new access tracks and the number of access tracks. ▪ Minimise disruption to landholder activities and third parties. ▪ Manage road and track usage, and achieve satisfactory road and site rehabilitation. ▪ Minimise damage to existing road networks. ▪ Stakeholder consultation plan implemented.
Management Strategies	▪ Existing roads and tracks will be used where practicable. ▪ New access tracks and any diversions will generally be avoided, but if necessary, will be selected to minimise impacts on sensitive vegetation, erosion-prone soils and watercourse crossings; avoid any significant cultural heritage sites in accordance with the CHMP and minimise noise to nearby residents. New access tracks and diversions will only be used by agreement with the landholder. ▪ Consultation shall occur between Decommissioning Manager and senior police management at Mareeba and Atherton to ensure any potential cumulative impacts are mitigated. ▪ Disturbance (including access) to No-go areas shall be avoided. These shall be marked with flagging tape, paraweb fencing or equivalent. ▪ Wash down of plant and equipment (including vehicles) following work in any declared plant area. ▪ Erosion and sediment control measures will be used as and where required. ▪ Speed and weight restrictions will be applied to project vehicles as appropriate. ▪ Any damage to existing roads and tracks shall be repaired regularly. ▪ Safely manage the transport of WTG components in accordance with the TMP to be developed in conjunction with local governments, QPS and DTMR. ▪ Undertake a road condition survey of roads used by the Project.
Performance Indicators	▪ Access readily manageable and able to be rehabilitated using standard techniques. ▪ Complaints from land owners, authorities and public are minimised. ▪ Erosion and sediment control in place. ▪ Condition of existing roads and tracks are maintained. ▪ WTG components managed in line with transport management plan. ▪ Road condition not deteriorated as a result of project activities or made good following deterioration caused by project activities.
Monitoring, reporting and corrective actions	▪ Photographic records ▪ Complaint Register – complaints recorded and closed out. ▪ Daily Check Sheets – completed and reviewed by manager / supervisor. ▪ Regular inspections, audits and reviews (non-compliance and incident reporting) undertaken in accordance with EMP and recommendations and corrective actions implemented.

Responsible Person	▪ Environmental Officer / Community Liaison Officer
Associated Documentation	▪ Biosecurity (including weeds) Management Strategy ▪ Decommissioning Safety Management Plan ▪ Road condition assessment ▪ Maps of access tracks

6.2 Flora and Fauna Management

Policy	To minimise additional impacts and effects on vegetation and habitat for flora and fauna during the decommissioning of the wind farm, including infrastructure such as turbine pads, compounds and yards and laydown areas and the access tracks.
Performance Objectives	▪ Prevent impacts to native vegetation and rehabilitation and conservation areas. ▪ Prevent weeds from entering the site. Continue application of Weed Management Plan and washdown facilities. ▪ No spread of weeds, and plant pest diseases within the site as a result of decommissioning activities. The site will be left free of serious weeds (environmental and declared, as well as introduced pasture grasses). ▪ Where practicable, avoid disturbance to endangered, vulnerable, rare and poorly known flora species that have regenerated adjacent to or in original construction zones. Avoid all impacts to these types of plants and habitats outside of the original construction zone. ▪ No net loss of habitat connectivity or additional habitat fragmentation to occur. ▪ Offset programme for rare, endangered or vulnerable plants has been successful and the objectives have been met as outlined in respective Management Plans.
Management Strategies	▪ A post-decommissioning survey undertaken to identify rare and threatened species within the decommissioning zone. ▪ Flag individual significant plant species (including habitat trees) which are located in the decommissioning zone so they may be avoided where practicable during operational work. ▪ Placement of physical barriers around significant vegetation areas in order to restrict access and avoid further disturbance. ▪ Harvesting seeds for replacement use in rehabilitation zones, where natural regeneration was not successful. ▪ Ensure adequate measures are in place to safeguard and assist the movement of fauna from the decommissioning zone. ▪ All weeds established within the site are to be recorded in a decommissioning weed survey. ▪ Control environmental and declared weeds within and adjacent to the decommissioning zone. This should be performed in accordance with the methods and control measures detailed in the Weed Management Plan; ▪ Management strategies for the continued health and population growth of conservation significant flora and fauna are implemented and have a success rate that meets criteria detailed in respective species' management plans.
Performance Indicators	▪ Vegetation, ecosystems, habitats and conservation significant species of flora and fauna are not suffering from adverse impacts, ▪ Matters of National Environmental Significance are maintained in their current condition with negligible declines in population dynamics and the numbers of species present on the site. ▪ Minimal disturbance to flora and fauna has occurred as a result of decommissioning the wind farm. ▪ Restoration (successful rehabilitation) has resulted from progressive rehabilitation and environmental management of the wind farm site. Vegetation communities have recovered with a major proportion of the flora comprising native species. ▪ No failure or irreversible decline of rehabilitation measures. ▪ The dominant ground cover adjacent to tracks and turbine pads comprises native species and not introduced pasture grasses or legumes. ▪ No damage to protected species or designated conservation zones without relevant approval and supervision. ▪ Ensure relevant permits are effective before removing any protected species. ▪ Declared plants and environmental weeds ine are adequately controlled, and no fauna pests are introduced into the site ▪ Plant species planted for the offset programme are self-sustaining and do not require

	human assistance to survive. Rehabilitated plant communities should be persistent in the landscape able to function without intervention.
Monitoring, Reporting and Corrective Action	▪ Photographic records to be maintained. ▪ Daily Check Sheets – completed and reviewed by manager / supervisor. ▪ Regular inspections, audits and reviews (non-compliance and incident reporting) undertaken in accordance with EMP and recommendations and corrective actions implemented. ▪ Offset planting to be monitored for a period of 3 years following rehabilitation to ensure survival and replacement of mortalities.
Responsible Person	▪ Environmental Officer and respective environmental advisors.
Associated Documentation	▪ Weed Management Plan ▪ Conservation Significant Plant Species Management Plan ▪ Threatened Plant Species Translocation Plan ▪ Environmental Offsets Plan Conservation Significant Plant Management Plan ▪ Rehabilitation Plan ▪ Offset Programme ▪ EIS technical reports

6.3 Erosion and Sediment Control

Policy	To provide effective erosion and sediment practices to mitigate the potential effects of construction on watercourses, land use and the general environment.
Performance Objectives	▪ Minimise soil erosion. ▪ Minimise sedimentation of land. ▪ Minimise modification to drainage patterns. ▪ Prevent as far as practical, sediment transport to adjacent watercourses.
Management Strategies	▪ Conduct activities in accordance with a detailed Erosion and Sediment Control Plan (ESCP). ▪ Minimise the quantity and duration of soil exposure. ▪ Protect topsoil, root and seed stock. ▪ Protect critical areas during and after construction by reducing the velocity of stormwater flow and redirecting runoff onto undisturbed areas. ▪ Install and maintain temporary erosion and sediment control measures during construction. ▪ Re-contour modified landforms to their original condition as soon as practicable including any erosion controls established prior to construction. ▪ Replace topsoil and seed stock to facilitate revegetation as soon as practicable following construction. ▪ Inspect disturbed areas and maintain erosion and sediment controls as necessary during and after construction until stabilisation is achieved. ▪ Strict implementation of permanent stormwater diversion drains on all hilly slopes (approximately 20 m intervals, depending on slope). ▪ Strict implementation of silt mesh fencing and stormwater diversion drains on the banks of all waterways containing flowing water during construction. ▪ Highly erodible soils are identified by visual inspection of the site to identify the extent and location of existing soil erosion. ▪ Where highly erodible soils are identified, and if the area cannot be reasonably avoided, the following controls should be implemented: ▪ Keep the work area to a minimum so that the smallest possible ground area is disturbed. ▪ Place erosion control structures such as diversion drains and silt fences at key locations to capture the suspended sediment. ▪ Divert stormwater away from the exposed soil to reduce overland flow or channel flow on the vulnerable soils.

	▪ For wet crossings, the following sediment controls should be implemented: ▪ Place erosion control structures such as rock check dams and sand bags in the channel to slow velocity and capture suspended sediment. ▪ Divert stormwater away from disturbed channels or swales to minimise the flow of water and erosion potential. ▪ Minimise disturbance to the existing channel. This may involve constructing a temporary access across small swales and channels. ▪ If flow modification is necessary during construction, reinstate the channel on completion of works. ▪ Reinstate all existing erosion control structures on completion of works. ▪ Stormwater Diversion ▪ In areas which are subject to erosion potential (slopes >5%), stormwater diversion banks / drains (whoa-boys) should be placed diagonally across access tracks to divert stormwater to adjacent undisturbed grassed areas following completion of construction. Spacing of such diversion drains can be approximately 50 m to 70 m apart. Where slopes are >5%, then more frequent spacing is required. ▪ Adequate monitoring and follow-up work following construction to ensure any initiated erosion is arrested early.
Performance Indicators	▪ No large scale erosion or sedimentation caused to adjacent land uses as a result of construction activities. ▪ No evidence of additional sedimentation in watercourses as a result of erosion from construction activities. ▪ Reinstatement of watercourses to original profile. ▪ Adequate spacing of stormwater diversion drains in areas of erosion potential.
Monitoring, Reporting and Corrective Action	▪ Photographic Records ▪ Daily Check Sheets – completed and reviewed by manager / supervisor. ▪ Regular inspections, audits and reviews (non-compliance and incident reporting) undertaken in accordance with EMP and recommendations and corrective actions implemented. ▪ Construction audits will include all watercourse crossings. ▪ A post-construction audit which will evaluate revegetation, erosion control, weed control, water course bank stability will be conducted annually for two years following completion of construction.
Responsible Person	▪ Environmental Officer and Community Liaison Officer
Associated Documentation	▪ Erosion and Sediment Control Plan

6.4 Management of Flammable and Combustible Substances

Policy	To ensure storage and handling of flammable and combustible substances onsite does not cause environmental harm or harm to persons.
Performance Objectives	▪ To minimise potential for land contamination. ▪ To ensure the on-going safety of construction personnel.
Management Strategies	▪ An Emergency Response Plan shall be in place and employees inducted in its application. ▪ Flammable and combustible substances are stored, handled, separated and signed as required by the Flammable and Combustible Liquids Regulations and AS1940. ▪ Transportation of dangerous goods will be in accordance with the Regulations and with AS 1678, AS 2809 and AS 2931. ▪ A qualified person will be appointed as Site Safety Officer. ▪ An on-site set of the relevant MSDS for all flammable and combustible substances and dangerous goods used during construction will be maintained and available. ▪ Waste flammable and combustible substances which cannot be recycled will be transported to a designated disposal site as approved by Local Government. ▪ No refuelling of plant and equipment over or within 100m of watercourses. ▪ Spill kits containing absorbent and containment material (e.g. absorbent matting) will be available where hazardous materials are used and stored and personnel trained in their correct use. ▪ Spills of flammable and combustible substances will be rendered harmless and collected for treatment and / or remediation or disposal at a designated site, including cleaning materials, absorbents and contaminated soils and reinstatement made to the affected area. ▪ Personal protective equipment (PPE) appropriate to the materials in use will be provided. ▪ Relevant Local Government permits will be held and conditions of permits met.
Performance Indicators	▪ No hazardous goods contamination of the environment. ▪ Cut off flowpath to drains / watercourses e.g. sand bags, earthen bund, in the event of a spill. ▪ Ensure appropriate remedial action has been implemented for any spills. ▪ Major incidents reported to relevant authorities and their directions followed. ▪ Spill kits and PPE available and used as appropriate.
Monitoring, Reporting and Corrective Action	▪ Photographic Records ▪ Regular inspection of storage facilities and work practices in the handling of flammable and combustible substances or other dangerous substances. ▪ Daily Check Sheets – completed and reviewed by manager / supervisor. ▪ Regular inspections, audits and reviews (non-compliance and incident reporting) undertaken in accordance with EMP and recommendations and corrective actions implemented.
Responsible Person	▪ Construction Manager
Associated Documentation	▪ Flammable and Combustible Liquids Regulations and AS1940

6.5 Noise and Vibration

Policy	To minimise the impact of construction noise nuisance and vibration to nearby residences.
Performance Objectives	▪ Minimise noise nuisance generated by construction activities. ▪ Minimise any vibration nuisance to nearby residences.
Management Strategy	▪ Provide advance notice of any scheduled atypical noise events to nearby residents. ▪ Ensure camp sites are located a sufficient distance form residences to limit any noise nuisance. ▪ Equipment maintained in accordance with manufacturer's specifications. ▪ Schedule atypical noise events for appropriate times. ▪ Any blasting is to be carried out in accordance with current practice standards with particular reference to AS 2187. ▪ Maintain liaison with nearby residents. ▪ Noisy construction activities in proximity to homesteads to be limited to 7.00 am to 6.00 pm Monday to Saturday or as stipulated in approval permits.
Performance Indicators	▪ Number of noise related complaints received from residents during construction. ▪ Evidence of repair and replacement of faulty equipment as soon as possible. ▪ Evidence of condition surveys.
Monitoring, Reporting and Corrective Action	▪ Photographic Records ▪ Complaints Register – recorded and closed out. ▪ Noise survey in the event of complaint. ▪ Check Sheets – completed and reviewed by manager / supervisor. ▪ Regular inspections, audits and reviews (non-compliance and incident reporting) undertaken in accordance with EMP and recommendations and corrective actions implemented.
Responsible Person	▪ Construction Manager
Associated Documentation	▪ Complaints Register

6.6 Air Emissions

Policy	To complete the installation of each WTG and access track in a manner to maintain ambient air quality of the local area.
Performance Objectives	▪ To maintain acceptable limits of vehicular and machinery operating emissions and to receive zero complaints from local landholders regarding air quality. ▪ To minimise the generation of fugitive dust emissions produced during construction.
Management Strategies	▪ Vehicles and machinery shall be maintained in accordance with manufacturer's specifications. ▪ Watering of construction site and access tracks will be carried out on an as required basis, particularly on dry and windy days and especially near residential homesteads. ▪ Avoid smoke generation by a strict no burning policy. ▪ Implement fire control measures during welding operations.
Performance Indicators	▪ Visual observations of dust emissions during windy / dry periods ▪ Receipt of dust nuisance complaints from nearby residents ▪ Excessive visual dust cloud during construction activities.
Monitoring, Reporting and Corrective Action	▪ Photographic Records ▪ Complaints Register – recorded and closed out. ▪ Daily Check Sheets – completed and reviewed by manager / supervisor. ▪ Regular inspections, audits and reviews (non-compliance and incident reporting) undertaken in accordance with EMP and recommendations and corrective actions implemented.
Responsible Person	▪ Construction Manager

Associated Documentation	▪ Nil

6.7 Waste Management

Policy	To minimise waste generation and maximise reuse and recycling of construction waste products.
Performance Objectives	▪ Minimise impacts related to waste management. ▪ No evidence of litter or refuse generated from construction related activities.
Management Strategies	▪ Stockpiling and salvaging reusable and recyclable wastes, such as timber skids, pallets, drums and scrap metals. ▪ Collecting and removing waste oil and solvents from site for recycling, reuse or disposal at approved locations. ▪ Disposing of sewage and sullage from camp sites via a packaged mini sewerage treatment plant (greywater may be discharged to land). ▪ Collection of chemical wastes in 200 L drums (or similar sealed container), appropriately labelled, for safe transport to an approved chemical waste depot or collection by a liquid waste treatment service. ▪ All binding material and dunnage from transport vehicles and unloading areas is to be collected and transported off the easement to designated disposal areas. ▪ Collecting and transporting general refuse to a Local Government approved disposal site. ▪ Ensure wastes are not accessible by stock or wildlife. ▪ Refuse containers will be located at each worksite. ▪ Where practical, wastes will be segregated and reused / recycled (e.g. scrap metal). ▪ All personnel shall be instructed in project waste management practices as a component of the environmental induction process. ▪ Spraying of declared plants and disposal to regulated landfill.
Performance Indicators	▪ Clean and waste-efficient construction site ▪ Percentage of waste recycled ▪ Nil litter left onsite during construction
Monitoring, Reporting and Corrective Action	▪ Photographic Records ▪ Complaints Register – recorded and closed out. ▪ Daily Check Sheets – completed and reviewed by manager / supervisor. ▪ Regular housekeeping checks and a waste audit to be conducted. The camp site area is to be inspected after relocation. ▪ Regular inspections, audits and reviews (non-compliance and incident reporting) undertaken in accordance with EMP and recommendations and corrective actions implemented.
Responsible Person	▪ Construction Manager
Associated Documentation	▪ Nil

6.8 Fire Management

Policy	To minimise the potential for vegetation to catch fire from construction activities.
Performance Objectives	▪ No fires deliberately lit or allowed to remain alight at WTG sites or access tracks or other project related worksites. ▪ No build-up of flammable material during construction near hot work areas.
Management Strategies	▪ Open fires will be banned on the project. Fires include open barbeques, billy fires, brush burning and rubbish burning. ▪ Unnecessary build-up of flammable material near working areas will be prevented, with vegetation and other flammable material being stockpiled well clear of hot work activities. ▪ Water trucks (also used for dust suppression) will be available for use as fire trucks in the event of fire. ▪ All vehicles will be equipped with portable fire extinguishers. ▪ Fire extinguishers and a water cart will be available to the welding crew. All appropriate crew members will be trained in the use of fire fighting equipment. ▪ Emergency Response Plan shall include details on local contacts for fire fighting assistance. ▪ Construction management liaison with local Rural Fire Service personnel during high fire periods.
Performance Indicators	▪ Nil Construction related fires ▪ Build-up of flammable material near hot work areas. ▪ Emergency Response Plan in place. ▪ Permits and approvals as required.
Monitoring, Reporting and Corrective Action	▪ Complaints Register – recorded and closed out. ▪ Daily Check Sheets – completed and reviewed by manager / supervisor. ▪ Regular inspections, audits and reviews (non-compliance and incident reporting) undertaken in accordance with EMP and recommendations and corrective actions implemented.
Responsible Person	▪ Environmental Officer and Community Liaison Officer
Associated Documentation	▪ Emergency Response Plan

6.9 Clean up and Rehabilitation

Policy	To restore the land to a status that is comparable to the condition of the pre-construction environmental characteristics.
Performance Objectives	▪ Minimise soil erosion ▪ WTG line stable ▪ Minimise modification of drainage patterns ▪ Minimise weed invasion ▪ Minimise visual impact ▪ Minimise adverse impacts on other land uses
Management Strategies	▪ Stockpiled topsoil and seed stock will be respread on prepared surfaces in an even layer to assist natural regeneration. Minor surface roughness will be encouraged when spreading topsoil to trap water and seed. ▪ Visual markers used to identify clearing boundaries and sensitive features, will be removed. ▪ Hollow-bearing logs and coarse woody debris are to be repositioned on decommissioned sites to provide habitat for fauna. ▪ Where ground conditions allow, compaction relief will be undertaken where required by scarifying soils along the contours. ▪ Former turbine pads will be re-profiled according to the nearest and most appropriate landform (i.e. additional slopes will not be created).

	▪ Erosion and sediment control measures will be installed where necessary. Existing soil erosion measures will be reinstated to a condition at least equal to the pre-existing state. ▪ All waste materials and equipment will be removed from the site following decommissioning. ▪ Soil material is to be returned to the same general area from which it was extracted to minimise the risk of the spread of weeds, pests and diseases. ▪ Where disturbed areas are to be re-planted or re-seeded, only local provenance native species sourced from a local seed bank will be used. If direct-seeding is recommended for particular situations as detailed in the Rehabilitation Plan, the seed mixtures will be formulated for the conditions of the area. ▪ Where applied, seed will be evenly spread over the entire disturbed area. ▪ Direct-seeding will take place as soon as practicable during clean up and when ground conditions are most conducive to seed germination. ▪ Fertilisers and soil supplements will be used only if prescribed in the Rehabilitation Plan or approved through specific expert advice. ▪ Two monitoring sites for each Regional Ecosystem to be rehabilitated are required to be established as a benchmark from which to measure performance of rehabilitation.
Performance Indicators	▪ No new weed species introduced ▪ Weed Management implemented ▪ Groundcover re-established ▪ No change in drainage pattern leading to soil erosion ▪ Stable landforms
Monitoring, Reporting and Corrective Action	▪ Photographic records from monitoring sites. ▪ Check Sheets (recorded at monitoring sites) – completed and reviewed by manager / supervisor. ▪ Regular inspections, audits and reviews (non-compliance and incident reporting) undertaken in accordance with EMP and recommendations and corrective actions implemented. ▪ Post Construction Audits ▪ Regular Easement Inspections
Responsible Person	▪ Environmental Officer and Construction Manager
Associated Documentation	▪ Rehabilitation Plan

Mount Emerald Wind Farm Traffic Impact Assessment

RATCH-AUSTRALIA CORPORATION LIMITED

Technical Note 2 - Traffic Impact Assessment Engineering Response

Traffic Impact Questions 23 to 26 | Rev 1

Response to Ministerial Call-In Information Request - TRAFFIC

29 August 2014

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Mount Emerald Wind Farm Traffic Impact Assessment

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Contents

Executive Summary

This technical note responds to queries from the State Government regarding the potential traffic impact of the proposed Mount Emerald Wind Farm (MEWF). Traffic Impact queries are addressed in Questions 23 to 26.

Question 23: Provide a clear description of all possible access routes (in their entirety) to the site for oversized vehicles. This should include at least a high level identification of constraints along the network and identification of measures that would be put in place to allow State Government and council to assess these impacts.

In response to Question 23, two possible access routes for oversized vehicles were identified: the first via the Palmerston Highway, the second via the Kennedy Highway. A high-level investigation of constraints suggests that checks should be conducted for the full length of each route to determine restrictions to oversized vehicles. Such restrictions include horizontal and vertical geometry, horizontal and vertical clearance, and the structural integrity of culvert and bridge crossings. Appropriate permits and escorts may need to be obtained, and traffic control measures may need to be implemented to allow passage of the proposed oversized vehicles.

Question 24: An assessment of the access to site (along Hansen Road and Springmount Road) for vertical geometry which utilises recent survey data.

In response to Question 24, it was noted that more recent survey data or appropriate 3D mapping does not exist to provide a more detailed vertical geometry assessment of Hansen Road and Springmount Road. GPS long section drawings are provided from a previous technical note (SKM 2012) identifying possible points of conflict.

Question 25: Provide further information on how staff travel to site can be managed in a way that will allow the maximum number of staff vehicles to remain below 30 vehicles per day as indicated in the Traffic Impact Assessment.

In response to Question 25, the estimate of 30 vehicles per day for construction staff traffic is achievable based on eight 30-seater busses, eight light vehicles, and a nominal 10 additional vehicles for various purposes. These figures were based on pre-feasibility estimates of worker numbers and construction schedules that would need to be confirmed by the nominated contractor in their construction traffic management plan. It is recommended that this plan be developed in consultation with relevant stakeholders.

Question 26: Should sufficient measures to restrict staff traffic to 30 vehicles per day not be provided, a new assessment identifying the worst case traffic impact on the road network should be provided.

In response to Question 26, a new assessment identifying the worst case traffic impact on the road network is not required as it is possible to restrict staff traffic to less than 30 vehicles per day.

These conclusions are given strictly in accordance with and subject to the following limitations and recommendations:

> The sole purpose of this report and the associated services performed by Jacobs is to respond to an information request as part of ministerial call-in by the State Government for the assessment of the MEWF Project as proposed by RATCH-Australia Corporation Limited in accordance with the scope of services set out in the contract between Jacobs and the Client (RATCH-Australia Corporation Limited). That scope of services, as described in this report, was developed with the Client.
>
> In preparing this report, Jacobs has relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by the Client and/or from other sources. Except as otherwise stated in the report, Jacobs has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.
>
> Jacobs derived the data in this report from information sourced from the Client (if any) and/or available in the public domain at the time or times outlined in this report. The passage of time, manifestation of latent conditions or impacts of future events may require further examination of the project and subsequent data analysis, and re-evaluation of the data, findings, observations, and conclusions expressed in this report.

Jacobs has prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations, and findings expressed in this report, to the extent permitted by law.

This report should be read in full and in conjunction with the following reports:

- Mount Emerald Wind Farm Traffic Impact Assessment (TIA) – 8 August 2011 undertaken by SKM. This report will be referred to as SKM 2011
- Technical Note: Mount Emerald Wind Farm Traffic Impact Assessment Engineering Responses - 19 December 2012 undertaken by SKM. The report will be referred to as SKM 2012

No excerpts are to be taken as representative of the findings. No responsibility is accepted by Jacobs for use of any part of this report in any other context.

Specific limitations include:

- Estimations of worker numbers, vehicle numbers, and types of vehicles required were provided by the Client, and parent company Transfield Services (Australia) Pty Limited, as noted in the above-mentioned reports
- Client-imposed budget and time restraints in obtaining more recent survey data, other than that gathered for the above-mentioned reports

This report has been prepared on behalf of, and for the exclusive use of, Jacobs' Client, and is subject to, and issued in accordance with, the provisions of the contract between Jacobs and the Client. Jacobs accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this report by any third party.

1. Introduction

1.1 Purpose of this Document

Jacobs Group (Australia) Pty Ltd (Jacobs) has been commissioned by RATCH-Australia Corporation Ltd (RATCH-Australia) to provide a technical response to a further round of information requests. The proposed Mount Emerald Wind Farm (MEWF) project has been called-in by the State Government for assessment. The purpose of this report is to provide engineering input to the State Government's queries regarding the impact of traffic generated by the proposed MEWF (Questions 23 to 26).

1.2 Background and Current Situation

The proposed project is situated on the Atherton Tableland within the jurisdiction of Tablelands Regional Council (TRC) and is located approximately 50 kilometres south-west of Cairns in Far North Queensland. More specifically, the site is 18 kilometres south of the township of Mareeba, 15 kilometres north of Atherton, and 6 kilometres south-west of Walkamin.

The major road adjacent to the proposed site is the Kennedy Highway, which runs in a north-south direction between Mareeba and Atherton. This road forms part of the planned route for the transport of the wind tower components from their delivery location. This State-Controlled road is a two lane, two-way, sealed road with sealed shoulders, unsealed verges, and is a gazetted 23-25 m B-double route.

From the Kennedy Highway at Walkamin, the recommended (and most viable) route to the proposed MEWF site is via Hansen Road and Springmount Road, and direct access to the site is off Kippen Drive. All of these roads are locally controlled by TRC and are generally two lane, two-way, sealed roads with unsealed shoulders and verges. Kippen Drive, however, is an unbound gravel road/track.

Based on information received from RATCH-Australia, a maximum of 75 wind turbines are planned for construction. A tourist viewing facility is also likely to be built but its location is currently undetermined.

Jacobs (previously Sinclair Knight Merz) provided technical assistance with the Mount Emerald Wind Farm Traffic Impact Assessment (TIA), dated 8 August 2011. Following this, TRC requested further information. This was provided as Technical Note: Mount Emerald Wind Farm Traffic Impact Assessment Engineering Responses, dated 19 December 2012. The proposed MEWF project has now been called-in by the State Government for assessment. As part of this process, there has been a request for additional information. The following sections address Questions 23 to 26 regarding the potential traffic impact of the proposed MEWF project.

2. Response to Question 23

2.1 Query

Provide a clear description of all possible access routes (in their entirety) to the site for oversized vehicles. This should include at least a high level identification of constraints along the network and identification of measures that would be put in place to allow State Government and council to assess these impacts.

2.2 Response

Two possible access routes for oversized vehicles were analysed in their entirety from Cairns Port to Mount Emerald. Maps detailing these two routes have been included in Appendix A of this report. A summary of each route is detailed in Table 2-1 below:

Table 2-1 Possible access routes for oversized vehicles from Cairns Port to Mount Emerald

Route No.	Traversed Roads
1	Dutton Street, Kenny Street, Draper Street, Bruce Highway (Ray Jones Drive), Bruce Highway (Innisfail – Cairns), Palmerston Highway (Innisfail – Ravenshoe), Millaa Millaa – Malanda Road, Malanda – Atherton Road, Mars Lane, Tinaroo Falls Dam Road, Kairi Road, Lawson Street, Kennedy Highway (Mareeba – Ravenshoe), Hansen Road, Springmount Road, Kippen Drive.
2	Dutton Street, Kenny Street, Port Connection Road (Bunda Street), Martyn Street, Mulgrave Road, Sheridan Street, Captain Cook Highway (Cairns - Mossman), Kennedy Highway (Cairns - Mareeba), Kennedy Highway (Mareeba - Ravenshoe), Hansen Road, Springmount Road, Kippen Drive

Of the roads listed in each route above, Dutton Street and Kenny Street (partial) are controlled by Cairns Regional Council, and Marks Lane, Kiari Road, Lawson Street, Hansen Road, Springmount Road and Kippen Drive are controlled by TRC. All other listed roads are state controlled roads maintained by the Department of Transport and Main Roads (TMR). It is noted that all roads forming *Route 1* to Hanson Road are gazetted B-Double routes while the Kennedy Highway (Cairns – Mareeba) which forms a section of *Route 2* is a non-approved B-Double route. It is suggested that Lawson Street is utilised for both directions of travel on *Route 2* to avoid traversing through the township of Tolga when transporting large material components despite being a gazetted B-Double route for south bound traffic only.

A high level identification of constraints and measures, which may be required to be implemented, has been completed for each route to allow State Government and Councils to assess the impact of these constraints:

It is recommended that a horizontal and vertical (crests and sags) geometry check, in addition to checking the vehicle envelope, is completed for the full length of each route. Due to their generally narrower road widths, it is noted that the horizontal geometry of Council-controlled roads should be checked. Horizontal geometry limits and overhanging rainforest canopy experienced on the Kennedy Highway (Cairns – Mareeba) via *Route* 2 will not permit the turn paths and the large envelope exhibited by the B-Doubles when transporting larger components (such as the rotor blade, hub, machine house components and steel sections). Contrary to this, there may be the potential for vehicle configurations with a smaller vehicle envelope and tighter turn path to utilise *Route* 2 when transporting smaller components under a permit as it is significantly shorter in comparison to *Route 1*.

Due to the substantial turn paths and large vehicle envelope exhibited by the oversized vehicles and material components, traffic control may be required at intersections where over-dimensional vehicles

(wide loads) are required to turn. These intersections have been identified for both Routes 1 and 2 and are detailed in Table 2-2 and Table 2-3, respectively (refer below). Also listed for each intersection are minor works and additional control measures that may need to be implemented.

Table 2-2 Intersections potentially requiring traffic control and measures involving minor works – Route 1

Intersection	Potential measures/works that may be require implementation
Dutton St / Kenny St	• Traffic Control • Remove and re-erect signage • Check clearance to railway crossing signals • Check clearance to overhead power lines
Kenny St / Draper St (roundabout)	• Traffic Control • Remove and re-erect signage • Check clearance to overhead power lines
Draper St / Bruce Highway (Ray Jones Drive)	• Traffic Control • Remove and re-erect signage • Check clearance to signal mast arms
Bruce Highway (Innisfail - Cairns) / Palmerston Highway (Innisfail - Ravenshoe)	• Traffic Control • Remove and re-erect signage
Millaa Millaa - Malanda Road / Malanda - Atherton Road	• Traffic Control • Check clearance to overhead power lines
Malanda - Atherton Road / Marks Lane	• Traffic Control
Marks Lane / Tinaroo Falls Dam Road	• Traffic Control • Remove and re-erect signage
Tinaroo Falls Dam Road / Kiari Road	• Traffic Control • Check clearance to overhead power lines
Kiari Road / Lawson St	• Traffic Control • Check clearance to overhead power lines • Remove and re-erect signage
Lawson St / Kennedy Highway (Mareeba - Ravenshoe)	• Traffic Control
Kennedy Highway (Mareeba - Ravenshoe) / Hanson Road	• Traffic Control