Mount Emerald Wind Farm

Preliminary Environmental Management Plan

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Document Status

Version	Purpose of Document	Orig	Review	Review Date
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Approval for Issue

Name	Signature	Date
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Contents

Tables

Figures

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.

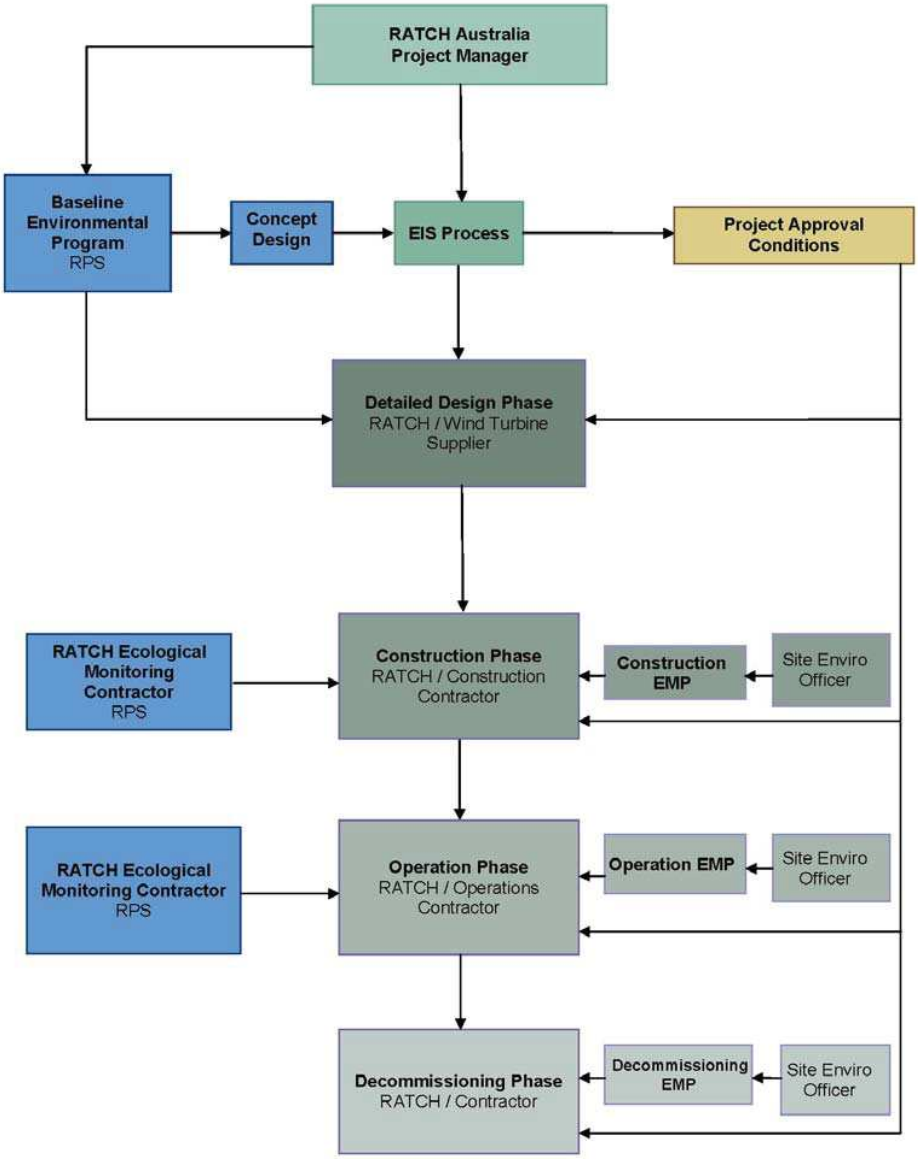

Figure 1 Draft Site Organisation Flowchart

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