



Ryan Corner Wind Farm

Ryan Corner Wind Farm *Environmental Management Plan*

Final Report

for Ryan Corner Development Pty Ltd

February 2012

0105123

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Ryan Corner Wind Farm

Environmental Management Plan

For

Ryan Corner Development Pty Ltd

February 2012

Reference: 0105123

Approved by:	Allan Wyatt
Position:	Partner
Signed:	
Date:	9 February 2012

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1.0	21 June 2010	Final Report	Allan Wyatt (ERM)
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This Environmental Management Plan (EMP) is considered a dynamic document and must be able to be reviewed, as necessary in consultation with the Moyne Shire Council and Department of Sustainability and Environment to the satisfaction of the Minister for Planning every 5 years to reflect operational experience and changes in environmental standards and techniques and must be submitted to the Minister for Planning for re-endorsement.

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CONTENTS

PART A - ENVIRONMENTAL MANAGEMENT FRAMEWORK

1 INTRODUCTION

1.1	<i>Purpose of the EMP</i>	1
1.2	<i>RCDP's Environmental Management System</i>	1
1.3	<i>The Structure of the EMP</i>	2
1.4	<i>Contractor Environmental Management Plan</i>	4
1.5	<i>Organisational Resources, Accountabilities and Responsibilities – Construction Phase</i>	4
1.6	<i>Organisational Resources, Accountabilities and Responsibilities – Construction Phase</i>	7

2 PROJECT OVERVIEW

2.1	<i>The Ryan Corner Wind Farm Project</i>	9
2.2	<i>Biological Features</i>	9
2.3	<i>Construction Phase (Activities and Timetable)</i>	13
2.3.1	<i>Timetable for Implementation</i>	14
2.3.2	<i>Hours of work</i>	14
2.3.3	<i>Property Access</i>	15
2.4	<i>Operation Phase (Activities and Timetable)</i>	15

3 LEGISLATIVE AND PLANNING PERMIT REQUIREMENTS

3.1	<i>Legislative Framework</i>	17
3.2	<i>Planning Permit Conditions</i>	20
3.3	<i>Environmental Obligations Register</i>	21
3.4	<i>Secondary Approvals, Licences & Permits</i>	22
3.5	<i>Other Relevant Guidelines</i>	25

4 HAZARD IDENTIFICATION AND RISK MANAGEMENT

4.1	<i>Risk Processes</i>	27
4.2	<i>Qualitative Risk Assessment</i>	27
4.3	<i>Risk Register</i>	30
4.4	<i>Objectives, Targets and Key Performance Indicators</i>	30
4.5	<i>Sub-contractor Management</i>	35
4.6	<i>Job Hazard Analysis</i>	35

5 TRAINING, COMPETENCY AND AWARENESS

5.1	<i>Induction</i>	39
5.2	<i>Toolbox Training</i>	40

6 COMMUNICATIONS AND STAKEHOLDER MANAGEMENT

6.1	<i>Internal Communication</i>	41
-----	-------------------------------	----

6.2	<i>External Communication</i>	42
6.3	<i>Complaints Management</i>	43
7	PERFORMANCE EVALUATION AND REPORTING	
7.1	<i>Site Inspections</i>	45
7.2	<i>Environmental Monitoring</i>	45
7.3	<i>Environmental Audit Schedule</i>	47
7.4	<i>Internal Auditing</i>	49
7.5	<i>External Auditing</i>	49
7.6	<i>Opportunities for Improvement, Non-Conformance, Corrective and Preventative Action</i>	49
7.7	<i>Internal Reporting</i>	50
7.8	<i>External Reporting</i>	50
7.9	<i>Notification of Environmental Related Incident</i>	50
8	DOCUMENT CONTROL AND RECORDS	
8.1	<i>Amendments to the EMP</i>	53
8.1.1	<i>Controlled Copy</i>	53
8.1.2	<i>Uncontrolled Copies</i>	53
8.1.3	<i>Superseded Documents</i>	53
8.2	<i>Records</i>	53
8.2.1	<i>Archiving Of Records</i>	53
8.2.2	<i>Correspondence and Filing</i>	53
8.3	<i>Amendments to Other Controlled Documents</i>	54
9	INCIDENT AND EMERGENCY PLANNING, PREPAREDNESS AND RESPONSE	
10	REVIEW AND IMPROVEMENT OF THE EMP	
PART B – CONSTRUCTION MANAGEMENT SUB-PLANS		
11	CONSTRUCTION AND WORKSITE MANAGEMENT SUB-PLAN	
11.1	<i>Construction Hours</i>	61
11.2	<i>Site Access</i>	62
11.3	<i>Pre-construction Works</i>	62
11.4	<i>Post-construction Rehabilitation</i>	62
11.5	<i>Contamination Background</i>	62
11.6	<i>Management and Mitigation Measures</i>	63
11.7	<i>Unexpected Contamination Find Protocol</i>	71
11.8	<i>Treatment / Remediation</i>	71
11.9	<i>Treatment Areas</i>	72
11.10	<i>Validation Testing</i>	72
11.11	<i>Inspections and Reporting</i>	72

12 NOISE & VIBRATION MANAGEMENT SUB-PLAN

12.1	<i>Construction Hours</i>	75
12.2	<i>Sensitive Receptors</i>	76
12.3	<i>Background Noise Levels</i>	78
12.4	<i>Construction Noise Limits</i>	78
12.5	<i>Management and Mitigation Measures</i>	79
12.6	<i>Inspections and Reporting</i>	84

13 HYDROCARBON & HAZARDOUS SUBSTANCES PLAN

13.1	<i>Management and Mitigation Measures</i>	85
13.2	<i>Inspections and Reporting</i>	89
13.3	<i>Hydrocarbon / Chemical Spill Response Process</i>	89

14 SEDIMENT, EROSION & WATER QUALITY MANAGEMENT PLAN

14.1	<i>Early Works – Stage 1</i>	91
14.2	<i>Receiving Water Environments</i>	91
14.3	<i>Receiving Water Quality</i>	91
14.4	<i>Groundwater Quality</i>	92
14.5	<i>Water Quality Criteria</i>	92
14.6	<i>Surface Water Management Overview</i>	92
14.7	<i>Erosion Sediment Control Plan – Construction Contractor</i>	92
14.7.1	<i>Drainage lines</i>	93
14.7.2	<i>Minimising Disturbance and Bare Areas</i>	93
14.7.3	<i>Temporary sediment control structures</i>	93
14.7.4	<i>Temporary Stabilised Site Access</i>	94
14.7.5	<i>Water Retention/Sediment Basins</i>	94
14.8	<i>Wastewater Management</i>	95
14.9	<i>Water Reuse</i>	96
14.10	<i>Sewage Treatment and Disposal</i>	96
14.11	<i>Management and Mitigation Measures</i>	96
14.12	<i>Inspections and Reporting</i>	101

15 BLASTING MANAGEMENT SUB-PLAN

15.1	<i>Potential Impacts</i>	103
15.2	<i>Sensitive Receivers and Buffer Distances</i>	103
15.3	<i>Relevant Criteria</i>	104
15.3.1	<i>Airblast Overpressure Criteria</i>	104
15.3.2	<i>Ground Vibration (ppv) Criteria</i>	104
15.3.3	<i>Time of Blasting</i>	104
15.4	<i>Blasting Responsibility</i>	104
15.5	<i>Management and Mitigation Measures</i>	105
15.6	<i>Site Clearance and Post-Blast Reoccupation Protocol</i>	109
15.7	<i>Complaint Handling and Incident Response</i>	110
15.8	<i>Inspections and Reporting</i>	110

16	ARCHEOLOGICAL MANAGEMENT PLAN (CULTURAL HERITAGE MANAGEMENT PLAN)	
16.1	<i>Recorded Sites</i>	111
16.2	<i>Management and Mitigation Measures</i>	113
16.3	<i>Aboriginal / Cultural Heritage Discovery Protocol</i>	115
16.3.1	<i>Suspected Human Remains</i>	116
16.4	<i>Inspection and Reporting</i>	116
16.5	<i>Cultural Heritage Management Sub-Plan</i>	116
17	TELEVISION AND RADIO RECEPTION MANAGEMENT SUB-PLAN (PRE-CONSTRUCTION)	
17.1	<i>Management and Mitigation Measures</i>	117
17.2	<i>Complaint Handling and Incident Response</i>	117
18	PEST ANIMAL MANAGEMENT SUB-PLAN	
19	PEST PLANT MANAGEMENT sub-PLAN	
20	TRAFFIC MANAGEMENT sub-PLAN	
PART C - OPERATIONS MANAGEMENT SUB-PLANS		
21	WILDFIRE PREVENTION & EMERGENCY RESPONSE PLAN	
21.1	<i>Risk of Fire</i>	127
21.2	<i>Native Vegetation and Archaeological/Cultural Significance</i>	128
21.3	<i>Asset Protection Zones</i>	128
21.4	<i>Management and Mitigation Measures</i>	128
21.5	<i>Complaint Handling and Incident Response</i>	131
21.6	<i>Inspections and Reporting</i>	131
22	NOISE MANAGEMENT SUB-PLAN	
22.1	<i>Operational Hours</i>	133
22.2	<i>Sensitive Receptors</i>	133
22.3	<i>Background Noise Levels</i>	135
22.4	<i>Operational Noise Limits</i>	135
22.5	<i>Management and Mitigation Measures</i>	135
22.6	<i>Complaint Handling and Incident Response</i>	137
22.7	<i>Inspections and Reporting</i>	137
23	TRAFFIC MANAGEMENT SUB-PLAN	
24	ARCHAEOLOGICAL MANAGEMENT SUB-PLAN (CULTURAL HERITAGE MANAGEMENT PLAN)	
25	PEST ANIMAL MANAGEMENT SUB-PLAN	
26	PEST PLANT MANAGEMENT SUB-PLAN	

27 BATS AND AVIFAUNA MANAGEMENT SUB-PLAN**28 LIGHTING MAINTENANCE SUB-PLAN**

28.1	<i>Relevant Criteria</i>	149
28.2	<i>Impact Minimisation Features</i>	150
28.3	<i>Management and Mitigation Measures</i>	150
28.4	<i>Complaint Handling and Incident Response</i>	152

LIST OF TABLES

Table 1.1	Roles and Responsibilities – Construction Phase	6
Table 2.1	Construction Activities	13
Table 3.1	Legislative Framework	17
Table 3.2	Relevant Planning Permit Conditions	21
Table 3.3	Secondary Approvals, Licences and Permits	23
Table 4.1	Qualitative Risk Analysis Matrix	28
Table 4.2	Risk Likelihood Descriptors	28
Table 4.3	Risk Consequence Descriptors	29
Table 4.4	Control Action Rating	30
Table 4.5	EMP Objectives and Targets	31
Table 6.1	Internal Communications Protocols	42
Table 6.2	Contact Details	42
Table 6.3	Distribution of Contact Details	43
Table 7.1	Summary of Monitoring Requirements	46
Table 7.2	EMP Audit Schedule	48
Table 11.1	Construction and Worksite Mitigation Measures	64
Table 12.1	Noise and Vibration Mitigation Measures	80
Table 12.2	Construction Noise Monitoring Programme	83
Table 13.1	Hydrocarbon and Hazardous Substance Mitigation Measures	87
Table 14.1	Sediment, Erosion and Water Quality Mitigation Measures	97
Table 14.2	Sediment, Erosion and Water Quality Monitoring Programme	100
Table 15.1	Blasting Mitigation Measures	106
Table 15.2	Blasting Monitoring Programme	108
Table 16.1	Archaeological Mitigation Measures	114
Table 21.1	Wildfire and Emergency Response Mitigation Measures	129
Table 22.1	Noise and Mitigation Measures	136
Table 22.2	Operational Noise Monitoring Programme	136
Table 28.1	Obstacle Lighting Monitoring and Maintenance	151

LIST OF FIGURES

Figure 1.1	Framework for Environmental Management	2
Figure 1.2	Approach for the Preparation of Sub Plans	4
Figure 1.3	Organisational Structure – Construction Phase	5
Figure 2.1	Site Location Plan	10
Figure 2.2	Turbine Layout & Site Facilities	11
Figure 2.3	Biological features	12
Figure 4.1	Example JHA Form	37
Figure 12.1	Location of Nearest Sensitive Receptors (Houses)	77
Figure 12.2	Representative Background Noise Levels	78
Figure 13.1	Spill Response Protocol	90
Figure 16.1	Recorded Archaeological Sites	112
Figure 16.2	Discovery Protocol	115
Figure 21.1	Bushfire Response Protocol	132
Figure 22.1	Location of Nearest Sensitive Receptors (Houses)	134
Figure 22.2	Representative Background Noise Levels	135

LIST OF ANNEXURES

<i>ANNEX A</i>	<i>ENVIRONMENTAL OBLIGATION REGISTER</i>
<i>ANNEX B</i>	<i>RISK REGISTER</i>
<i>ANNEX C</i>	<i>EROSION SEDIMENT CONTROL PLAN</i>
<i>ANNEX D</i>	<i>CULTURAL HERITAGE MANAGEMENT SUB-PLAN</i>
<i>ANNEX E</i>	<i>PEST ANIMAL MANAGEMENT SUB-PLAN</i>
<i>ANNEX F</i>	<i>PEST PLANT MANAGEMENT SUB-PLAN</i>
<i>ANNEX G</i>	<i>TRAFFIC MANAGEMENT SUB-PLAN</i>
<i>ANNEX H</i>	<i>BATS AND AVIFAUNA MANAGEMENT SUB-PLAN</i>

Glossary

Term	Definition
Audit	Systematic, independent and documented process for obtaining evidence and objectively evaluating the extent to which environmental management meets legislative, regulatory and permitting requirements.
Auditor	Person with appropriate training and competence who performs the audit.
Australian Height Datum (AHD)	Adopted by the National Mapping Council as the datum to which all vertical control for mapping (and other surveying functions) is referred.
EMP	Environmental Management Plan.
Continual improvement	Ongoing process of enhancing the EMP in order to achieve improvements in environmental performance.
Construction contractor	Prime Contractor engaged by Ryan Corner Development Pty Ltd (RCDP) to undertake construction activities associated with the Project.
Corrective action	Action to eliminate the cause of non-conformance.
Environment	Surroundings in which the Contractor operates including: air; water, land, natural resources, flora, fauna, humans, heritage and their interrelation.
Environmental aspect	Element of organisational activities or products that can interact with the environment.
Environmental assessment	Process of investigating the potential environmental impacts or effects of a proposed development, according to the Environment Effects Act 1978; enables informed decisions on whether a project with potentially significant environmental effects should proceed.
Environmental Control Plan (ECP)	A work instruction, which details the environmental protection or control methodology for a particular activity.
Environmental Effects Statement	Document describing the proposed development; the existing environment that may be affected; potentially significant environmental effects of the proposal; proposed measures to avoid, minimise or manage adverse environmental effects; and measures for monitoring and managing environmental effects. Project proponent is responsible for preparing an EES if the Minister for Planning decides that it is required. After the EES is completed and released for public comment, the Minister provides an assessment to the relevant decision-makers.
Environmental impact	Any changes to the environment, whether adverse or beneficial, wholly or partially resulting from the proposed construction activity.
Environmental management	The management system used to develop and implement the environment system policy and manage environmental aspects.
Environmental objective	Overall environmental goal, consistent with the environment policy that the project aims to achieve.
Environmental	Measurable results of an organisation's management of

Term	Definition
performance	environmental aspects.
Environmental policy	Overall statement of intent and direction relating to environmental performance as expressed by project management.
Environmental Protection Instructions (EPIs)	Instructions developed for all activities identified as high environment risk, describing actions to be taken to mitigate and minimise risk.
Environmental target	Detailed performance requirement that arises from the environmental objectives and are set in order to achieve those objectives.
Lagging indicator	A measurable factor that changes after the environment has changed; indicates change in the environment.
Leading indicator	A measurable factor that changes before the environment starts to follow a particular pattern or trend; may be used to predict changes in the environment.
Non conformance	Non fulfilment of a requirement.
Performance indicators	Indicators that have been developed as leading or lagging to monitor and assess performance.
Pollution prevention measure	Method employed to avoid, reduce or control the creation, emission or discharge of any type of pollutant or waste, in order to reduce adverse environmental impacts.
Preventive action	The action required to eliminate the cause of a possible non-conformance.
Procedure	Specified way to carry out an activity or a process.
Project environmental alert	Notice to provide important environmental information to the construction team; information may be triggered by a recent incident (not necessarily within the Project site but a similar project in Australia or another project being developed by the Proponent), infringement notice, change in acceptable work practices, significant weather changes, etc.
Record document	Document stating results achieved or providing evidence of activities performed.
RCDP	Ryan Corner Development Pty Ltd ABN: 75 130 542 915
Sub-contractor	Any company, body or person who is contracted to the Contractor for the purpose of supplying services or goods.

PART A - ENVIRONMENTAL MANAGEMENT FRAMEWORK

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The Ryan Corner Wind Farm Project (the Project) will involve the construction, commissioning and operation of up to 68 turbines, capable of generating up to 476,000 MWh of electricity per annum. The proponent is Ryan Corner Development Pty Ltd (RCDP), a wholly owned subsidiary of Union Fenosa Wind Australia Pty Ltd. Construction of the Project will be undertaken on behalf of RCDP by a construction contractor (yet to be appointed). The Project will make a substantial contribution towards meeting Victorian and Commonwealth Government renewable energy targets and reducing greenhouse gas emissions.

The *Ryan Corner Wind Farm Environmental Effects Statement and Application for Planning Permit, (Gamesa Energy Australia / TME Australia) October 2006* (EES) was prepared for the Project in 2006. The EES was endorsed by the Minister for Planning and in August 2008, the Minister granted Planning Permit No. 20060222 (the Planning Permit) for the Project.

The Planning Permit allows the use and development of land for a Wind Energy Facility and outlines conditional requirements, including preparation of an Environmental Management Plan (EMP) (Condition 13), which must be approved before development starts and is applicable during the life of the Project.

1.1**PURPOSE OF THE EMP**

This EMP establishes the management system and framework to guide proposed activities associated with the construction and operation of the Project and ensures that appropriate measures and processes are in place to manage identified environment risks and provide for ongoing continual improvement.

This EMP is based on the approach outlined in *Chapter 23 of the Ryan Corner Wind Farm Environmental Effects Statement and Application for Planning Permit, (Gamesa Energy Australia / TME Australia) dated October 2006*, as well as relevant State and Commonwealth legislation.

This EMP has also been prepared in accordance with requirements of the Planning Permit (No. 20060222) conditions and addresses both construction and operational phases of the Project. More specifically, this EMP addresses permit condition numbers 10, 13, 16, 19 and 24 (refer to Section 3.2).

RCDP and the future head construction contractor will ensure that management controls are appropriately implemented, regularly monitored and audited to assess their effectiveness. Changes to the controls will be instigated if they are not achieving their stated objectives, to the satisfaction of the Responsible Authority and any other relevant authorities.

1.2**RCDP'S ENVIRONMENTAL MANAGEMENT SYSTEM**

RCDP's Environmental Management System (EMS) is based on the International EMS standard, AS/NZ ISO 14001:2004. This EMP has been prepared giving consideration to the framework established by the RCDP EMS. The EMS underpins the commitment and management systems applied by all employees and sub-contractors of RCDP.

The key elements of the EMS include:

- RCDP corporate environmental policy (the controlling corporation is Union Fenosa Wind Australia);
- environmental risk assessment and identification of legal requirements;
- development of environmental objectives and targets for continual improvement;

- training, operational control, communication, emergency response, corrective and preventative actions; and
- audits and review.

RCDP is committed to responsible environmental management of the Project and believes that potential environmental risks can be effectively managed during the life of the Project. All construction and operation activities will be conducted in accordance with the Environmental Policy which outlines the Company's commitment to sound environmental management of the Project.

1.3 THE STRUCTURE OF THE EMP

This EMP has been prepared within the framework of RCDP's overarching EMS for addressing project-related environmental risks. The EMP establishes a framework to implement an integrated set of management plans prepared for the construction and operational phases of the Project (refer *Figure 1.1* overleaf). The framework also embraces the future head contractor's Construction Environmental Management Plan (CEMP), a condition of contract for the Project.

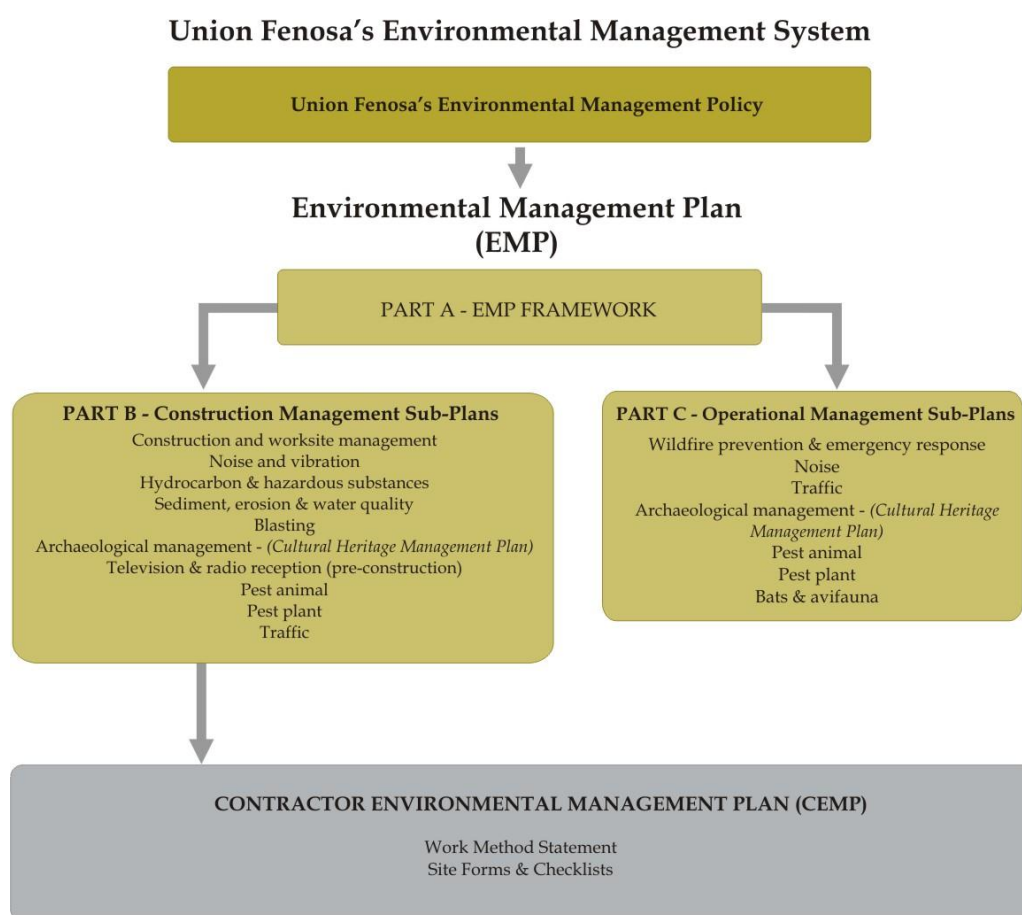


Figure 1.1 Framework for Environmental Management

This EMP has three parts. Part A sets out the management framework and arrangements during both operation and construction phases. It details approaches and procedures for:

- project overview;
- construction and operational activities;
- legislative and planning permit obligations;
- risk assessment and management;

- training;
- reporting;
- implementation timetable;
- communications and stakeholder management;
- incidents and emergency response;
- performance evaluation;
- document control; and
- review and improvement of the EMP.

Part B incorporates the Construction Management Sub-plans to be implemented during construction and address the specific requirements of the Planning Permit, other legislative obligations environmental mitigation measures established in the EES and from the Project risk assessment. The construction sub-plans include:

- Construction and Worksite Management;
- Noise and Vibration;
- Hydrocarbon and Hazardous Substances;
- Sediment, Erosion and Water Quality;
- Blasting;
- Archeological;
- Television and Radio Reception (pre-construction);
- Pest Animal;
- Pest Plant; and
- Traffic Management.

Part C incorporates the sub-plans for ongoing operations. These include:

- Wildfire Prevention and Emergency Response;
- Noise;
- Traffic;
- Archeological;
- Pest Animal;
- Pest Plant;
- Bats and Avifauna; and
- Lighting Maintenance.

All the sub-plans have been prepared giving consideration to relevant legislative obligations and the outcomes of the Project risk assessment. *Figure 1.2* overleaf provides an outline of the approach adopted for the preparation of the sub-plans.

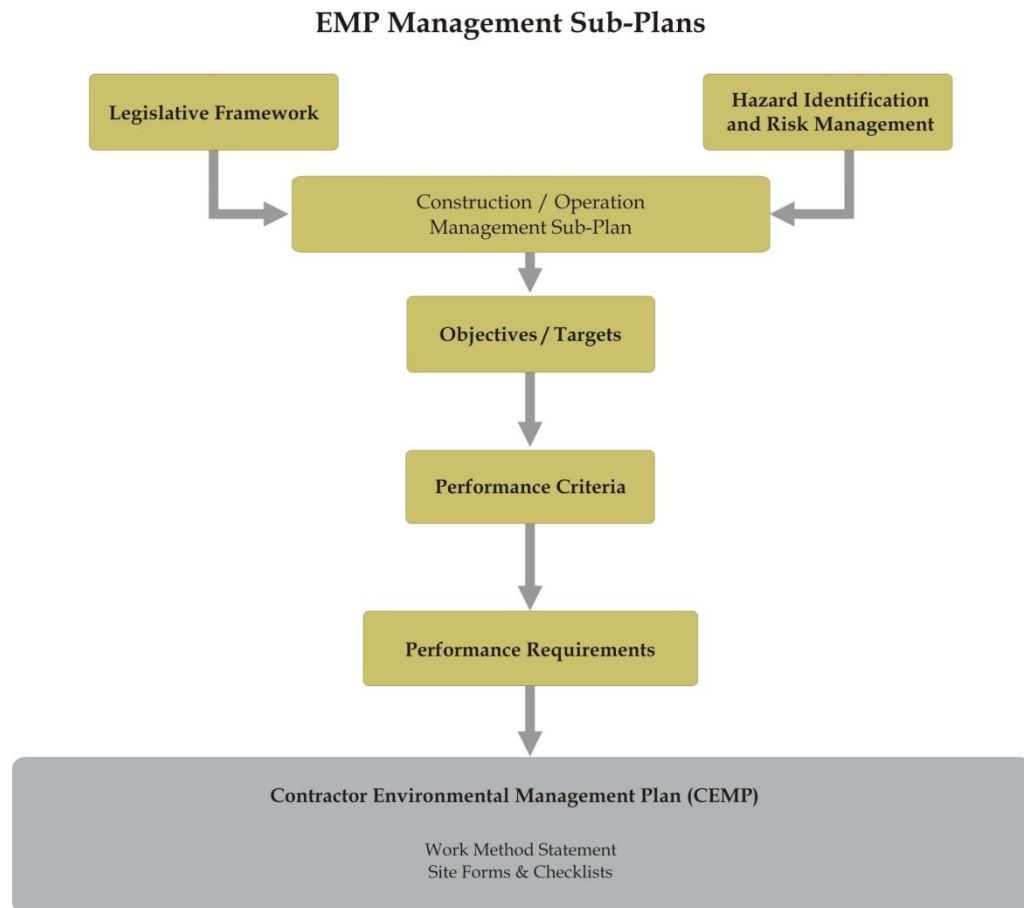


Figure 1.2 Approach for the Preparation of Sub Plans

1.4 CONTRACTOR ENVIRONMENTAL MANAGEMENT PLAN

The future head construction contractor will prepare their own Contractor Environmental Management Plan (CEMP) to comply with the requirements of this EMP. The CEMP will include Work Method Statements, Environmental Protection Instructions, Site Forms and Checklists and other documents to guide construction activities and manage environmental risks.

1.5 ORGANISATIONAL RESOURCES, ACCOUNTABILITIES AND RESPONSIBILITIES – CONSTRUCTION PHASE

RCDP is accountable for implementation of the EMP during construction. Both RCDP and the future head contractor will share some responsibilities for the implementation of the EMP during the construction phase.

All site staff have responsibilities and authorities in relation to environmental management including:

- the right and authority to stop work or refuse to work in a situation that may cause environmental harm;
- duties and responsibilities to prevent pollution; and
- obligations to respond to environmental incidents, including their prevention, cleanup and reporting.

These, and other general obligations, are included in the site induction (see Section 5.1). Persons with specific environmental responsibility are detailed in *Figure 1.3* and *Table 1.1*.

Environmental consultants may be commissioned by RCDP as required to provide specialist input and advice on environmental matters, undertake surveys, inspections and monitoring. Consultants may also be required to prepare environmental reports in consultation with the head construction contractor.

All contractors, sub-contractors and personnel are accountable through conditions of employment or contractual arrangements for ensuring that their work complies with the stated EMP framework and procedures.

The position duties and responsibilities of all staff will be defined in position descriptions, a copy of which is held by the RCDP Construction Project Manager.

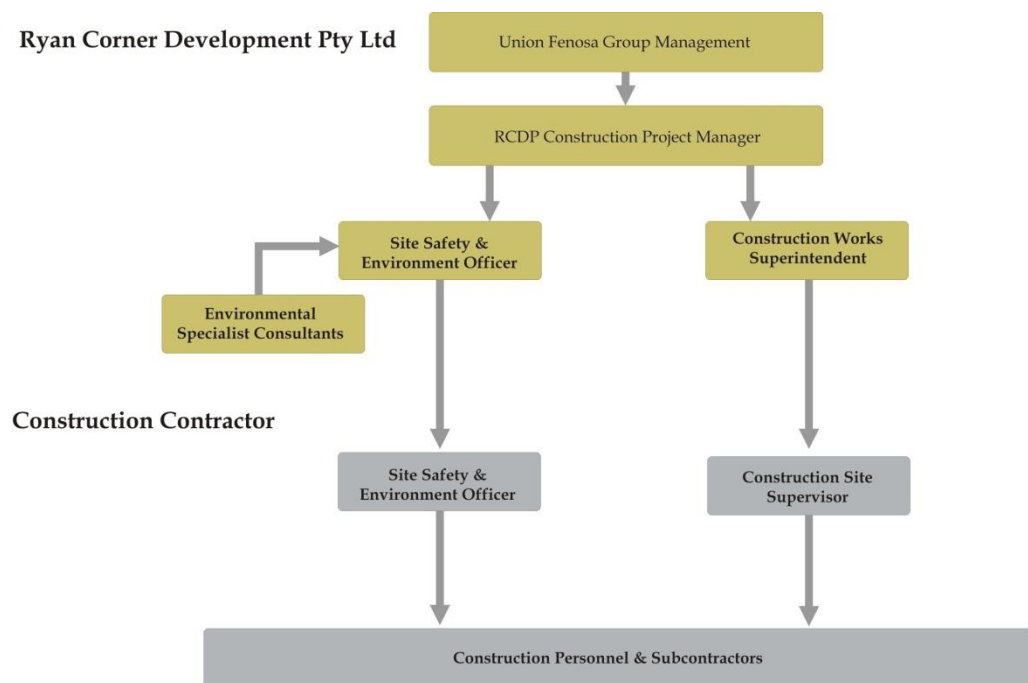


Figure 1.3 *Organisational Structure – Construction Phase*

Table 1.1 Roles and Responsibilities – Construction Phase

Role	Responsibilities
RCDP Group Management	Group management is accountable for the management of all risk (including environment) during the delivery of the Project. Group management is responsible for adequately allocating sufficient resources (personnel, financial and technical) to manage environmental risks.
RCDP Construction Project Manger	The Construction Project Manager is responsible for ensuring adequate environmental resources and budget is allocated to the Project. In addition the Construction Project Manager must ensure that the EMP has been developed and all hazards and risks associated with the works to be carried out have been identified and effective control measures implemented throughout the Project. The Construction Project Manager has overall responsibility to ensure corrective actions are implemented for issues raised and all community complaints are closed out. Authority must be given for: • approval of the EMP; and • dismissal of personnel if required for environmental non-compliance.
RCDP Site Safety & Environment Officer	The Site Safety and Environment Officer is responsible for ensuring the project proceeds without health, safety and environment risk to the persons, environment and property involved in the completion of the works. Authority might be given for stopping work if unacceptable impact is likely, or has occurred. The Site Safety and Environment Officer will be responsible for the management of all complaints received. This includes: • responding to the calls of the 1800 phone number and following up any messages left with community members; • responding to any email or postal complaints received; • coordination of appropriate corrective actions in response to the complaint; and • completion of the Community Complaints Form and updating of the Complaints Register. The Site Safety and Environment Officer will also: • ensure that all Project environmental obligations are met; • ensure no work requiring a licence or permit is undertaken without the (up to date) licence or permit required; • complete environmental inspections and checklists; • provide input and advice to engineers on work method statements; • provide environmental induction and training; • identify and prepare environmental induction and training materials; • liaise with government agencies and relevant stakeholders; • provide a regular construction program identifying critical construction activities to the EMR; • manage the environmental budget; • respond to environmental incidents;

Role	Responsibilities
	- manage environmental sub-consultants; - oversee the maintenance of environmental documents; - prepare reports on compliance; and - monitor the revegetation activities along the Project route.
RCDP Construction Works Superintendent	The Construction Works Superintendent is responsible for ensuring the implementation of relevant CEMP sub-plans and associated environmental controls.
Contractor Site Safety & Environmental Officer	The Contractor Site Safety and Environment Officer is responsible for ensuring that all works are performed safely and in an environmentally sound manner. The key responsibilities are to: - liaise with designers and the construction manager with regard to construction program and activities on-site; - provide input to the CEMP and sub-plans prior to the start of construction; - implement the Project environmental management system; and - maintain, assess and monitor the effectiveness of the EMP for controlling environmental risk.
Contractor Construction Site Supervisor	The Contractor Construction Site Supervisor is responsible for ensuring the implementation of relevant CEMP sub-plans and associated environmental controls.
Personnel	All construction employees are equally responsible for safety and environment management at the work sites. Specifically, they will support the hazard identification and risk management process: - identifying the hazards; - evaluating the risks; - implementing the control measures; and - evaluating and monitoring the controls.

1.6 ORGANISATIONAL RESOURCES, ACCOUNTABILITIES AND RESPONSIBILITIES – CONSTRUCTION PHASE

RCDP will be the operator of the Project and this EMP will be updated with an appropriate organisational structure prior to the commencement of the operational phase.

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PROJECT OVERVIEW

The Project is located in south-west Victoria approximately 12 km north-west of Port Fairy. The site is bounded by Youls Road to the west, Shaw River and Riverside Road to the north, Hamilton-Port Fairy Road to the east and Fingerboard Road and Smittens Road to the south. .

2.1

THE RYAN CORNER WIND FARM PROJECT

The Project will involve the installation of up to 68 turbines, capable of generating up to 476,000 MWh of electricity per annum.

The main components of the Project are:

- 68 Wind Turbine Generators (WTGs);
- a 33/132 kV on-site substation;
- underground/overhead electrical cable network, linking each turbine to the substation;
- external connection to the national electricity grid, through on-site and off-site electrical substations and associated power line connection;
- a control room/facilities building;
- two site access points (Youls Road and Hamilton-Port Fairy Road);
- a network of internal access tracks; and
- wind monitoring towers.

Figure 2.1 shows the location of the Ryan Corner Wind Farm.

Figure 2.2. shows the location of the proposed 68 wind turbines, nearby houses, surrounding roads and waterways. An indication of the existing surface contours is also shown as well as the location of the proposed concrete batching plant.

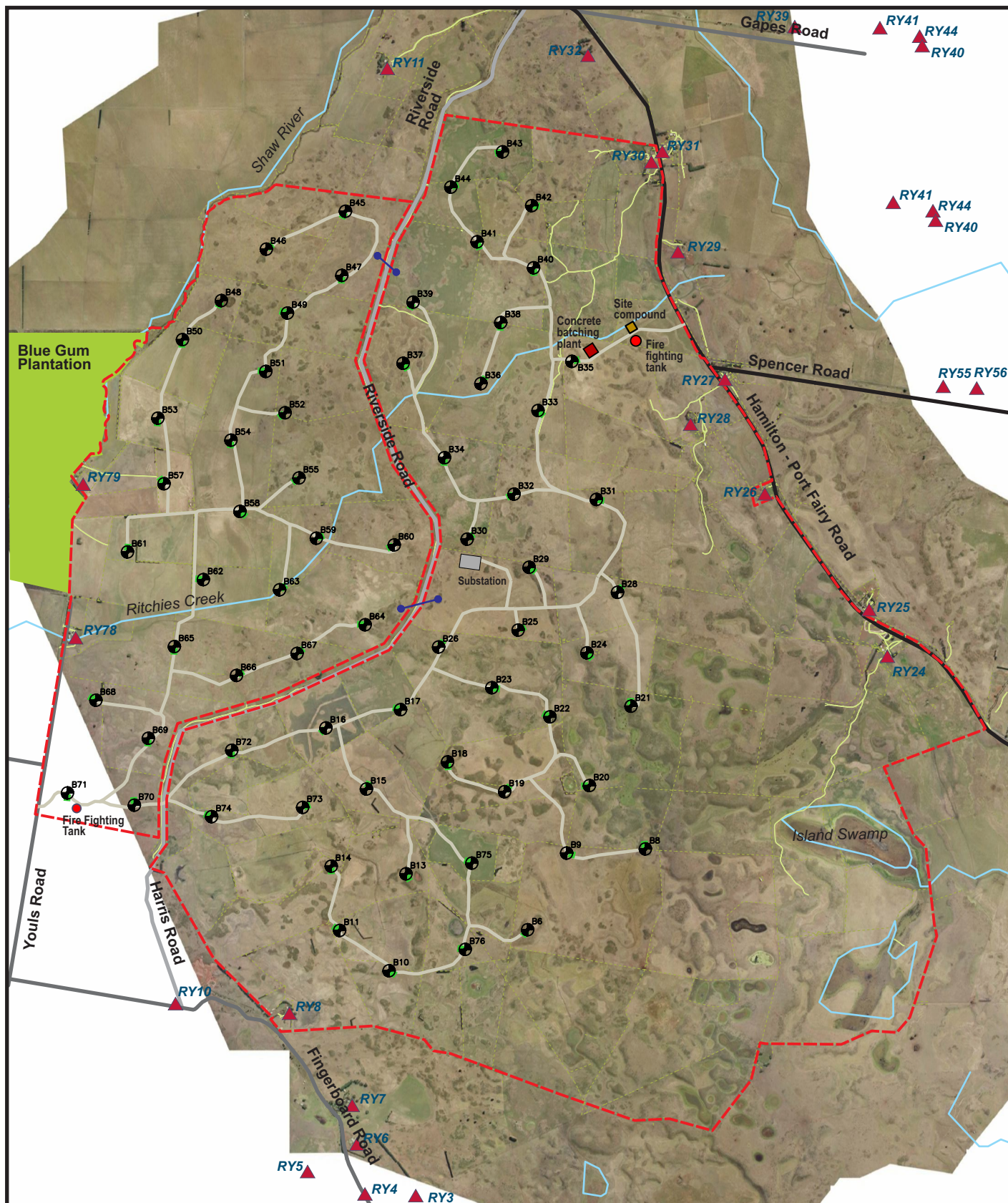
2.2

BIOLOGICAL FEATURES

The site's biological features are to be protected whenever possible. This EMP proposes measures to protect native vegetation.

Figure 2.3 shows the location of the biological features on the site.





Legend

- Site boundary
- Watercourse
- Main road
- Sealed road
- Unsealed road
- Existing tracks
- Existing fence lines
- Overhead cable crossing point
- Proposed access tracks
- ⊕ Wind turbine
- ▲ Houses
- On-Site Substation
- Concrete Batching Plant
- Site Compound
- Fire Fighting Tank

Client: Ryan Corner Development Pty Ltd

Project: Ryan Corner Wind Farm

Drawing No: 0105123m_02 Suffix No: R1

Date: 12/01/2012 Drawing size: A4

Drawn by: ML Reviewed by: -

Source: -

Scale: Refer to Scale Bar

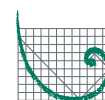


Figure 2.2

Turbine Layout

Environmental Resources Management Australia Pty Ltd

Level 3, Tower 3, World Trade Centre
18-38 Siddaley Street, Docklands, VIC 3005
Telephone +61 3 9696 8011



ERM



Legend

- Site boundary
- Watercourse
- Main road
- Sealed road
- Unsealed road
- Existing tracks
- Existing fence lines
- Proposed access tracks
- ⊕ Wind turbine
- High quality rocky knoll
- High quality grassland also Vegetation Protection Overlay (VP02) offsite
- Low quality grassland
- Non-indigenous vegetation (shelterbelt)
- Stone wall
- Proposed Environmental Significance Overlay

Client: Ryan Corner Development Pty Ltd

Project: Ryan Corner Wind Farm

Drawing No: 0105123m_03

Suffix No: R1

Date: 12/01/2012

Drawing size: A4

Drawn by: ML

Reviewed by: -

Source: -

Scale: Refer to Scale Bar



0 0.5 1km

Figure 2.3

Biological Features

Environmental Resources Management Australia Pty Ltd

Level 3, Tower 3, World Trade Centre
18-38 Siddesley Street, Docklands, VIC 3005
Telephone +61 3 9696 8011



2.3

CONSTRUCTION PHASE (ACTIVITIES AND TIMETABLE)

The construction activities of the Project are set out in *Table 2.1*.

Table 2.1 Construction Activities

Activity	Works Required
Site Establishment	Clearing of work areas, levelling and compaction, installation of portable buildings and installation, connection of utility services. Site survey.
Internal Road Works (access roads)	Removal of topsoil, levelling, sub-base compaction, gravel and drainage.
External Road Works	Upgrade existing roads where required. Provide access upgrades to the site (for over dimension vehicles).
Foundations	Removal of topsoil, excavation, screed concrete, reinforcement steel bottom, installation of foundation ring, reinforcement steel top, concreting, concrete ring and conduits and backfilling.
Concrete Batching Plant	Removal of topsoil, levelling, installation of plant, hardstand, bunding and wastewater recycling facility.
Crane Pad Establishment	Removal of topsoil, base compaction and rock/gravel compaction.
Trenches	Excavation, sand infill, conduit installation, backfilling and compacting and installation of cable route markers.
Substation Civil Works	Site survey, site clearing and levelling/compaction. Building foundations including excavation, formwork and concrete. Installation of columns, walls, roof, gutters, doors and floors. Installation of building services including plumbing, electrical, fire protection and security.
Control Building	Foundation works including excavation, formwork, reinforcement and concreting. Installation of columns, walls, carpentry, roof, floors and doors. Installation of services including plumbing, electrical, fire protection, air conditioning and security.
Switchyard Works	Site survey, site clearing and levelling/compaction. Equipment foundations including excavation, formwork, reinforcement steel, concrete and grouting. Oil containment and separation system including excavation, formwork, concrete, ladders, hatches, pipes and bund walls. Security Fencing.
Electrical Works	Control building switchboards, communications and supervisory control and data acquisition (SCADA) systems. Installation of cabling, switchgear, turbine control panels.
Turbine Supply	Transport of towers, nacelles, hubs and blades to site.
Turbine Erection	Erection of towers, nacelle, blades and installation of cabling.

Activity	Works Required
Substation Electrical Works	Installation of steel structures, busbars, transformers, equipment, earthing system and metering system.
Transmission Line Works	Surveying, site establishment, clearing, installation of foundations, poles / towers, conductors and fittings.
Wind Farm Commissioning	Pre-commissioning of turbines, SCADA, cables testing and optical fibre. Testing and commissioning of turbines, switchgear and SCADA.
Substation Commissioning	Testing and commissioning of transformers, equipment, earthing, cabling and wiring checks, protection relays, SCADA, communications and security systems.
Electricity Grid Cut-in	Site establishment, clearing and levelling / compaction. Installation of foundations, poles / towers and connections to 132kV transmission line.
Construction Closure	Site cleanup, revegetation and landscaping.

The construction works will be phased with activities being carried out at different locations across the site, so only a few locations will be disturbed at any one time. A precise staging plan will be prepared by the future head construction contractor in accordance with their accepted technical and commercial offer.

2.3.1 *Timetable for Implementation*

It is estimated that the whole construction period including preparatory works and site rehabilitation will take approximately 18 months from site preparation to completion. The typical timelines for construction of the principal elements of the wind farm are as follows:

- access roads – 32 weeks;
- foundations – 36 weeks;
- wind turbine supply and erection – 70 weeks;
- electrical works (cabling & substation) – 42 weeks; and
- commissioning and rehabilitation – 15 weeks.

2.3.2 *Hours of work*

Construction activities will be restricted to the hours of 7:00am and 6:00pm Monday to Friday, 7:00am to 4:00pm Saturdays and at no time on Sundays or public holidays. Blasting activities (if required) will take place only between 8:00am and 4:00pm Monday to Saturday. In circumstances where specific work activities are required outside of these hours, they will be strictly managed in accordance with the appropriate management sub-plans and consultation with the relevant stakeholders.

2.3.3

Property Access

RCDP will, prior to the commencement of construction, consult with each landholder whose property is directly impacted by the Project regarding the terms and conditions relating to access arrangements for construction activities on their land.

Primary access routes to and from properties will be kept open for the duration of construction works or alternative access will be provided to landholders.

2.4

OPERATION PHASE (ACTIVITIES AND TIMETABLE)

The Ryan Corner Wind Farm is designed to operate automatically using a computerised (SCADA) system. Notwithstanding this, it will be supervised by between four and ten operating staff during normal week-day business hours. In addition, the wind farm will be supported by continuous out-of hours monitoring with local 'on-call' staff available to respond to operational problems and alarms from computerised systems.

The SCADA system will monitor and control all functions of the turbines to ensure that they are operating at optimum performance within the wind speed design envelope. The nature of wind energy is that it is not always suitable for operation of a wind farm. The wind speed may be too low to turn the blades at sufficient speed to generate power, or too strong for safe operation. Hence, the rotational speed and the angle of the wind-turbines will be automatically modified to maximise overall efficiency.

Maintenance requirements depend on the number and design of the turbines. Typical maintenance activities will include:

- monthly maintenance of each turbine generator and electrical infrastructure;
- routine scheduled maintenance every six months, involving inspection of all machinery, greasing of bearings and checking of hydraulic oil etc.;
- replacement of gearboxes after approximately 10 years;
- periodic painting of the tower structure (the fibreglass nacelle and blades are not expected to require repainting within the lifetime of the Project);
- minor maintenance including the replacement of electronic and electrical components;
- maintenance of tracks and parking areas, and other site infrastructure such as drainage and erosion control structures, to ensure that access is available to all structures; and
- routine maintenance of the substation, such as insulator cleaning, removal of debris from the switchyard and greasing of contacts.

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The overarching legislation for the planning and environmental approvals associated with the Project was determined by the Victorian Government under the *Environment Effects Act 1978*, the *Planning and Environment Act 1987*, and the Moyne Shire Planning Scheme. The responsible authority for the administration and enforcement of the Planning Permit is Moyne Shire Council.

3.1 LEGISLATIVE FRAMEWORK

In identifying, understanding and complying with the legislative requirements, RCDP and the future construction contractor and operations staff will initially refer to the legislative requirements outlined below in *Table 3.1*. The general environmental legislative framework relevant to the Project has been outlined along with the associated agencies responsible for the administration of the legislation.

Table 3.1 Legislative Framework

Legislation	Applicability to Project	Administrative Authority
Environment Protection and Biodiversity Conservation Act 1999	Provides for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance. The Project was determined as a <i>not controlled</i> action.	Department of Environment, Water, Heritage and the Arts
Environment Effects Act 1978	The Victorian <i>Environment Effects Act 1978</i> provides for the environmental impact assessment of proposals with potentially significant effects. The Act sets up a procedure for the potential environmental impacts of a proposed development to be carefully assessed before any decision is made on the development. The Minister for Planning has sole discretion for determining whether a project requires an EES, the mechanism by which the Act is implemented. The EES for the Project has been endorsed by the Minister for Planning.	The Minister for Planning

Legislation	Applicability to Project	Administrative Authority
Planning and Environment Act 1987 and Moyne Planning Scheme	The purpose of the <i>Planning and Environment Act 1987</i> is to establish a framework for planning the use, development and protection of land in Victoria in the present and long-term interests of all Victorians. The <i>Planning and Environment Act 1987</i> requires that a planning framework, termed a Planning Scheme, be established for all land within Victoria. A planning scheme is a statutory document which sets out objectives, policies and provisions relating to the use, development, protection and conservation in the area to which it applies, which in this case is the Moyne Shire Council. The Minister for Planning granted Planning Permit No. 20060222 for the Project in August 2008. The Minister for Planning also granted Planning Permit No. PL07/067 in August 2008 and allows the relevant native vegetation on Crown Land to be removed, lopped or destroyed, subject to approval of a Vegetation Offset Management Plan and permit under the <i>Flora and Fauna Guarantee Act 1988</i>/Wildlife Act 1975.	Minister for Planning, Moyne Shire Council
Flora and Fauna Guarantee Act 1988	The <i>Flora and Fauna Guarantee Act 1988</i> is designed to protect flora and fauna on Crown land. A permit is required from DSE for activities on public land which might kill, injure or disturb protected native plants and animals. A permit will be required where native vegetation is proposed to be removed on Crown lands at the site, potentially in areas where existing roads are to be widened/ improved at the access points onto the site, and at the track crossing of Harris Road. A permit under the <i>Flora and Fauna Guarantee Act</i> will be obtained prior to works commencing.	Department of Sustainability and Environment
Wildlife Act 1975	The Wildlife Act 1975 is the primary legislation in Victoria providing for protection and management of wildlife. Approval under the Act is required to remove or destroy wildlife which is in a prescribed category under the <i>Flora and Fauna Guarantee Act</i>.	Department of Sustainability and Environment

Legislation	Applicability to Project	Administrative Authority
Environment Protection Act 1970	The <i>Environment Protection Act 1970</i> requires that a Works Approval be obtained from the Environment Protection Authority (EPA) to establish scheduled premises. Such premises are specified in the Environment Protection (Scheduled Premises and Exemptions) Regulations 1996. A concrete batching plant designed to produce more than 100 tonnes per annum is a scheduled premises and normally requires a Works Approval. However, the EPA has previously advised that a Works Approval is not required for the temporary concrete batching plant associated with this Project. The Act makes provisions for a number of regulations including the Environment Protection (Industrial Waste Resource) Regulations 2009 and Environment Protection (Vehicle Emissions) Regulations 2003, and the development of Waste Management Policies (WMPs) and State Environment Protection Policies (SEPP's) including: • WMP (Protection of the Ozone Layer) • WMP (Used Packaging Materials) • SEPP (Air Quality Management) • SEPP (Ambient Air Quality) • SEPP (Waters of Victoria) • SEPP (Groundwaters of Victoria) • SEPP (Prevention and Management of Contamination of Land) The proposed construction of the development must have regard to the relevant provisions of the WMPs and SEPPs.	Environmental Protection Agency
Water Act 1989	The <i>Water Act 1989</i> provides Water Authorities with a range of enforcement powers and imposes obligations on persons and organisations not to interfere with assets of Water Authorities, waterways and water. A permit is required for construction activities interacting with waterways.	Glenelg Hopkins Catchment Management Authority
Catchment and Land Protection Act 1994	The purpose of the <i>Catchment and Land Protection Act 1994</i> includes to set-up a framework for the integrated management and protection of catchments, to encourage community participation in the management of land and water resources and to set up a system of controls on noxious weeds and pest animals.	Department of Primary Industries
Heritage Act 1995	The <i>Heritage Act 1995</i> establishes a legislative framework for heritage protection in Victoria.	Heritage Victoria (Department of Planning and Community Development), Heritage Council

Legislation	Applicability to Project	Administrative Authority
Crown Land (Reserves) Act 1978	The <i>Crown Land (Reserves) Act 1978</i> covers a range of government owned land which includes National and other parks, State forests, and public purpose reserves. Approval will be required from the Moyne Shire Council to undertake all road construction works, and to construct the overhead cabling in the Harris Road/Riverside Road reserve pursuant to the Crown Land (Reserves) Act 1978 and the Road Management Act 2004. Similar approvals will also be required for other road improvement works (e.g. Youls Road and Hamilton-Port Fairy Road).	Department of Sustainability and Environment
Aboriginal Heritage Act 2006	The Aboriginal Heritage Act 2006 replaces Part IIA of the Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Comm.) and the Archaeological and Aboriginal Relics Preservation Act 1972 (Vic.). The new Act allows for greater protection of Aboriginal cultural heritage and permits increased Aboriginal community involvement in the decision making process. In accordance with the Act, a Cultural Heritage Management Plan has been prepared and approved for the Project. In the event that any Aboriginal sites are discovered, consent will be required to disturb such sites in accordance with the Aboriginal Heritage Act 2006.	Secretary to the Department for Victorian Communities and Aboriginal Affairs Victoria
Victorian Renewable Energy Act 2006	The <i>Victorian Renewable Energy Act 2006</i> promotes the development of renewable energy generation. This Act established a scheme that provides for the creation and acquisition of renewable energy certificates by large electricity consumers or retailers and requires the surrender of these certificates to demonstrate that renewable energy has been generated.	Essential Services Commission
1. Applicable legislation will be reviewed and confirmed, and any necessary approvals sought prior to commencement of construction and operation. 2. A range of other legislative obligations may be applicable to the construction/operation phases of the Project. This table intends to highlight those key legislative obligations relevant to the Project.		

3.2

PLANNING PERMIT CONDITIONS

The use and development of the land for the Project is granted under the Planning Permit (Permit No. 20060222). This EMP has been prepared primarily to meet *Conditions 10, 13, 16, 19 and 24* of the Planning Permit requiring that before the commencement of development, an EMP be prepared for the Project.

The Planning Permit requirements for the EMP are outlined below in *Table 3.2*, which includes the preparation of a number of management sub-plans.

Table 3.2 Relevant Planning Permit Conditions

Condition	Detail	EMP Response
Condition 10	Traffic Management Plan	EMP Construction and Operational Sub-Plan
Condition 13a	Construction and Work Site Management Plan	EMP Construction Sub-Plan
Condition 13b	Sediment, Erosion and Water Quality Management Plan	EMP Construction Sub-Plan
Condition 13c	Blasting Plan	EMP Construction Sub-Plan
Condition 13d	Hydrocarbon and hazardous substances plan	EMP Construction Sub-Plan
Condition 13e	Wildfire Prevention and Emergency Response plan	EMP Operational Sub-Plan
Condition 13f	Archaeological Management Plan (Cultural Heritage Management Plan)	EMP Construction and Operational Sub-Plan
Condition 13g	Pest Animal Management Plan	EMP Construction and Operational Sub-Plan
Condition 13h	Pest Plant Management Plan	EMP Construction and Operational Sub-Plan
Condition 13i	Training Program	EMP
Condition 13j	A program for reporting	EMP
Condition 13k	Implementation Timetable	EMP
Condition 16	Bats & Avifauna Management Plan	EMP Operational Sub-Plan
Condition 19	Post construction Noise Monitoring Program	EMP Operational Sub-Plan
Condition 24	Television & Radio Reception pre-construction survey	EMP Construction Sub-Plan

3.3 ENVIRONMENTAL OBLIGATIONS REGISTER

RCDP and the future construction contractor will further develop an Environmental Obligations Register: an electronic database of environmental requirements, safeguards, project commitments and monitoring requirements. The Environmental Obligations Register will be reviewed and endorsed by key construction personnel to ensure that the controls can be practically applied to achieve the required environmental outcomes.

The Environmental Obligations Register will be structured to enable evidence of compliance to be linked to each project commitment for ease of reporting, tracking compliance, and demonstrating to Moyne Shire Council and relevant Government agencies that project commitments and approval conditions are being progressively satisfied.

The Register will include as a minimum the following items:

- planning and environmental (permits, licences,) conditions of approval;
- relevant legislation;
- EES commitments;
- industry standards and guidelines; and
- State, regional and local policies.

The Register will be regularly reviewed (minimum quarterly) and amended as additional approvals/licences/permits are received. The construction contractor will also have a process in place to ensure changes to legislative requirements are identified. This may include subscription to 'EnviroLaw'.

A template Environmental Obligations Register has been included as *Annex A* and will be used as a basis for finalisation prior to the commencement of construction.

Similarly, this EMP will undergo continual review in response to changes in environmental legislation and/or the environmental management procedures and policies developed by RCDP and the construction contractor.

3.4 *SECONDARY APPROVALS, LICENCES & PERMITS*

The likely secondary approvals, licences and permits required for the Project are set out in *Table 3.3*.

RCDP and the construction contractor will ensure that each necessary approval, licence and permit is obtained prior to the commencement of any work that requires such consent.

Table 3.3 Secondary Approvals, Licences and Permits

Legislation / Policy	Applicability to Project	Approval Potentially Required	Administrative Authority
<i>Planning and Environment Act 1987</i> and Moyne Planning Scheme	Removal of Native Vegetation Business Signage	Permit/consent to clear additional native vegetation on road reserves to facilitate construction access. A planning permit to paint business signs on the nacelle. Permit for 'in principal' removal of vegetation has been obtained.	Department of Planning and Community Development Moyne Shire Council
<i>Flora and Fauna Guarantee Act 1988</i>	Removal of Native Vegetation	A permit will be required where protected native vegetation is proposed to be removed on Crown lands at the site, potentially at areas where existing roads are to be widened/improved, at the access points onto the site, and at the track crossing of Harris Road. This includes removal of any Black Wattle trees, and removal of Plains Grassland. A permit under the Flora and Fauna Guarantee Act will be obtained prior to works commencing.	Department of Sustainability and Environment
<i>Wildlife Act 1975</i>	Removal of Native Vegetation	A permit is required to remove or destroy wildlife which is in a prescribed category under the Flora and Fauna Guarantee Act.	Department of Sustainability and Environment
<i>Environment Protection Act 1970</i>	Works Approval for scheduled premises/ activity General environment protection duties	A concrete batching plant designed to produce more than 100 tonnes per annum is a scheduled premises and normally requires a Works Approval. However, the EPA has previously advised that a Works Approval is not required for a temporary concrete batching plant associated with this Project.	Environmental Protection Agency
<i>Environment Protection Act 1970</i>	EPA and Council approval for onsite wastewater treatment systems	The Environment Protection Act 1970 defines on-site wastewater systems treating no more than 5,000 litres per day of wastewater of domestic origin as 'septic tank systems', which are subject to a two-stage approval process: EPA Victoria approves the types of on-site systems that may be installed in Victoria;	Environmental Protection Agency Moyne Shire Council

Legislation / Policy	Applicability to Project	Approval Potentially Required	Administrative Authority
		Municipal councils administer a permit system which regulates the installation, maintenance and monitoring of individual units at specific sites.	
<i>Crown Land (Reserves) Act 1978</i>	Proposed works on Government owned land	Approval will be required to undertake all road construction works, and to construct the overhead cabling in the Harris Road/Riverside Road reserve.	Moyne Shire Council
<i>Aboriginal Heritage Act 2006</i>	Protection of Aboriginal cultural heritage values	In the event that any Aboriginal sites are discovered, consent will be required to disturb such sites.	Aboriginal Affairs Victoria
Not Applicable	Movement of Over Dimension loads	Approval will be required from VicRoads if the movement of Over Dimensional loads is required.	VicRoads
<i>Road Management Act 2005</i>	Construction of transmission lines	Approval will be required from VicRoads if any proposed transmission lines are located within an Arterial Road under the Road Management Act 2004.	VicRoads
<i>Water Act 1989</i>	Works on waterways	A permit will be required for the construction of all waterways crossings for access tracks and utilities conduits prior to works commencing.	Glenelg-Hopkins Catchment Management Authority
1. Applicable secondary approvals/permits etc. will be reviewed and confirmed prior to commencement of construction and operation.			

3.5 OTHER RELEVANT GUIDELINES

Other applicable guidelines include:

- EPA, Bunding Guidelines, 1992.
- EPA, Environmental Guidelines for Major Construction Sites, Publication 480, 1995.
- EPA, Construction Techniques for Sediment Pollution Control, Publication 275, 1991.
- EPA, Guidance on Applying for EPA Approval of an On-site Wastewater System, Publication 935, 2004.
- EPA, Guidelines for Environmental Management Code of Practice – On-site wastewater Management, Publication 891.2, 2008.
- EPA, Environmental Guidelines for the Concrete Batching Industry.
- EPA, A Guide to the Sampling and Analysis of Waters, Wastewaters, Soils and Wastes, Publication 448.
- EPA, Classification of Wastes, Publication 448.
- CSIRO, Urban Stormwater Best Practice Environmental Management Guidelines, 1999.
- EPA, Noise Control Guidelines, Publication 1254, 2008.

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4 HAZARD IDENTIFICATION AND RISK MANAGEMENT

The identification of the significant environmental aspects and impacts that could eventuate during construction of the Project is central to the selection of appropriate environmental safeguards.

The environmental aspects are those operations that may result in an environmental impact (a risk event). The relationship of aspects and impacts is one of cause and effect. The process of identifying risk events and associated impacts is one of progressively breaking down each activity into its environmental aspects.

4.1 RISK PROCESSES

The environmental hazards and risks associated with the proposed construction and operational activities will be identified and assessed by RCDP and the construction contractor prior to commencing work and throughout the construction and operational phases.

The risk assessment process is based on AS/NZS 4360:2004 and HB203:2006, *Environmental Risk Management Principles and Processes*, and identification of potential environmental emergencies/incidents that may be encountered during the Project construction/operation.

The risk management process follows the following steps:

- Step 1: Identify the hazard – does the work activity contain potential hazards?
- Step 2: Put immediate, temporary controls in place.
- Step 3: Conduct a risk assessment, based on the principle Risk = Likelihood x Consequence.
- Step 4: Put permanent controls in place to reduce the risk to As Low As Reasonably Practicable (ALARP).

Environmental Protection Instructions (EPIs) (or equivalent) will be developed for all activities identified in the risk assessment process as being of high or very high environmental risk. The EPIs will describe actions to be taken to mitigate and minimise the environmental risks.

Examples of risks include construction and operational activities that have the potential to:

- cause the discharge or release of pollutants to water, air, or land;
- damage flora, fauna or heritage;
- create change to the environment, including noise; and
- generate wastes.

4.2 QUALITATIVE RISK ASSESSMENT

The qualitative risk analysis matrix in *Table 4.1* provides a guide to predicting the potential level of risk of project activities. This qualitative approach will be adopted throughout the Project lifecycle for the assessment of risk.

The potential environmental/community consequences or impacts of the activity, and the likelihood of an incident occurring when undertaking activities, will be rated as Very High, High, Medium or Low.

Table 4.1 Qualitative Risk Analysis Matrix

	CONSEQUENCE				
LIKELIHOOD	Insignificant	Minor	Moderate	Major	Critical
Almost Certain	Medium	High	High	Very High	Very High
Likely	Medium	Medium	High	High	Very High
Possible	Low	Medium	High	High	High
Unlikely	Low	Low	Medium	Medium	High
Rare	Low	Low	Medium	Medium	High
1. Risks assessed as either Very High or High are considered 'significant' and therefore require either treatment measures to be implemented or are unacceptable.					

Risks assessed as either Very High or High are considered 'significant' and therefore require either treatment measures to be implemented or are considered unacceptable.

Table 4.2 provides a guide to the assessment of likelihood.

Table 4.2 Risk Likelihood Descriptors

Likelihood	Descriptor
Almost certain	Almost inevitable outcome, the event is expected to occur in most circumstances.
Likely	Not a certainty but such an event is known to have occurred and represents a creditable scenario. There is a good chance the event will occur.
Possible	Could happen, easy to imagine a feasible scenario where the situation could exist but it would be unusual for the event to occur.
Unlikely	Conceivable, occurrence would require multiple failures of systems and controls, but it would be remotely possible for the event to occur.
Very unlikely	Little or no chance of occurrence. Would require a combination of factors for the situation to result. The event has not known to have happened, but it is possible given the wrong circumstances.

Table 4.3 provides a guide to the assessment of consequence.

Table 4.3 Risk Consequence Descriptors

	People / Industrial Relations / Society	EBIT / Contribution	Plant	Environment	Tendering / Contractual	Reputation
Critical	Single or multiple fatalities IR dispute targeting multiple sites	EBIT impact greater than \$10M	Unavailability of key resources (assets, people or consumables) for an extended period of time	Irreparable/long term damage to a large or critical aspect of the natural environment	Serious non-performance on contract Major client insolvency	Negative national media event Intervention by government agency and licence to operate is revoked
Major	Life threatening incident resulting in serious LTI or ongoing illness/health effects Inability to attract/retain key staff to meet contract Protracted IR dispute at one site	EBIT impact of between \$2M and \$10M	Unavailability of key resources (assets, people or consumables)	Major damage with medium term impact on the natural environment, remediation with six to twelve months	Non-performance against contract schedule Critical sub-contractor non-performance	Employee's actions impact reputation on a specific site Investigation by government agency
Moderate	Incident that requires medical treatment by a qualified medical practitioner Loss of key individuals A single IR event at a single site	EBIT impact of between \$0.5M and \$2M	Equipment performance below contract tender rates for less than 3 months	Localised short-term controllable impact on the natural environment, remediation expected within one month	Rework requiring additional resources Moderate sub-contractor non-performance	Employee's actions impact on a specific site Investigation by government agency
Minor	Injury requiring first aid treatment only Delays in filling vacancies Isolated IR issue handled at site	EBIT impact of between \$50K and \$0.5M	Equipment performance below contract tender rates for less than 1 month	Localised impact on the natural environment, remediation expected within one day.	Rework using existing resources	Employee's actions cause no impact on a specific site
Insignificant	No injuries	EBIT impact less than \$50K	Equipment performance below contract tender rates for less than 1 week	Negligible impact on the environment which is difficult to notice and does not require remedial action.	Insignificant rework using existing resources	Trivial unsubstantiated community complaints

Table 4.4 provides a guide to the control actions required according to the risk classification.

Table 4.4 Control Action Rating

Rating	Overview / Guide
Very high	Extreme risk, immediate action required
High	High risk, senior management attention needed
Moderate	Moderate risk, management responsibility must be specified
Low	Low risk, manage with routine procedures

4.3 RISK REGISTER

On the basis of the hazard identification and risk management processes described above a risk assessment has been prepared for construction and operation phases for the Project. The outcomes of the risk assessment are documented in a risk register, enclosed at *Annex B*.

A further risk workshop will be undertaken prior to site mobilisation to allow relevant personnel to discuss and formulate the controls required to reduce the identified risks to acceptable levels. The risk register will be revised at this point if controls differ from those already implemented.

4.4 OBJECTIVES, TARGETS AND KEY PERFORMANCE INDICATORS

Table 4.5 describes the key environmental factors identified in the risk assessment, EES and approval documentation. The table also identifies objectives, targets and key performance indicators (KPIs) for each of these issues. Assessing whether the identified objectives and targets have been achieved will require regular inspection, measurement, monitoring and audit activities.

KPIs will be further developed by RCDP and the construction contractor to demonstrate the achievement of objectives and targets, and continual improvement. KPIs include areas such as:

- regulatory compliance;
- compliance with EMP processes;
- demonstration of continuous improvement;
- reportable environmental incidents or offences; and
- minimising environmental impacts and meeting objectives.

Table 4.5 outlines the EMP objectives, targets, and key performance indicators for the Project.

Table 4.5 EMP Objectives and Targets

Issue	Objective	Target	Key Performance Indicator
Construction and Worksite Management	To protect local amenity, assets and the environment during construction and operation.	Air pollution resulting from construction and operations and associated activities is minimised. Zero air quality related complaints from the community. No environmental impacts result from the generation, storage, transport or disposal of waste materials. Minimise waste to landfill and maximise re-use and recovery rates. Prevent the risk of fire from construction activities by implementing wildfire prevention measures. Compliance with specified regulatory requirements including conditions of approval related to the treatment, storage and disposal of contaminated soils. Avoid degradation to the environment relating to the disturbance of contaminated soils on the site.	EMP or management sub-plans
Noise and Vibration	To protect local noise amenity during construction and operation.	Noise related impacts resulting from construction and operations, and associated activities are minimised. Construction activities occur from: Monday to Friday 7:00am to 6:00pm; Saturday 7:00am to 4:00pm and no work on Sundays or Public Holidays. Blasting activities only between 8:00am and 4:00pm Monday to Saturday. Zero noise related complaints from community.	Noise and Vibration Management Sub-Plan

Issue	Objective	Target	Key Performance Indicator
Hydrocarbon and Hazardous Substances	Protect human health and the environment through management of any contamination and use of hazardous substances and dangerous goods. Protect the quantity and quality of groundwater consistent with the relevant State water policies.	Hazardous materials (including chemicals and fuels) must be stored within bunded areas in accordance with EPA Bunding guidelines, and must ensure that any spills do not enter the site stormwater system. Limit the on-site storage of hazardous substances. Emergency response and contingency plans are in place. Spill response kits to be available on-site and maintained to relevant standards. Employees and neighbours are not exposed to unacceptable risk.	Hydrocarbon and Hazardous Substances Management Sub-Plan
Sediment, Erosion and Water Quality	To manage sediment, erosion and water quality consistent with relevant State waste policies and guidelines.	Stormwater management measures comply with relevant guidelines and incorporate Water Sensitive Urban Design (WSUD) principles. Implement opportunities (where possible) for roof runoff and stormwater containment and/or reuse on-site. Chemical storage and delivery areas are bunded in accordance with the EPA Bunding guidelines. Minimise areas disturbed, locate stockpiles to protect drainage lines, install erosion control devices and monitor erosion control measures.	Sediment, Erosion and Water Quality Management Sub-Plan
Blasting	The objective is to ensure all blasts are planned and implemented to ensure compliance with regulatory requirements and conditions of consent.	The community is informed of the planned time and date of pending blasts. Road closures and evacuations occur within the zone of exclusion. Blast monitoring stations are operational. Required levels of ground vibration and air blast are not exceeded. No flyrock is emitted beyond the zone of exclusion. No visible emissions of dust/fumes from site. All complaints are recorded and responded to in a timely and professional manner.	Blasting Management Sub-Plan

Issue	Objective	Target	Key Performance Indicator
Aboriginal / Cultural Heritage	To minimise the impacts on Aboriginal archaeological sites, heritage sites and cultural values.	Disturbance to Aboriginal heritage is avoided or minimised wherever practicable. Where disturbance of items of Aboriginal heritage is unavoidable, appropriate management measures ensure protection of all disturbed items. Disturbance to European heritage is avoided or minimised wherever practicable. Where disturbance of items of European heritage is unavoidable, appropriate management measures ensure protection of all disturbed items.	Archaeological Management Sub-Plan (Cultural Heritage Management Plan)
Television and Radio Reception	To avoid impacts on television and radio reception during the operation of the facility.	Television and radio reception related impacts resulting from operations and associated activities are minimised. Zero television and radio reception related complaints from community.	Television and Radio Reception Management Sub-Plan
Pest Animal	To ensure that the activities of the project do not exacerbate existing pest animal impacts so as to cause economic or environmental impacts to landholders.	Control the population of rabbits and foxes within the site to meet the requirements under the Catchment and Land Protection Act 1994 (CALP Act) for established pest animals. No net increase in the impacts of foxes and rabbits on agricultural and environmental values within the site.	Pest Animal Management Sub-Plan
Pest Plant	To ensure that the activities of the project do not exacerbate existing weed impacts so as to cause economic or environmental impacts to landholders.	Meeting the requirements of the CALP Act in relation to control of listed noxious weeds within the study area. Achieving control and eradication of key (noxious) weed species within the construction phases (for the duration of the project). No net increase in the cover of environmental weeds. Minimise impacts to native flora and fauna.	Pest Plant Management Sub-Plan
Traffic	To minimise inconvenience to existing road users and any damage to public roads.	Traffic managed in accordance with Council and VicRoads requirements.	Traffic Management Sub-Plan

Issue	Objective	Target	Key Performance Indicator
Wildfire Prevention and Emergency Response	To manage wildfire and emergency events to prevent injury, damage to property and assets and protect the environment.	Prevent, mitigate and suppress bush and other fires at the Project site. Co-ordinate bushfire fighting and bushfire prevention at the site. Protect people from injury or death and property from damage and as a result of bush fires. Protect the environment.	Wildfire Prevention and Emergency Response Plan
Bats and Avifauna	To confirm and ensure that operation of the Ryan Corner Wind Farm will not prejudice the survival of populations of bat and bird species of concern, including: - Southern Bent-wing Bat; - Brolga; and - Any species of bat or bird listed on the Australian Environment Protection and Biodiversity Conservation Act 1999, or the Victorian Flora Guarantee Act 1988.	Minimise impacts to bats and avifauna.	Bats and Avifauna Management Sub-Plan
Native Vegetation	To avoid any unauthorised and/or unnecessary damage to or removal of native vegetation.	Design all aspects of project to avoid and minimise impacts on native vegetation, all construction and operational access kept to designated access tracks. No unauthorised use of Riverside Road. Where practical, undertake construction of turbine bases, access tracks and power cabling during warmer months to minimise impacts on ephemeral wetland and local fauna.	Construction and Worksite Management Sub-Plan Traffic Management Sub-Plan

4.5 SUB-CONTRACTOR MANAGEMENT

Some construction activities and services may be performed by sub-contractors. Such sub-contractors need to demonstrate an understanding and ability to manage their activities to prevent potential environmental impacts.

Depending on the complexity of the sub-contractor's work, the sub-contractor may be required to produce documentation detailing their own environmental management systems and, where necessary, to prepare their own Project-specific EMPs, and/or environmental procedures to augment this EMP. Sub-contractors' EMPs must be consistent with this EMP and the Project's environmental requirements.

Sub-contractors working on the Project will be required to:

- observe sub-contract and statutory requirements relating to environmental protection and all relevant environmental law and to follow instructions issued by the Project management and supervisory personnel;
- nominate site representatives to liaise with the contractor or RCDP with respect to environmental requirements for site activities;
- co-operate fully with site emergency incident procedures and consultative arrangements; and
- follow procedures, mitigation measures and relevant reporting requirements identified in the EMP and associated management sub-plans.

The Construction Project Manager, in consultation with the RCDP Site Safety and Environment Officer or equivalent, will determine the appropriate environmental management requirements applicable to specific sub-contractors. These requirements will be included in any sub-contract agreement or contract. In addition, relevant references to environmental management and controls, reflecting the EES and Planning Permit, will be included in sub-contract documentation.

Sub-contractor personnel will be given on-site induction prior to accessing any site, procedure reviews and any daily pre-start talks.

RCDP and/or the construction contractor will ensure that work undertaken by sub-contractors is monitored through the site inspection process. The Superintendents/Supervisors and the Site Safety and Environment Officers will conduct regular site surveillance (including inspections and audits) of sub-contractors to assess the effectiveness of environmental protection measures being used by the sub-contractor and to determine compliance with the requirements of the EMP.

Internal audits will also be undertaken to assess:

- compliance with contractual requirements;
- knowledge of and compliance with the EMP; and
- work procedures and environmental management controls used on-site as identified in the EMP and associated sub-plans.

4.6 JOB HAZARD ANALYSIS

The environmental risk register has documented key risks requiring management during construction and operation of the Project. This EMP and associated management sub-plans provides processes and procedures for the control of those identified risks.

In addition, the future construction contractor will prepare Work Method Statements (WMS) and Inspection and Test Plans (ITPs) which will provide more specific activity-based controls comprising sets of instructions to be followed out in the field (in a step-by-step format) so that each step can be ticked off as it is completed. ITPs have associated checklists to ensure that a record is kept of this process.

Finally, in order to evaluate the changing environmental needs through different areas of work, a Job Hazard Analysis (JHA) (a form of qualitative risk assessment) will be conducted to assess the types of environmental hazards possible throughout the activity, the level of risk, and controls to reduce the risks for that activity. An example JHA form is provided overleaf as *Figure 4.1*.

All supervisory personnel are:

- responsible for carrying out a risk assessment and related JHA for activities and goods supplied and used on-site;
- to ensure the risk assessment is kept up to date;
- to communicate to sub-contractors, suppliers and supervisors; and
- responsible for communication to sub-contractors and to receive their JHAs for review before they arrive on-site.

Supervisors are to ensure that environmental risks are managed effectively in accordance with this EMP and relevant JHA for that activity. All personnel will be made aware of the necessity for including an analysis of environmental hazards in their JHAs at inductions and toolbox talks, including sub-contractors.

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Figure 4.1 **Example JHA Form**

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5 **TRAINING, COMPETENCY AND AWARENESS**

A training programme has been specified and will be delivered in a “multi-tier” manner, which will range from visitor to general awareness training (e.g. basis induction material, through to highly specialised competency-based training). Specific competency-based training may be identified for employees and contractors undertaking activities that are associated with controlling significant environmental risks (e.g. hazard identification and risk assessment).

Environmental training will be provided to all employees involved in the construction and ongoing operation of the Project. The training will give participants a base level understanding of their individual roles in the implementation of this EMP. Training will also be provided for specific tasks to ensure employees are competent to perform their required duties.

RCDP and the construction contractor will identify environmental training requirements throughout the project and maintain a staff training register. The Site Safety and Environment Officer will assist in identifying training needs, preparing training materials and running training sessions where appropriate.

The main forms of training to be provided on-site include:

- site induction, including communication of roles and responsibilities for visitors, staff and contractors;
- regular “toolbox” training; and
- specialised training (vegetation/weed identification for example) as required.

5.1 **INDUCTION**

Records of induction and training will be kept in a training register, including the training carried out, dates, names and trainer details. Inductees will be required to sign-off that they have been informed of the environmental issues and understand their responsibilities. The Site Safety and Environment Officer will review the program and monitor its implementation.

All personnel, including RCDP employees, contractors and sub-contractors, will be required to attend a compulsory project induction before commencing any work on the Project. Site visitors will be required to attend a shorter induction presentation.

The environmental component of the induction will be delivered by RCDP or the contractor’s Site Safety and Environment Officer (or delegate) and include the following items:

- EMP overview;
- environmental policy;
- environmental and sustainability objectives and targets;
- environmental responsibilities under the EMP in relation to implementing mitigation measures, monitoring, reporting and implementing corrective actions;
- key environmental issues and controls as identified in the EMP and associated management sub-plans;
- consequences of departure from specified procedures or other controls;
- community awareness and sensitivities, and cultural perspectives and expectations;
- emergency / environmental incident response requirements; and
- internal and external communication processes.

5.2 **TOOLBOX TRAINING**

“Toolbox” training will help to ensure that relevant information is communicated to the workforce and updates provided on issues of interest or concern.

“Toolbox” training will generally be prepared by the Site Safety and Environment Officer and delivered by the Project Engineers or Site Foreman. “Toolbox” training topics may include:

- waste management, minimisation and recycling;
- noise and vibration minimisation;
- flora and fauna protection;
- dust control;
- protecting waterways;
- wastewater control/dewatering;
- work methods, general site issues;
- storage of liquids;
- soil erosion and sediment control, particularly sediment basins, dewatering and spill response;
- plant and equipment maintenance; and
- truck and plant wash down.

Fauna and Flora Toolbox Training

It is anticipated that the Fauna and Flora Toolbox Training Program will include the following:

- Detailed description of any threatened flora and fauna species known to occur, or likely to occur within the study area during works;
- A clear method of what workers should do in the event that they come across a threatened species during works;
- The contact details of an appropriately qualified ecologist/zoologist/botanist that can be called to the site to verify the record of the species and remove it from harm (i.e. if a mobile fauna species such as Growling Grass Frog);
- How any remnant native vegetation that is being retained on site will be protected with high-visibility fencing and clearly signed as a ‘no-go zone’ for the duration of the construction period.
- Key points will then be provided on A4 or A3 sheets to be placed in crib sheds/toolbox kits for quick reference post-induction. This allows for reminders to staff of threatened species they may encounter and the actions that should be initiated if located on site.

Project Environmental Alerts

Where required, Project Environmental Alerts (consistent in nature with safety alerts) will be prepared to convey approved important information to the construction project team.

The Project Environmental Alert may be triggered by a recent incident (not necessarily within the project site but a similar project throughout Australia or another project being developed by the Proponent), infringement notice, change in acceptable work practices, good practices, significant weather changes, etc.

Alerts will be approved for issue by RCDP or the contractor’s Site Safety and Environment Officer with counter-approval by the relevant discipline manager.

Alerts will be presented by the relevant Supervisor or on the next staff member computer login, on project notice boards and other means suitable for applicable project team members.

6 COMMUNICATIONS AND STAKEHOLDER MANAGEMENT

This section describes how RCDP and the construction contractor will communicate internally and externally, to ensure that the Project's environmental management requirements of the terms of this EMP are met.

A guide to communications protocols is provided in *Table 6.1*.

6.1 INTERNAL COMMUNICATION

Communications with contractors and other key stakeholders may be by telephone, email and/or face-to-face correspondence for general environmental issues and/or specific feedback on a particular issue or plan (i.e. review of this EMP).

Records will be maintained to demonstrate conformance with environmental requirements. These records may include, but are not limited to:

- important email and telephone correspondence;
- meeting minutes;
- monthly performance reports;
- monitoring and testing records;
- training records;
- audit records;
- construction method statements;
- emergency procedures; and
- incident reports and investigations.

In addition, to the toolbox training, the Project team will meet at least weekly to discuss project-wide lessons and current issues. Team members will also have the opportunity to table issues and seek feedback from others on proposed methods of construction and appropriate environmental management measures.

Typical weekly meeting agenda items will include:

- administration and resources;
- incidents and monthly reporting;
- environmental awareness (alerts, procedures, response flowcharts);
- environmental aspects / project specific tasks; and,
- new business.

Meetings will be minuted, with any actions noted. Minutes will be distributed to all attendees and personnel in the wider construction team on an as needs basis.

Table 6.1 Internal Communications Protocols

Method/Medium	Frequency	Participants	Record
Induction	Upon commencement of employment (refreshed annually)	All staff, contractors and sub-contractors	Formal Record or Form
Tool Box meeting and/or Daily Pre-start Talks	Where relevant to a particular work activity	Relevant project personnel and sub-contractors	Formal Record and/or Site Diary
Site meeting	As required	Relevant project personnel and sub-contractors	Minutes
Interested party/Community Group meeting	As required	Project Manager/ Site Safety and Environment Officer	Minutes
Management Review (internal)	3 months and 9 months after commencement of construction; annually thereafter.	Project Manager / Site Safety and Environment Officer / Construction Works Superintendent	Minutes

6.2 EXTERNAL COMMUNICATION

This external communication and stakeholder plan aims to:

- define external communication protocols;
- provide a variety of communication channels to enable members of the community to comment and lodge complaints at all times; and
- ensure timely response to complaints and implementation of any appropriate corrective/preventative actions.

The communications and stakeholder management plan may be revised following the completion of construction to ensure the system's ongoing suitability for operational purposes.

Contact details are set out in Table 6.2.

Table 6.2 Contact Details

Method	Details
Telephone¹	1800 457 181 (Free Call)
Postal	Ryan Corner Development Pty Ltd Suite 4.03, 68 York Street Sydney NSW 2000
Email	info@unionfenosa.com.au
1. This number may be directed to a message bank system if the project team is not able to take the call.	

These contact details may change through the life of the Project, in which case RCDP will ensure that the community are advised of the new contact details. The community will be advised of the contact details changes as set out in *Table 6.3*.

Table 6.3 ***Distribution of Contact Details***

Method	Frequency
Construction site signage	Throughout construction period
Advertisement in local newspaper	One week prior to construction
Community newsletter	Quarterly during construction
1. In the event that the contact details change, an additional advertisement would be made within one week of the change occurring.	

Communication to stakeholders external to RCDP, the construction contractor or sub-contractors, will be conducted via written correspondence on an appropriately marked letter or email.

Complaints are generally received via telephone (an 1800 number will be established) or email. Written correspondence regarding complaints will be undertaken via RCDP marked letter or email as described below in *Section 6.3*.

6.3 ***COMPLAINTS MANAGEMENT***

Complaints represent an opportunity to improve project environmental performance.

All complaints received will be recorded on a Community Complaints Form and also summarised in the Complaints Register. This Community Complaints Form is the input form for the complaints register which is an Excel database. The records of the complaint will be maintained for at least seven years following the date of the complaint.

All complaints will initially be received by the Site Safety and Environment Officer. On receipt of a complaint the Site Safety and Environment Officer will:

- contact the complainant (i.e. if a message/email etc. has been left).
- complete a Community Complaints Form to record:
 - the date and time, where relevant, of the complaint.
 - the means by which the complaint was made (telephone, mail or email).
 - any personal details of the complainant that were provided, or if no details were provided, a note to that effect.
 - the nature of the complaint.
- Co-ordinate with the Project Manager/relevant contractors to determine and implement appropriate corrective actions if possible.
- advise the complainant of the corrective actions and record these on the Community Complaints Form.
- complete the Community Complaints Register.
- if corrective actions cannot be implemented immediately, an incident report will be raised to manage the process.
- if appropriate, follow up with complainant to review outcome of implemented corrective actions.

All site staff are responsible for reporting any complaints to the Site Safety and Environment Officer.

7 PERFORMANCE EVALUATION AND REPORTING

The requirements for performance evaluation and monitoring are set out below.

7.1 SITE INSPECTIONS

The Site Safety and Environment Officer will conduct daily and weekly routine inspections of construction work areas to monitor work practices and identify non-conforming areas and activities or work practices which could lead to potential environmental harm. A Site Conditions Checklist will be used to record and report any improvements required.

The purpose of the inspections is to:

- ensure that safeguards are being implemented;
- identify where problems might be occurring (or have the potential to occur);
- identify where sound environmental practices are not being implemented; and
- facilitate the identification and early resolution of problems.

Weekly inspections also provide an opportunity for the Site Safety and Environment Officer to address issues raised by construction superintendents/supervisors/project engineers etc. and assist in the implementation of environmental controls. Often this continued support leads to better ownership of environmental management and becomes a valuable coaching exercise for field personnel to improve their skills in this discipline.

7.2 ENVIRONMENTAL MONITORING

Monitoring and measurement procedures will be implemented to ensure that all project construction and operations activities comply with relevant limits and standards, and that RCDP and the construction contractor are performing in accordance with stated EMP requirements.

The timing, frequency, applicable sampling standards, comparison criteria, locations and responsibilities for environmental monitoring programs are specified in the respective construction and operational management sub-plans. A summary of environmental monitoring requirements is provided in *Table 7.1*.

Monitoring programs range from those involving formal sample collection, analysis and measurement to those involving a qualitative assessment. All environmental monitoring equipment such as noise meters will be calibrated and maintained according to manufacturer's specifications.

The results of all monitoring conducted will be used to identify potential or actual problems arising from construction processes. Where a non-compliance with nominated performance goals is detected:

- a Works Improvement Notice (or similar) will be raised by the Site Safety and Environment Officer;
- notification to the relevant regulatory agencies (e.g. DSE, DPCD, Moyne Shire Council).
- the results will be analysed by the Construction Project Manager and Site Safety and Environment Officer in more detail to determine possible causes of the non-conformance;
- relevant personnel will be contacted and advised of the problem;

- a site inspection may be undertaken by the Site Safety and Environment Officer, if determined to be necessary;
- an agreed action will be identified (including planned completion date);
- action will be implemented to rectify the problem; and
- the Works Improvement Notice will be closed out.

Where monitoring methods permit, results will be obtained at the time of the assessment and analysed by the Site Safety and Environment Officer (or relevant consultant). This will allow a prompt response to be initiated should a non-conformance of accepted goals/criteria be identified.

Table 7.1 Summary of Monitoring Requirements

Environmental Factor	Frequency	Process	Responsibility
<i>Pre-Construction</i>			
Television and radio reception and interference	Prior to construction and subject to a compliant	Independent survey of reception and interference	RCDP
Noise	One week continuous noise logging prior to significant construction	Completed during previous noise assessment (2006)	RCDP
<i>Construction</i>			
Noise	In response to a complaint	Attended noise monitoring with a sound level meter	RCDP / Construction Contractor
Traffic	Monthly monitoring/ inspection by RCDP and every 3-4 months with VicRoads and Moyne Shire Council	Inspection materials to be logged and followed up accordingly	RCDP
Archaeological	In response to a discovery of an unknown site or artefact.	Works on-site to be suspended and a Cultural Heritage Advisor to be appointed to advise on management strategies	RCDP / Construction Contractor
Native Vegetation	Regular monitoring throughout construction.	Inspect extent of works to ensure within prescribed areas	RCDP / Construction Contractor
<i>Post Construction and Operations</i>			
Wildfire	Before or within three months of commencement of operations	Familiarisation visit by CFA, Moyne Shire Council Municipal Emergency Management Committee, Rural Ambulance Victoria and Victoria Police	RCDP
Bat and Avifauna	Twice a year for at least two years from commissioning of last turbine	Bird utilisation surveys, broilga risk assessment surveys, and bat and aviary fatality searches. Survey materials to be recorded and followed up accordingly.	RCDP
Pest plant	Weed monitoring four times annually for at least 2 years post-construction	Observe presence and eradicate/contain weeds if necessary	RCDP

Environmental Factor	Frequency	Process	Responsibility
Pest animal	Pest animal monitoring four times annually for at least 2 years post-construction	Observe presence/damage and implement long-term habitat modification if necessary	RCDP
Native Vegetation	In response to identification of additional native vegetation.	Observe presence and implement measures to avoid impacts.	RCDP
Noise	Noise compliance assessment – within 2 months of commissioning first turbine and continue for 12 months following commissioning of last turbine.	Independent expert to undertake acoustic measurement and analysis of turbine noise.	RCDP

7.3 ENVIRONMENTAL AUDIT SCHEDULE

RCDP will develop and maintain an audit methodology, process and schedule to ensure continuous improvement and alignment with this EMP. The overall objectives of the audit program; the methodology and processes to be implemented; the frequency of audits; and processes to ensure that corrective actions are taken and changes made to management plans, where required, are set out in *Table 7.2*.

The audit process and schedule will be reviewed annually to ensure its continuing effectiveness and applicability to RCDP's environmental objectives.

Table 7.2 EMP Audit Schedule

Audit Type	Location	Frequency	Audit Objectives	Audit process	Responsibility
EMP Audit	On-Site	Bi-Annual	- monitor compliance and alignment with legislation, permits, objectives, targets and KPIs within the EMP - monitor compliance with RCDP requirements and progress with any action plans - gauge effectiveness and adequacy of the EMP system - monitor and evaluate effectiveness of risk mitigation measures - identify areas of improvement and opportunities to address	Document review and site walk-over including: - site inspection, visual assessment - interviews with contractor - incident reports and investigations - risk assessments (see below) - management sub-plans - objectives and targets	Relevant UFWA personnel Site Safety and Environment Officer
Environmental Risk Assessments	On-Site	Annually	- identify changes in conditions and address risks associated with construction activities. - monitor and evaluate effectiveness of risk mitigation measures	- review of documents including EMP, incident reports and action requests - site based audits (see below)	Site Safety and Environment Officer RCDP input may be required
Site based Audits	Substation/ turbine/ transmission line construction sites	Bi-annually for each site	- assess implementation of the EMP - assess compliance with permits and contract conditions - assess sub-contractor management and compliance with RCDP procedures - assess non-conformance reporting and action request sign-off - assess incident reporting and investigation - monitor and evaluate effectiveness of risk mitigation measures.	- site inspection, visual assessment - interviews with contractor - document review of sample procedures and records - incident reports, action requests and reporting - interviews with construction, project, maintenance and area managers	Site Safety and Environment Officer
Sub-contractor Audits	Various sites (site selection dependent on risk assessments and level of site activity)	Monthly	monitoring of sub-contractor performance in managing their environmental impact and compliance with the EMP	- site inspection, visual assessment - interviews with contractor - review of previous inspections - licensing - document review - contract (if required).	Site Safety and Environment Officer

7.4 INTERNAL AUDITING

Internal audits will be undertaken on a six monthly basis. The audits will assess the effectiveness of the EMP, associated management sub-plans and training in achieving the Project's environmental objectives and performance goals. The Site Safety and Environment Officer may also require additional audits (and nominate appropriate personnel to conduct the audits) in response to environmental issues identified through, for example, air and water quality monitoring.

The scope for each audit will be determined by the Site Safety and Environment Officer in consultation with the Construction Project Manager, with operational personnel notified and a date set for the audit.

Audit reports will, in conjunction with monitoring reports, be used to evaluate the project environmental performance and to provide a basis for continual improvement through the EMP.

7.5 EXTERNAL AUDITING

External audits may be conducted by relevant Government regulators such as Moyne Shire Council. External audits will address:

- compliance with regulatory requirements;
- compliance with the EMP;
- documentation and record keeping;
- compliance with approval, permit and licence obligations; and
- resolution of complaints.

Audit outcomes will be documented and noted (including any non-conformances requiring Works Improvement Notices (WINs). Non-conformances will be addressed immediately following the audit using draft audit findings and, where possible, resolved within four weeks of receiving the final audit report.

7.6 OPPORTUNITIES FOR IMPROVEMENT, NON-CONFORMANCE, CORRECTIVE AND PREVENTATIVE ACTION

RCDP Works Improvement Notices will be used to ensure environmental issues, non-conformances and incidents are recorded and appropriate actions taken.

Non-conformances, Works Improvement Notices and corrective actions will be registered to identify and correct non-conformance, to take action to control environmental impacts, and prevent future reoccurrence.

Non-conformances may be identified by anyone involved with the site construction and operation including the public, construction management personnel, employees, visitors, sub-contractors and external auditors. The underlying cause or the system failure that gave rise to the non-conformance will be evaluated in order to avoid recurrences.

7.7 INTERNAL REPORTING

RCDP will maintain an auditable records system in accordance with the Project EMP and EMS. Environmental reporting will be conducted in accordance with licence and permit conditions. Environmental reporting information will include, but not be limited to:

- monthly Project reports (including environmental performance);
- non-conformance reports (WIN's);
- quantitative records of discharges to the environment that are accurate and can be audited;
- detail on fauna capture and release;
- inspection reports;
- training and induction attendance;
- consultation records and meeting notes;
- complaints management and resolution;
- internal and external audit reports; and
- monitoring results.

7.8 EXTERNAL REPORTING

All external reporting required by the Planning Permit or other obligations for the Project will be approved by the Construction Project Manager. This includes management planning documentation associated with this EMP and responding to complaints.

All non-compliance will be reported to the Moyne Shire Council as the Responsible Authority for the enforcement of this permit. It will be the responsibility of Moyne Shire Council to advise other authorities and other relevant stakeholders (e.g. DSE, DPCD and adjoining landowners).

The monthly Project reports (including environmental performance) (see Section 7.7) will also be forwarded to the Moyne Shire Council as the responsible authority.

7.9 NOTIFICATION OF ENVIRONMENTAL RELATED INCIDENT

The Construction Project Manager (or delegate/incident response controller) will notify the appropriate regulatory authorities including Moyne Shire Council and the EPA (or EPA Pollution Hotline) if a notifiable environmental incident occurs on or off-site. Incidents will be reported in the following circumstances:

- if there has been a non-compliance with approval conditions;
- if the actual or potential harm to the health or safety of human beings or ecosystems is not minor; or
- if actual or potential loss or property damage (including clean-up costs) associated with a pollution incident exceeds \$10,000.

RCDP's Group Management will be notified within four hours of any pollution incidents requiring notification of Moyne Shire Council, the EPA or any other external Government Body. Following the initial report to the relevant agency, the results of the incident investigation will be provided within one month (where possible) of the incident. Where the investigation period is longer than this, an interim report will be submitted, and therefore finalised once all details are available. The following details will be provided:

- the nature of the incident (including conditions, goals or environmental requirements that were breached or had the potential to be breached);

- the extent of the harm;
- the cause;
- corrective actions undertaken; and
- preventive actions to minimise the potential for a recurrence of such an incident.

The Incident Investigation Report will be forwarded to the Moyne Shire Council as the Responsible Authority.

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8 DOCUMENT CONTROL AND RECORDS

Amendments to the EMP, construction documentation and documentation of procedures, standards etc. will be undertaken during the construction and operational life of the Project. Records of any changes must be maintained.

8.1 AMENDMENTS TO THE EMP

Amendments to this EMP will be prepared by the RCDP Site Safety and Environment Officer and approved by the RCDP Project Manager. Amendments to the EMP will also require formal approval under the permit and may require prior review by relevant authorities. A copy of the updated version should also be provided to any relevant authority. Redundant copies will be removed and archived for future reference.

A 5 year review and re-endorsement of this EMP by the Minister of Planning is required and will be initiated by RCDP in consultation with Moyne Shire Council and the Department of Sustainability and Environment.

8.1.1 Controlled Copy

The electronic EMP is the controlled copy and is available on the RCDP information management system. The RCDP Site Safety and Environment Officer is responsible for updating and maintaining the distribution of this document.

8.1.2 Uncontrolled Copies

Any additional copies (hard copy) of the EMP are uncontrolled copies and are not controlled by RCDP. Uncontrolled copies of the EMP are not subject to automatic amendment and the holder of an uncontrolled copy is responsible for verifying its currency against the controlled copy.

8.1.3 Superseded Documents

Where superseded versions of controlled documents are retained for any purposes, such documents are to be identified 'Superseded' to prevent the unintended use of obsolete information.

8.2 RECORDS

Records will be kept during the implementation and review of this EMP. A copy will be kept at the Project site or in a suitable location for the lifetime of the project.

8.2.1 Archiving Of Records

Project environmental records shall be archived for a minimum period of 7 years.

The originator is to complete an Archive Record Form identifying contents of records in each box. A destroy by date is to be included on the form taking account of the minimum retention periods stated in the procedure.

8.2.2 Correspondence and Filing

A filing index and correspondence register system is to be set up at the commencement of a project, which is appropriate to control all correspondence and project records.

The Document Controller, in liaison with the Construction Project Manager, establishes a hard-copy project filing index to ensure that records are indexed and filed in a manner to facilitate easy retrieval of information.

The Construction Project Manager informs RCDP, suppliers, sub-contractors etc., of where project-related correspondence is to be addressed.

All inward correspondence is to be stamped with a 'Received' stamp showing the receipt date, registered and then distributed to relevant staff as directed by the Construction Project Manager. Correspondence is to be filed in chronological order.

Where changes are required to project documentation, the Construction Project Manager or the delegate shall co-ordinate all amendments/revisions to the documents and implement the necessary changes required.

Unless otherwise specified by the Construction Project Manager, contract/shop drawings are to be transmitted to external parties using a Document Transmittal. All other documents may be transmitted using suitable correspondence. Transmittal records shall be maintained.

8.3

AMENDMENTS TO OTHER CONTROLLED DOCUMENTS

The following documents, as a minimum, shall be subject to control.

- Group procedures & forms;
- Standards / Codes / Acts / Regulations;
- project procedures and forms; and
- drawings.

Project records, including pertinent sub-contractor project records, shall be maintained to provide evidence of conformity and of the effective operation of the environmental management system. Such records include, but are not limited to:

- details of qualifications held by individuals primarily responsible for environmental monitoring;
- correspondence to/from RCDP and interested parties;
- permits, licenses and approvals;
- induction training records;
- inspection and test documentation (including calibration);
- non-conformance and corrective action/complaints;
- environmental incidents;
- minutes of management review meetings;
- evidence of action taken as a result of such meetings/events;
- audits (internal and external) and inspections; and
- monitoring records.

9

INCIDENT AND EMERGENCY PLANNING, PREPAREDNESS AND RESPONSE

RCDP and the construction contractor will ensure that all environmental incidents are promptly and effectively managed to minimise environmental impacts during the Project.

An environmental incident is an event that has the potential to harm the environment. Examples of environmental incidents include fuel spillage, failure of erosion or sediment controls and excessive noise or dust generation.

All environmental incidents will be handled according to the RCDP incident management process.

Procedures for handling an environmental incident include:

- stop action(s) causing the incident (e.g. switch-off equipment);
- stop all work in the immediate vicinity of the incident until advised to continue work by the Project Manager – inform nearby workers if required;
- notify Project Manager;
- if there is a fuel spill – block flow paths or install temporary barriers or controls as necessary. Dispose any contaminated spill containment materials to appropriately licensed landfill facility;
- Site Superintendent is to ensure the incident area is controlled, cleaned up, the problem rectified and prevention measures put in place;
- fire extinguishers are to be carried by all machinery used on-site;
- Site Conditions Checklist to be completed regularly (daily); and
- immediate reporting of an incident causing or threatening harm to the environment.

All site staff are responsible for their own actions in preventing incidents from occurring. The Project Manager is responsible for investigation of incidents, notification and written reports to regulatory authorities as required, as well as declaring an area safe after an incident.

The incident reporting process is a valuable method of addressing shortcomings in procedures, training or equipment. Where lessons are learnt from the investigation or current procedures are identified as being ineffective, the EMP will be revised by the RCDP or the contractor's Site Safety and Environment Officer to include the improved procedures or requirements.

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10

REVIEW AND IMPROVEMENT OF THE EMP

Condition 14 of the Planning Permit states that *“The Environmental Management Plan must be reviewed and if necessary amended in consultation with the Moyne Shire Council to the satisfaction of the Minister for Planning every five years to reflect operational experience and changes in environmental management standards and techniques and must be submitted to the Minister of Planning for re-endorsement.”*

RCDP will review the Environmental Management System (including the EMP and associated management sub-plans) and its operation annually.

Every 5 years, the review will be initiated in consultation with relevant senior managers of the Moyne Shire Council and Department of Sustainability and Environment. The review will ensure that the system is meeting the requirements of relevant legislation, standards, policies, licences, permits, approvals and objectives. A report will be provided to the Project Manager with any recommendations for change to the system. The Project Manager will review and approve changes as required.

The review will reflect operations experience and changes in environmental standards and techniques. It will be submitted to the Minister for Planning (and Moyne Shire Council) for re-endorsement.

The review will consider (but not be limited to) the following:

- site personnel comments;
- state agency/administering authorities comments;
- audit findings;
- environmental and community committee meeting recommendations/opportunities for improvement;
- environmental monitoring records;
- complaints;
- details of corrective and preventative actions taken;
- environmental non-conformances, environmental inspection notices, inspection reports, and non-conformance reports;
- incident reports;
- changes in organisation structures and responsibilities;
- the extent of compliance with objectives and targets;
- the effect of changes in standards and legislation; and
- co-ordination of environmental management of sub-contractors.

The Site Safety and Environment Officer will implement any changes arising from the review. Records of such reviews will be maintained.

Details of any significant changes made to the EMP and associated sub-plans will be summarised in a table and forwarded in a memo to all relevant Project personnel.

In addition to the review of the EMS, the Site Safety and Environment Officer will annually review the EMP and all related system documentation to ensure compliance with Project policies and objectives.

The EMP will be revised when any of the following occurs (but not limited to the following):

- an inconsistency with environmental requirements is detected through monitoring and audits;
- improvement opportunities are identified;
- the EMP does not adequately reflect the environmental management requirements of the Planning Permit or adequately respond to environmental risks and compliance requirements identified within the EMS;
- a relevant amendment of the Project design, construction methods or operation method occurs;
- there are relevant changes to environmental conditions or generally accepted environmental management practices;
- previous unforeseen environmental risks are identified;
- previously unidentified areas of contamination/Indigenous heritage are discovered;
- there is a change in relevant legislation that impacts on either the design outputs or construction activities;
- there is a request made to RCDP, by the EPA or any other relevant Government agency; or
- there is a non-conformance relevant to the EMP (not of minor nature).

PART B – CONSTRUCTION MANAGEMENT SUB-PLANS

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11**CONSTRUCTION AND WORKSITE MANAGEMENT SUB-PLAN**

The purpose and scope of this sub-plan is to:

- describe how RCDP and the future construction contractor will manage and control construction and worksite risks associated with the construction of the project;
- outline the roles and responsibilities of those involved in the implementation of construction and worksite management controls;
- address the requirements of applicable legislation;
- meet the Minister's Conditions of Approval for the Project; and
- address the requirements of the Project Environmental Effects Statement (EES).

The scope of this management sub-plan addresses construction and worksite management in the terrestrial environment.

The objective is to protect local amenity, assets and the environment during construction and operation. The following targets are applicable:

- air pollution resulting from construction and operations, and associated activities is minimised;
- zero air quality related complaints from community;
- no environmental impacts result from the generation, storage, transport or disposal of waste materials;
- minimise waste to landfill and maximise re-use and recovery rates;
- prevent the risk of fire from construction activities by implementing wildfire prevention measures;
- compliance with specified regulatory requirements including conditions of approval related to the treatment, storage and disposal of contaminated soils;
- management and protection of fauna and native vegetation; and
- avoid significant degradation to the environment relating to the disturbance of contaminated soils on the site.

11.1**CONSTRUCTION HOURS**

As detailed in Section 2.2.2, construction activities associated with the Project including heavy vehicles entering and exiting the site, will only be carried out between the following hours:

- Monday to Friday: 7:00 am and 6:00 pm
- Saturdays: 7:00 am and 4:00 pm.
- Sundays/Public Holidays: Nil

In addition, blasting activities (if required) are restricted to the following hours:

- Monday to Friday: 8:00am and 4:00pm
- Saturday: 8:00am and 4:00pm
- Sunday: Nil

If blasting is required to be undertaken at other times, prior approval will be obtained from the relevant authority.

11.2 SITE ACCESS

Two points of access will be provided during construction activities. A western access will be located on Youls Road approximately 300m south of Davidson Road. An eastern access point will be provided on Hamilton-Port Fairy Road approximately 300m north of Spencer Road. Over dimensional vehicles will only be provided access via the western access on Youls Road.

Riverside Road and Harris Road will not be used for site access. The Traffic Management Plan details comprehensive traffic management protocols for the Project (refer Section 20).

11.3 PRE-CONSTRUCTION WORKS

The construction works are to be phased with activities being carried out at different locations across the site, so only a few locations will be worked on at any one time. RCDP and the construction contractor will establish a temporary site compound and lay down area(s) for construction and turbine equipment. The site compound will include a number of demountable buildings, portable sanitary facilities, and an amenities block. These will be installed on-site for the duration of the construction work.

The site compound and lay down areas will be located in appropriate locations on the site, agreed to with the site landowners, and taking into account the nature of the ground and soils. The site compound and lay down areas will also be sited to avoid and minimise impacts on native vegetation and fauna. Systems and arrangements for provision of power, communications, and water will be established to service the compound.

No on-site accommodation is to be provided for construction staff.

11.4 POST-CONSTRUCTION REHABILITATION

Rehabilitation will be an on-going practice throughout the lifetime of the Project. Rehabilitation following construction will include revegetation of hardstand areas, revegetation of cabling trenches, reducing the size of access tracks and general revegetation works. Weed control works will also be carried out post-construction and throughout the lifetime of the Project.

11.5 CONTAMINATION BACKGROUND

Contamination may be the result of:

- industrial/construction related processes performed on-site.
- materials/wastes stored or dumped on the site.
- some agricultural processes on the site, such as a sheep dip or where farm chemicals were mixed for application.
- contaminants in imported fill.
- demolition.

The area surrounding the site is largely cleared agricultural farmland. To the east of the site is a blue gum plantation, however historically the site has always been agricultural farmland. Though the site is considered to be a greenfield site, there is still the potential for contaminated soils and groundwater to exist on-site. Potential contamination issues are related to the historic farming activities undertaken on-site, especially in locations where agricultural chemicals were used or disposed.

According to the SEPP (Prevention and Management of Contamination of Land) the occupier of a site must ensure the land is managed to prevent contamination. Occupiers of land which, due to its chemical or physical properties, has the potential to adversely impact on protected beneficial uses must manage the land in a manner that ensures adverse impacts on the beneficial uses of the site are avoided by taking into account the properties of the land when disturbing, developing or using the site.

A preliminary Environmental Site Assessment has not been undertaken at the site, however, there is the possibility that small localised areas, or hotspots, of contamination exist. These contamination hotspots could be disturbed during the excavation access tracks/roads and the foundation pads for the wind turbines. Sources of contamination are likely to be unknown buried wastes (i.e. animal carcasses) or areas of historical chemical impact.

Small quantities of diesel, unleaded petrol, oil, degreasers etc. will be stored on-site in appropriate hazardous substances storage containers. Spills of hazardous substances, hydraulic hose breaks on plant etc. may also present a risk to soil contamination (albeit minor).

11.6 MANAGEMENT AND MITIGATION MEASURES

Table 11.1 lists work practices that will be used to control worksite related risks during construction and mitigate the impacts of these risk events.

The proposed construction worksite monitoring programme is outlined in *Table 11.2*.

Table 11.1 Construction and Worksite Mitigation Measures

Construction Phase	Management and Mitigation Measures	Responsibility
<i>Air Quality</i>		
Transport of materials	All vehicles carrying loads which may generate dust will be covered or enclosed at all times whilst on public roads. The load will not be uncovered except during loading or unloading activities.	Superintendent / Supervisor
Site access and internal roads	Install vehicle cleaning stations at site access/egress points to minimise off-site transport of material which could cause soil tracking onto public roads and dust emissions (establishment of a rubble grid [crushed concrete or similar]). In wet weather it may be necessary to hose mud off vehicle wheels as they traverse the grid.	Construction Manager / Supervisor
	Disturbance of surfaced areas will be minimised through appropriate staging of works.	
	Water trucks may be utilised to minimise dust generation from internal roads due to construction vehicle movements. Roads which pass in close vicinity to residences will be more frequently wet down (if required). Use of water trucks will be optimised to ensure a balance between dust suppression, water conservation and prevention of water erosion/damage to the site roads. The decision and requirement for water suppression will be based upon visual inspection and prevailing meteorological conditions.	Site Safety and Environment Officer
Stockpiled materials	A speed limit of 40Kph will apply for all internal site traffic movements.	Superintendent / Supervisor
	Cover/protect areas susceptible to significant dust emissions from wind erosion. Use natural landforms to shield exposed areas and dust generating construction operations from prevailing strong winds blowing towards sensitive receptors.	Site Safety and Environment Officer
Rehabilitation	Exposed areas will be rehabilitated as soon as practicable following completion of construction works in the area. Rehabilitation will include spray seeding/grassing with appropriate pasture species as determined in consultation with landowners.	Site Safety and Environment Officer
Construction activity (excavation, clearing, concrete batching etc.)	Restrict/cease activities with high dust generating potential (including heavy excavations) during periods when strong winds blowing towards sensitive receptors prevail causing nuisance dust.	Superintendent / Supervisor
Consultation	Engage with the community through actions including: - responding to queries regarding construction methodologies and responding to complaints/concerns by community members; and - provide regular updates to community members to inform them of upcoming work that could result in any increased levels of emissions. Incorporate discussion on dust sources, impacts and mitigation measures into Site Induction.	Site Safety and Environment Officer

Construction Phase	Management and Mitigation Measures	Responsibility
<i>Waste</i>		
Waste management approach	As set out in the Environment Protection Act 1970, all wastes will be managed in the following order of preference: • Avoidance; • Reuse; • Recycling; • Recovery of energy; • Treatment; • Containment; • Disposal.	Site Safety and Environment Officer
Avoidance and reuse	• Arrangements will be made with suppliers to return any unused construction materials. • Specify packaging minimisation requirements in contracts with suppliers. • Use low toxicity equivalents for all products, i.e. solvents, paints, sealers. • Source products in bulk to minimise packaging wastes with packaging material returned to the suppliers wherever practicable. • Promote awareness of recycling facilities and proper waste disposal practices to employees, including placement of instructional signage around work sites. • Implement best practice weed control prior to commencement of construction to ensure topsoil can be re-used later. • Stockpile weed-free topsoil for re-use where possible in landscaping, habitat restoration or similar. • Concrete formwork, reinforced steel structures, culverts, cabling and poles and similar infrastructure will be re-used throughout the project where possible. • Waste concrete and pavements will be re-used during road construction (sub-base layer) or as hardstand areas in construction compounds.	Site Safety and Environment Officer
Waste tracking and reporting	Tracking and recording keeping will be implemented for applicable waste transport and disposal. This will include: • copies of all waste transfer dockets and manifests; • other waste streams as recorded by the waste tracking system; • any non-conformances or exceedances; • waste management improvements and resultant gains as measured against stated performance criteria; and • any other data or observations considered appropriate.	Site Safety and Environment Officer
General wastes (putrescible waste)	Provide suitable collection receptacles (skip) and transfer to suitable landfill facility.	Site Safety and Environment Officer
Cardboard, paper, glass, plastics, aluminium, toner cartridges	Provide suitable collection receptacles (skip) and transfer to suitable recycling facility. Recycling collection point to be provided for collection, re-fill and re-supply of toner cartridges.	Site Safety and Environment Officer

Construction Phase	Management and Mitigation Measures	Responsibility
Prescribed industrial waste (lubricants, oils and greases and receptacles)	Storage, transport and disposal of prescribed industrial wastes will be in accordance with the <i>Environment Protection (Industrial Waste Resource) Regulations 2009</i>. All prescribed industrial wastes (PIWs) will have contaminant analysis to determine the appropriate hazard category prior to being accepted at landfills. The industrial waste threshold values will be obtained from the EPA guidelines for both soil and solid waste under: • Soil hazard categorisation and management; and • Solid industrial waste hazard categorisation and management. ○ No disposal of Category A waste to landfill. ○ Disposal of hazard category B or C waste to a licensed site. ○ EPA transport certificates must be used. ○ Vehicles must hold EPA permit (unless exemption issued). Used oils generated during construction will be collected and recycled by a licensed contractor, as will the empty oil and fuel drums and containers.	Site Safety and Environment Officer
Excavated materials	Avoid and minimise areas of disturbance. Any contaminated soil materials to be re-used (approval required) and if this is not possible, dispose at licensed landfill by an approved and licensed contractor. EPA guidelines for <i>Soil hazard categorisation and management</i> to be adopted and implemented prior to reuse. Reuse clean soil material on-site, or if not possible, another construction site. For example, re-use as fill for noise walls, or re-use of boulders/rocks for landscaping.	Construction Manager / Supervisor / Site Safety and Environment Officer
	Where practical, undertake construction of turbine bases, access tracks and power cabling during warmer months to minimise impacts on sediment mobilisation.	
Green waste	Mulch and/or compost only small quantities and use onsite, i.e. with landscaping/rehabilitation works.	Site Safety and Environment Officer
Excess or used construction materials e.g. packaging, formwork, pallets, etc.	Transfer to suitable recycling facilities. Excess clean soil will be returned to the supplier where possible. If the supplier cannot accept the material it will be provided to a landscaping company or donated to the community (along with appropriate tracking documentation).	Site Safety and Environment Officer
Industrial waste / solid inert wastes (bitumen, concrete, asphalt and gravel)	Excess materials will be returned to the supplier where possible. Some excess material will also be used as course select layer for roads (concrete washout etc.). Where reuse is not possible, dispose at a licensed landfill by an approved and licensed contractor. Residual concrete from the batching plant and concrete truck pipes etc. will be placed on plastic to cure, prior to reuse or disposal to landfill. No spent concrete is to remain onsite.	Site Safety and Environment Officer

Construction Phase	Management and Mitigation Measures	Responsibility
Provision and disposal of sanitary facilities	Implement EPA Publication 891.2 <i>Code of Practice – Onsite wastewater management</i> (currently under EPA review): <i>Note: This Code replaces EPA publication 891, Septic tanks code of practice (March 2003) and publication 891.1, Code of practice – Onsite wastewater management (September 2008).</i> - Restrict the use of germicides (such as strong detergents, disinfectants, toilet cleaners and bleaches), as they will kill the microflora that make the septic system work. - Do not flush rubbish such as sanitary napkins, condoms, cotton buds or disposable nappies down the system. - Fill the septic tank with water to reduce odours on start-up and after desludging. Do not wash or disinfect the tank after desludging. - Check sludge level, pumps and alarms regularly, as outlined in the relevant council permit.	Site Safety and Environment Officer
<i>Contamination</i>		
Contaminated materials	Excavation will avoid and minimise disturbance of potentially contaminated materials. Excavation areas will be inspected by supervisors and the site safety and environmental officer for unusual odours or staining within the soil. Fill material that is generated from site works will be re-used on-site, where it is practicable and geotechnically and environmentally suitable, to avoid the potential for importing contaminated fill. Should contaminated soil be encountered, the contamination will be classified according to the EPA's Industrial Waste Resource Guideline (IWRG), document IWRG621. This will be achieved by undertaking site sampling according to the EPA Victoria Publication 441, <i>A Guide to Sampling and Analysis of Waters, Wastewaters, Soils and Wastes</i>. Samples will be analysed by a National Association of Testing Authorities (NATA) approved laboratory. Potentially contaminated materials will be segregated based upon the results of waste classification where practicable (e.g. Natural Material will be excavated and stockpiled separately from material which is fill or visibly impacted). Soils or other materials suspected of being more heavily contaminated or otherwise significantly different to the materials encountered during the excavation and/or sampling works will be isolated and stockpiled/stored separately with appropriate bunding/containment to minimise the potential for cross contamination. All site personnel will be inducted in identification of potentially contaminated material based on encountering materials of unusual colour, texture, odour or inclusions (e.g. asbestos, drums etc.). If, during excavation, significantly odorous contaminated materials are encountered works are to cease, the material is to be recovered and the Contractors Site Safety and Environmental Officer will be informed as soon as practicable, who will advise on appropriate classification and disposal options.	Construction Manager / Site Safety and Environment Officer

Construction Phase	Management and Mitigation Measures	Responsibility
	Work will only re-commence once appropriate actions have been developed to manage the issue appropriately. Records of all contaminated material spoil movements will be tracked and reported. This includes spoil truck drivers submitting dockets to site personnel (dockets detail date, time, material, destination, truck number etc.), docket information being transferred to spreadsheets, monthly invoices supplied from the earthworks contractor, Site personnel checking invoices against dockets and adjusting for actual weight where required, collating of data for monthly reporting.	
Education	Training and orientation sessions will be conducted for Project personnel involved in the excavation, transport or handling of soils or other earthworks on the site. The training sessions will be designed by the Site Safety and Environmental Officer and shall be conducted prior to the excavation of any soils on the site. The sessions shall be designed to ensure that staff is aware of potential contamination issues on the site, able to recognise contaminated materials on the site and are aware of their responsibilities in managing contaminated materials.	Site Safety and Environmental Officer
<i>Site Access</i>		
Transport to and from site	Over dimensional vehicles are only to access the site via the western access on Youls Road. Riverside Road and Harris Road are not to be used for any site access. Impact to native vegetation due to vehicular movements must be reported as part of the incident reporting process.	Construction Manager / Site Safety and Environment Officer
Internal site vehicle movements	Construction vehicles, plant and equipment are only to utilise designated access roads and tracks at all times. Access roads and tracks must be sited to avoid native vegetation. Impact to native vegetation due to vehicular movements must be reported as part of the incident reporting process.	Construction Manager / Supervisor / Site Safety and Environment Officer
<i>Flora and Fauna</i>		
Protection of native vegetation	Where practical, undertake construction of turbine bases, access tracks and power cabling during warmer months to minimise impacts on ephemeral wetland and local fauna. Clearly delineate vegetation to be retained and protected as 'No-Go' zones. Install protection fencing (at least 1.2 metres in height, made of plastic fencing securely mounted on wooden posts or wooden or chain link fencing mounted on wooden or metal posts).	Site Safety and Environmental Officer
Trenching	Cover trenches/pits/shafts at the end of each day to prevent fauna entry. Excavations will not be left open overnight where practicable. If this is unavoidable, open excavations (e.g. trenches) must be fenced with fauna proof fencing, egress ramps installed at each end, and some form of refugia (e.g. a crumpled blanket) must be provided. Excavations will be inspected by a qualified ecologist daily prior to the commencement of construction work (with inspections to be completed no later than 8:00 am) to check for injured or trapped fauna. Any trapped fauna within the site will be removed and relocated to a minimum distance of 50m from the site.	Superintendent / Supervisor / Site Safety and Environmental Officer

Construction Phase	Management and Mitigation Measures	Responsibility
	Wildlife Victoria will be contacted if injured/ orphaned fauna are found within the site. Wildlife Victoria: Tel: 1300 094 535. Management actions must be reported as part of the incident reporting process.	
Removal of native vegetation	No native vegetation may be damaged or removed without prior approval (a permit). Before construction commences or any native vegetation removal occurs, all relevant personnel must be informed and aware of the native vegetation removal permit requirements. The awareness training/induction must include a representative from DSE. Any unauthorised damage or removal of native vegetation must be reported as part of the incident reporting process.	Site Safety and Environmental Officer
Pest weeds and pathogens	All vehicles entering the site must be free of soil, seed and plant material and again before leaving the site (also refer to Pest Plant Management Plan and Pest Animal Management Plan). Ensure all contract machinery, vehicles and equipment are cleaned down prior to arriving and leaving site. Locate a clean down facility away from watercourses, in an area that can be monitored for future germination (> 100m from a watercourse). Avoid moving machinery in wet conditions where clay removal is difficult. Develop work practices which avoid contamination of vehicles and machinery, and prevent the spread or introduction of additional weed seeds. Develop remedial action plans for controlling isolated outbreaks that occur within the work project area. Site personnel to observe actions relating to management of soil pathogens, particularly with regard to Cinnamon Fungus (<i>Phytophthora cinnamomi</i> or Pc). Minimise soil disturbance at all times. Restrict vehicles and people to designated tracks and trails. Restrict access to sites prone to water inundation.	Superintendent / Supervisor
Awareness	Provide site personnel with instruction on the identification of native and introduced plants.	Site Safety and Environmental Officer
<i>Wildfire Prevention</i>		
Construction Activities	Storage of hazardous substances and explosives (if required) shall be in accordance with the Hydrocarbon and Hazardous Substances Management Sub-Plan.	Construction Manager

Construction Phase	Management and Mitigation Measures	Responsibility
	During Code Red (Catastrophic) and Extreme fire danger rating days, work should not be undertaken.	Construction Manager
	On High - Severe fire danger rating days, the CFA must be informed that construction work is proceeding on the morning of work, and all plant and equipment must be accompanied by a 9 L container of water.	Construction Manager / Site Safety and Environmental Officer
	It is considered that construction will not need to formally implement the provisions of AS3959-1999 <i>Construction in Bushfire-prone Areas</i> as the site is not within bush fire prone land.	Safety and Environmental Officer
<i>Post-construction Rehabilitation</i>		
General	Carry out ongoing revegetation activities throughout the course of construction. Consider the sequencing of construction works to avoid damage to new plantings.	Site Safety and Environmental Officer
Weed control	Undertake weed control at the completion of construction to facilitate successful rehabilitation.	Site Safety and Environmental Officer

11.7 UNEXPECTED CONTAMINATION FIND PROTOCOL

In the event that suspected contaminated materials are encountered/disturbed during construction works, the following contingency plan will be adopted to manage potential adverse impacts from the disturbance of contaminated materials.

- stop excavation/earthworks works in the subject area and contact the Site Safety and Environment Officer;
- delineate the unidentified contaminated material;
- site Safety and Environment Officer to undertake/organise field testing and collect samples for analysis;
- site Safety and Environment Officer to submit soil samples for analysis at National Association of Testing Authorities (NATA) accredited laboratory in accordance with National Environment Protection Measure (NEPM) Assessment of Site Contamination (1999) guidelines;
- the results of the laboratory analysis will confirm the presence/absence of contaminated; and
- if contaminated material is present an appropriate course of action will be advised by the Site Safety and Environment Officer in accordance with NEPM (Assessment of Site Contamination) 1999 guidelines.

Ideally the suspected contaminated material will be left undisturbed until laboratory results have been received. If, however, this is not practical the materials will be handled and treated as follows:

- separation of the suspect materials from non-suspect materials (where practicable and safe);
- placement of the suspect materials in an appropriate bunded area (or lined skip) to prevent discharge of contaminants to the environment; and
- management of leachate, including prevention of contaminated discharge to the environment.

11.8 TREATMENT / REMEDIATION

The preferred hierarchy for remediation of soil on contaminated sites as set out in NEPM is outlined below:

- if practicable, on-site treatment of the contamination so that it is destroyed or the associated risk is reduced to an acceptable level;
- off-site treatment of excavated soil so that the contamination is either destroyed or the associated risk is reduced to an acceptable level, after which it is returned to the Site;
- consolidation and isolation of the soil on-site by containment with a properly designed barrier;
- removal of contaminated material to an approved site or facility and replacement, where necessary, with validated clean fill; or
- where the assessment indicates remediation would have no net environmental benefit or would have a net adverse environmental effect, implementation of an appropriate management strategy.

Any treatment/remediation will require assessment on an issue specific basis, however these overarching principles should be adopted in the selection of the most appropriate remedial/treatment methodology.

11.9 TREATMENT AREAS

It is proposed that potentially contaminated materials shall be stored and treated at strategically located soil storage and handling areas. All potentially contaminated materials are to be stored and treated in these prepared areas. Treatment areas shall be constructed in the following manner:

- perimeter bunds of low permeability clay around the storage area;
- an internal perimeter drain grading to a central sump shall be constructed inside the bund where any run off can be collected, tested and treated if necessary; and
- the base of the treatment area to be constructed from low permeability clay and/or covered with a suitable polyethylene membrane (or equivalent).
- the treatment area shall be located a minimum distance of 100m from a surface waterway.

11.10 VALIDATION TESTING

Verification testing of treated materials in accordance with NEPM guidance shall be undertaken by an appropriately qualified consultant to confirm the effectiveness of the treatment. The treatment shall be deemed successful when the treated soils meet the relevant guideline values for the proposed land use.

11.11 INSPECTIONS AND REPORTING

Daily and weekly inspections will be undertaken throughout the construction period by the Site Safety and Environment Officer. This inspection will ensure that appropriate worksite and construction controls are being implemented and are effective. The outcomes of these inspections will be reported in checklists and monthly construction project reports.

Any monitoring results collected (if relevant) will be reported on a special case-by-case basis and evaluated and actioned accordingly.

Any deviation from the controls will be reported immediately to the relevant site managers, and evaluated and actioned accordingly.

Permanent records of the following activities must be kept on-site and updated as appropriate, to enable audit/review by means of a simple 'check list' or similar method:

- all excavation activities at any location where potentially contaminated material has been identified;
- quantities of spoil removed from excavations/spatial ID;
- results of verification tests undertaken;
- quantities of treated 'spoil' placed as fill and locations;
- register quantities of any treatment agents brought on-site and used;
- any management of native fauna (e.g. salvage); and
- water quality and groundwater monitoring results from treatment/stockpile areas.

Records of monitoring results will be maintained at all times during the Project construction and available for inspection by the relevant Government agencies at any time. In addition, any reports relating to management of native fauna will be forwarded to the DSE within seven (7) days.

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12**NOISE & VIBRATION MANAGEMENT SUB-PLAN**

The purpose and scope of this sub-plan is to:

- describe how RCDP and the future construction contractor will manage and control noise and vibration risks associated with the construction of the project;
- outline the roles and responsibilities of those involved in the implementation of noise and vibration management controls;
- address the requirements of applicable legislation;
- meet the Minister's Conditions of Approval for the Project; and
- address the requirements of the Project Environmental Effects Statement (EES).

The scope of this management sub-plan addresses construction noise and vibration management in the terrestrial environment.

The objective is to protect local noise amenity during construction and operation. The following targets are applicable:

- noise related impacts resulting from construction and operations, and associated activities are minimised;
- construction activities occur from: Monday to Friday 7:00am to 6:00pm; Saturday 7:00am to 4:00pm and no work on Sundays or Public Holidays. Blasting activities (if required) only between 8:00am and 4:00pm Monday to Saturday; and
- zero noise related complaints from community.

12.1**CONSTRUCTION HOURS**

As detailed in Section 2.2.2, construction activities associated with the Project including heavy vehicles entering and exiting the site, will only be carried out between the following hours:

- Monday to Friday: 7:00 am and 6:00 pm
- Saturdays: 7:00 am and 4:00 pm.
- Sundays/Public Holidays: Nil

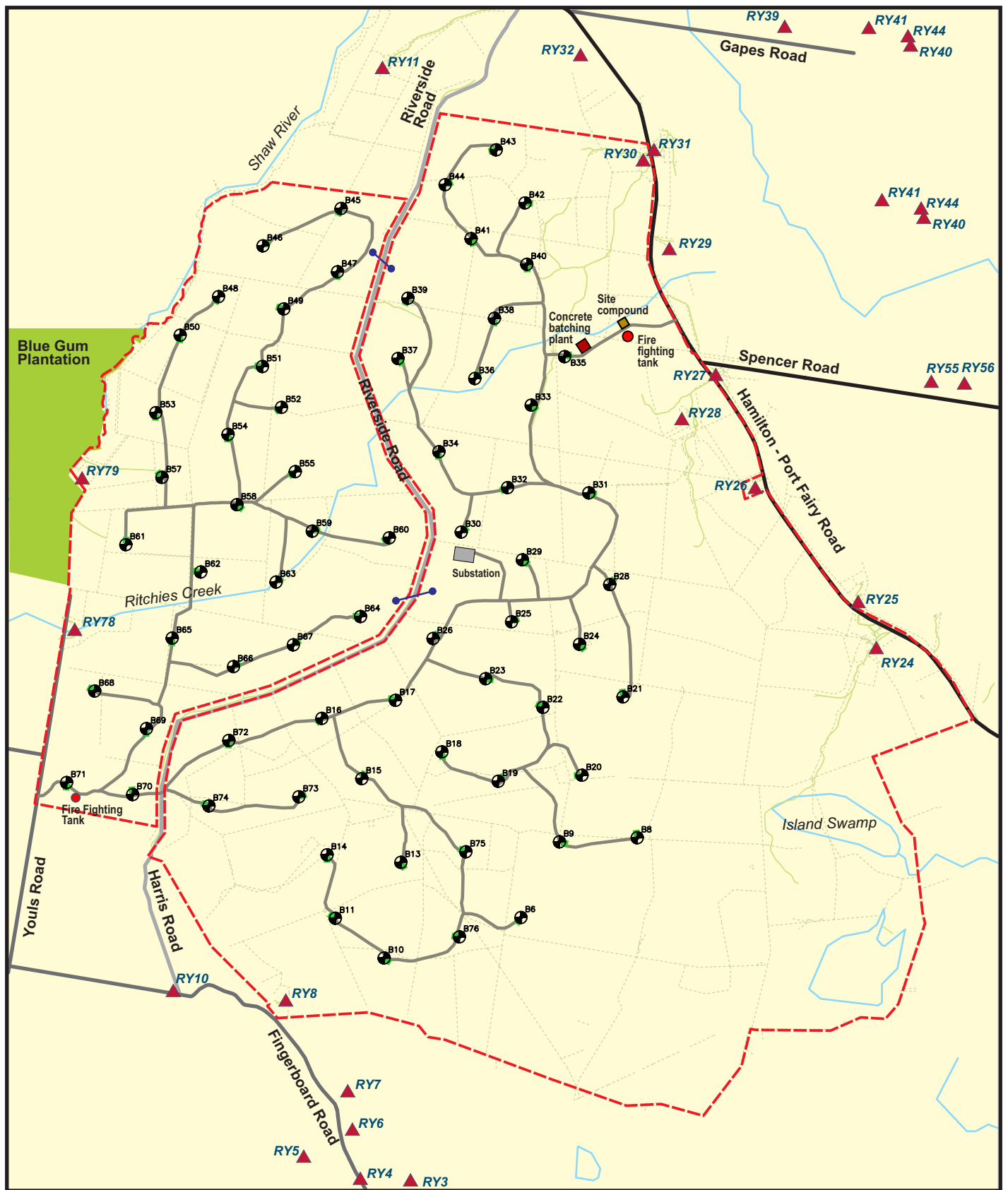
In addition, blasting activities (if required) are restricted to the following hours:

- Monday to Friday: 8:00am and 4:00pm
- Saturday: 8:00am and 4:00pm
- Sunday: Nil

If blasting is required to be undertaken at other times, prior approval will be obtained from the relevant authority.

12.2***SENSITIVE RECEPTORS***

A number of sensitive receptors have been identified that potentially may be impacted by construction activities associated with the wind farm, sub-station and transmission line construction. The EES identified twenty-three (23) receptors potentially susceptible to noise impacts. The location of nearest sensitive receptors (residential properties) is shown below in *Figure 12.1*.



Legend

- | | |
|--|-------------------------|
| --- Site boundary | Wind turbine |
| --- Watercourse | Houses |
| --- Main road | On-Site Substation |
| --- Sealed road | Concrete Batching Plant |
| --- Unsealed road | Site Compound |
| --- Existing tracks | Fire Fighting Tank |
| --- Existing fence lines | |
| Overhead cable crossing point | |
| --- Proposed access tracks | |

Client: Ryan Corner Development Pty Ltd

Project: Ryan Corner Wind Farm

Drawing No: 0105123m_03

Suffix No: R1

Date: 12/01/2012

Drawing size: A4

Drawn by: ML

Reviewed by: -

Source: -

Scale: Refer to Scale Bar



Figure 12.1

Location of Nearest Sensitive Receptors (Houses)

Environmental Resources Management Australia Pty Ltd

Level 3, Tower 3, World Trade Centre
18-38 Siddale Street, Docklands, VIC 3005
Telephone +61 3 9696 8011



12.3 BACKGROUND NOISE LEVELS

Noise monitoring conducted as part of the EES preparation at five representative residential properties resulted in the following average measured background noise levels.

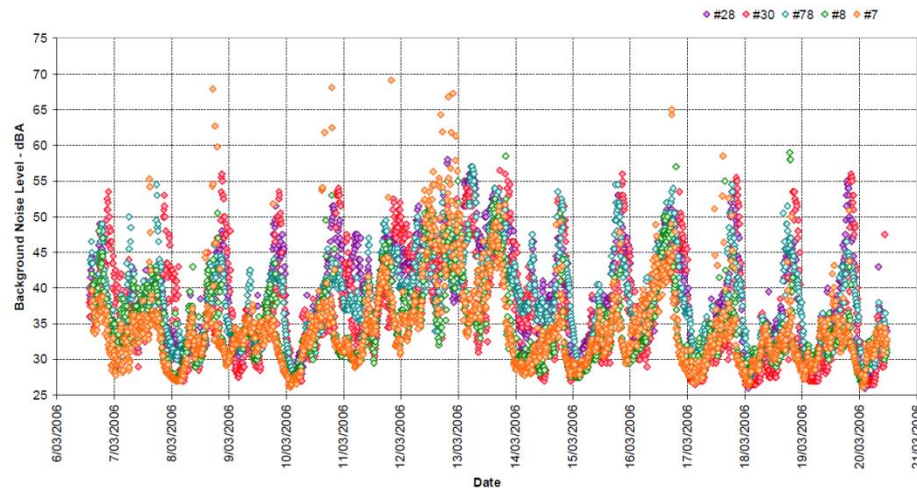


Figure 12.2 Representative Background Noise Levels

12.4 CONSTRUCTION NOISE LIMITS

There are no specific construction noise limits applicable to the Project. Upon receipt of a noise complaint, an investigation will be undertaken and appropriate corrective actions implemented to resolve the issue.

The overpressure level from blasting operations associated with the Project must not:

- exceed 115dB (Lin Peak) for more than five per cent of the total number of blasts over the period of construction; and
- exceed 120dB (Lin Peak) at any time.

Ground vibration (peak vector sum) from the blasting operations associated with the development must not:

- exceed 5mm/s for more than five percent of the total number of blasts during construction; and
- exceed 10 mm/s at any time.

The overpressure/vibration level is to be measured at any point that is located at least 3.5 metres from any building or structure at any nearby residence not associated with the wind farm or other noise sensitive receiver location such as a school or hospital.

12.5 *MANAGEMENT AND MITIGATION MEASURES*

Table 12.1 lists work practices that will be used to control emissions of noise during construction and mitigate the impacts of these emissions.

The proposed construction noise monitoring programme is outlined in *Table 12.2*.

Table 12.1 Noise and Vibration Mitigation Measures

Construction Phase	Management and Mitigation Measures	Responsibility
Site layout	Undertake design of site to position access routes, parking, site administration/ crib and noisiest equipment furthest from sensitive receptors and install barriers and shielding as needed.	Construction Manager / Superintendent
Construction sequencing	Construct structures nearest to residences that can serve as noise attenuation barriers as early as possible.	Construction Manager / Supervisor
Site controls	Where practicable install construction noise mitigation measures as soon as possible in the construction program.	Supervisors
Behavioural awareness and training	Initial site induction and ongoing routine toolbox talks to be provided. Information relating to practices that minimise noise to sensitive receptors will be provided to all site workers including sub-contractors, suppliers and delivery drivers.	Site Safety and Environment Officer
Community notification	Surrounding community to be informed of the upcoming activities and likely duration. The construction program will continue to be developed in consultation with the local community to schedule noisier activities during normal operational hours.	Site Safety and Environment Officer
Process methodology and equipment selection	Plant with the lowest noise rating which meets the requirement of the task should be selected. Regular monitoring of maximum noise levels from fixed and mobile plant will be undertaken to ensure that levels are not degraded by lack of maintenance. Pre-start checks of equipment to be conducted daily to ensure equipment is operated in the correct manner including replacement of engine covers, repair of defective silencing equipment, tightening of rattling components, repair of leakages in compressed air lines and shutting down equipment not in use. Where possible for works in close proximity to sensitive receptors, use electric motors in preference to diesel motors. Where reversing alarms are to be used, their acoustic range should be limited to the immediate danger area. Traditional “beeper” alarms for mobile equipment could be replaced with “Smart alarms” that adjust their volume depending on the ambient level of noise. Where practicable, metal surfaces subject to impacts with heavy objects (such as rock dropping into empty truck trays, or metal grates on road ramps etc.) should be lined with rubber impact protection to minimise impact noise. Ensure that tailgates on trucks are fitted to avoid noise from the movement of empty trucks.	Construction Manager Workers

Construction Phase	Management and Mitigation Measures	Responsibility
Dilapidation surveys	Ensure blasting is carried out in accordance with regulatory requirements and relevant standards to limit annoyance including ANZECC (1990) Technical Basis for Guidelines to minimise annoyance due to blasting overpressure and ground vibration. Conduct baseline building conditions surveys of properties with the potential for vibration impacts.	Site Safety and Environment Officer
General noise management practices and scheduling of activities	Avoid conducting noisy activities simultaneously and/or employ respite periods for particularly noisy activities where possible. Maintain a site activity log, recording the type of activities occurring during various times of the day.	Construction Manager / Supervisor
Maximise shielding and distance to receivers	Maximise the off-set distance between noisy plant and continuous operations (generators, crushers etc.) and nearby noise sensitive receptors and/or ensure that plant is screened using: • purpose built barriers; • materials stockpiles; • site sheds, buildings or other structures; and • natural topographical barriers. Where possible, carry out loading and unloading of materials and equipment in areas as far away from noise sensitive areas as possible.	Construction Manager / Supervisor
Construction Traffic Noise	Establish designated access route/s to the site and inform drivers of these routes, parking areas and acceptable delivery times. Undertake regular site road maintenance (and inspections) to minimise impact noises from trucks travelling over irregularities in the road surface (pot holes, washouts or ruts). Limit vehicle speeds in critical areas both on- and off-site. Material transport should be undertaken using full loads to minimise unnecessary vehicle trips. Allow one way traffic flow through the site to minimise the use of reversing alarms as much as possible and minimise traffic delays. Ensure vehicles within compounds do not queue outside the worksite close to residential areas. This particularly applies in the commencement of shift during morning hours, where sleep disturbance issues may arise. Entry and departure of heavy vehicles to and from the site are restricted to the standard daylight construction times.	Construction Manager / Supervisor Site Safety and Environment Officer

Construction Phase	Management and Mitigation Measures	Responsibility
Plant and equipment	Equipment having directional noise characteristics (emits noise strongly in a particular direction) orientated such that noise is directed away from sensitive areas. Acoustic enclosures or localised noise screens could be incorporated around fixed plant or over individual pieces of equipment as appropriate. Selection of equipment to be used should be the smallest possible to undertake the task safely and effectively. All mechanical plant should be silenced by practical means using current control technology and in accordance with manufacturer's specifications, and maintained appropriately. When using pneumatic equipment, select silenced compressors or use quieter hydraulic equipment. Equipment not being utilised as part of the work should not be left standing with engines running for extended periods.	Construction Manager Workers
Construction techniques	Use of alternative construction techniques where possible such as: • diaphragm walling for cut & cover operations; • bored piling as an alternative to pile driving; and • directional drilling as an alternative to open trenching.	Construction Manager / Superintendent / Supervisor
Regular review	Regular review of the effectiveness of noise mitigation measures and management procedures to accommodate changing site activities would be undertaken: • at the commencement of construction activities; • in response to a valid community complaint regarding construction noise; and • where review of upcoming construction schedule indicates a high likelihood for impact at a sensitive receptor location.	Site Safety and Environment Officer
Routine activities	Scheduling of routine site activities to occur in daytime.	Construction Manager / Supervisor

Table 12.2 Construction Noise Monitoring Programme

Element	Criteria	Frequency	Location	Procedure and Instrumentation
Pre-construction	Baseline noise Minimum of 2 sensitive sites. AS 1055, Type 1 Noise Logger 10 minute logging interval.	One week continuous noise logging prior to significant construction.	Minimum of 2 sensitive sites.	Completed during previous noise assessment.
General Construction	Construction noise monitoring in response to a noise complaint.	Attended noise monitoring with a sound level meter.	Outdoor / indoor (as appropriate).	AS 1055 Acoustic consultant expertise may be required as deemed necessary.
Rock excavation/ Rock-drilling/rock-hammering	If risk assessment determines noise and vibration impact at nearest sensitive receptor.	Each blast	At location of sensitive receptor.	AS1055 AS 2187.2-2006, Ground vibration logger with triaxial geophone and air-blast microphone, PPV and ZC frequency analysis – modem connection for wireless data retrieval if daily blasting. Acoustic consultant expertise may be required as deemed necessary.
Blasting (if required)	Within 1 km of sensitive receptor. If risk assessment determines noise and vibration impact at nearest sensitive receptor.	Each blast	At location of sensitive receptor.	AS1055 AS 2187.2-2006, Ground vibration logger with triaxial geophone and air-blast microphone, PPV and ZC frequency analysis – modem connection for wireless data retrieval if daily blasting. Acoustic consultant expertise may be required as deemed necessary.

12.6 *INSPECTIONS AND REPORTING*

Daily and weekly inspections will be undertaken throughout the construction period by the Site Safety and Environment Officer. This inspection will ensure that appropriate noise and vibration controls are being implemented and are effective. The outcomes of these inspections will be reported in weekly checklists and monthly construction project reports.

Any monitoring results of noise and vibration levels will be reported on a special case by case basis, and evaluated and actioned accordingly.

Records of monitoring results will be maintained at all times during the Project construction and available for inspection by the relevant Government agencies at any time.

13**HYDROCARBON & HAZARDOUS SUBSTANCES PLAN**

The purpose and scope of this sub-plan is to:

- describe how RCDP and the future construction contractor will manage and control hydrocarbon and hazardous substances risks associated with the construction of the project;
- outline the roles and responsibilities of those involved in the implementation of hydrocarbon and hazardous substances management controls;
- address the requirements of applicable legislation;
- meet the Minister's Conditions of Approval for the Project; and
- address the requirements of the Project Environmental Effects Statement (EES).

The scope of this management sub-plan addresses construction hydrocarbon and hazardous substances use and management in the terrestrial environment.

The objectives are to:

- protect human health and the environment through management of any contamination and use of hazardous substances and dangerous goods; and
- protect the quantity and quality of groundwater consistent with the relevant State water policies.

The following targets are applicable:

- hazardous materials (including chemicals and fuels) must be stored within bunded areas in accordance with EPA Bunding guidelines, and must ensure that any spills do not enter the site stormwater system;
- limit the on-site storage of hazardous substances;
- emergency response and contingency plans are in place;
- spill response kits to be available on-site and maintained to relevant standards; and
- employees and neighbours are not exposed to unacceptable risk.

13.1**MANAGEMENT AND MITIGATION MEASURES**

Table 13.1 lists work practices that will be used to control the use of hydrocarbons and hazardous substances during construction and mitigate the potential impacts of these materials and their use on-site.

Hydrocarbons that could be utilised onsite include diesel, oils, hydraulic fluids, lubricants and solvents or degreasers.

The proposed hydrocarbon and hazardous substance inspection and reporting responsibilities are outlined in Section 13.2.

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Table 13.1 Hydrocarbon and Hazardous Substance Mitigation Measures

Construction Phase	Management and Mitigation Measures	Responsibility
Hydrocarbon and Hazardous Substance Use	All activities involving the handling, storage, use, and disposal of hydrocarbons and hazardous substances will comply with the EPA Publication 480, Environmental Guidelines for Major Construction Sites (1996), the OH&S Act 2004, the OH&S Regulations 2007, Chapter 4 – Hazardous Substances and Materials and the Dangerous Goods (Storage and Handling) Regulations 2000. Large quantities of hydrocarbons and hazardous materials will not be stored on-site unless necessary in accordance with EPA Publication 480. Storage facilities for hydrocarbons and hazardous substances will be located away from watercourses and areas prone to flooding or tidal areas. Storage areas will be bunded appropriately according to Victorian EPA publication 347, Bunding Guidelines (1992) and EPA Publication Construction techniques for Sediment and Pollution Control (1991). This would include creating an impermeable base to the bunded area and bund storage capacity equal to the capacity of the largest storage container plus 10%. Storage areas, including waste storage areas, will be appropriately signed. A register of all hydrocarbon and hazardous substances utilised onsite will be kept with a file of Material Safety Data Sheets (MSDS) for all substances. All employees will be made aware of the location of these MSDS.	Site Safety & Environmental Officer/ Contractor Site Safety and Environment Officer
Prevention of Hydrocarbon and Hazardous Substance Spillages	All spillages will be contained in accordance with the EPA Act 1970 and the State Environment Protection Policy (Waters of Victoria) to prevent their discharge into drainage systems. Should a spill occur on-site, the relevant Government agencies will be informed and the clean-up will be undertaken according to the relevant EPA guidelines. Maintenance on contractor machinery will be carried out in designated areas only, preferably located within the contractor compound. Designated hazardous substance usage areas will be located away from vegetation if possible. A hydrocarbon and hazardous chemical spill kit will be maintained and located as close as possible to designated maintenance, refueling and hazardous substance storage areas. All project personnel will be trained in the hydrocarbon/hazardous substance spill response process, as illustrated in the flowchart in <i>Figure 13.1</i>, to ensure the most efficient deployment of the spill response.	Site Safety & Environmental Officer/ Contractor Site Safety and Environment Officer

Construction Phase	Management and Mitigation Measures	Responsibility
	The spill response flowchart will be prominently displayed in key areas such as lunch rooms, maintenance workshops and spill response stations. An Emergency Response Plan will be prepared and specific employees will be inducted in its application. Refueling locations will be such that there is no possibility of discharge into a natural watercourse or storm water system in the event of accidental spillage. Fuel and oil storage facilities will be established in accordance with the requirements of the Australian Standard AS1940: The Storage and Handling of Flammable and Combustible Liquids. Storage facilities will be located away from watercourses and areas prone to flooding or tidal areas. If a fuel storage tank is required on-site it will be placed on an impervious bunded pad in accordance with EPA guidelines. Waste materials will be stored on-site in a secure area and periodically removed from site to a licensed re-cycling facility. Refueling of machinery and vehicles will be carried out in a manner which prevents spills. Any maintenance or servicing of machinery and vehicles will be undertaken in accordance with EPA guidelines to minimise the potential for site contamination through oil or fuel leakages. Waste oil filters will be drained overnight and disposed to a regulated waste facility. Plant and vehicles will be subject to routine maintenance to ensure peak operation and to minimise oil/fuel leaks.	

13.2 *INSPECTIONS AND REPORTING*

Weekly inspections will be undertaken throughout the construction period by the Site Safety and Environment Officer and the Contractors Site Safety and Environment Officer. This inspection will ensure that appropriate hydrocarbon and hazardous substance controls are being implemented and are effective. The outcomes of these inspections will be reported in weekly checklists and monthly construction project reports.

Any deviation from the controls or observed spills will be reported immediately to the relevant site managers and evaluated and actioned accordingly.

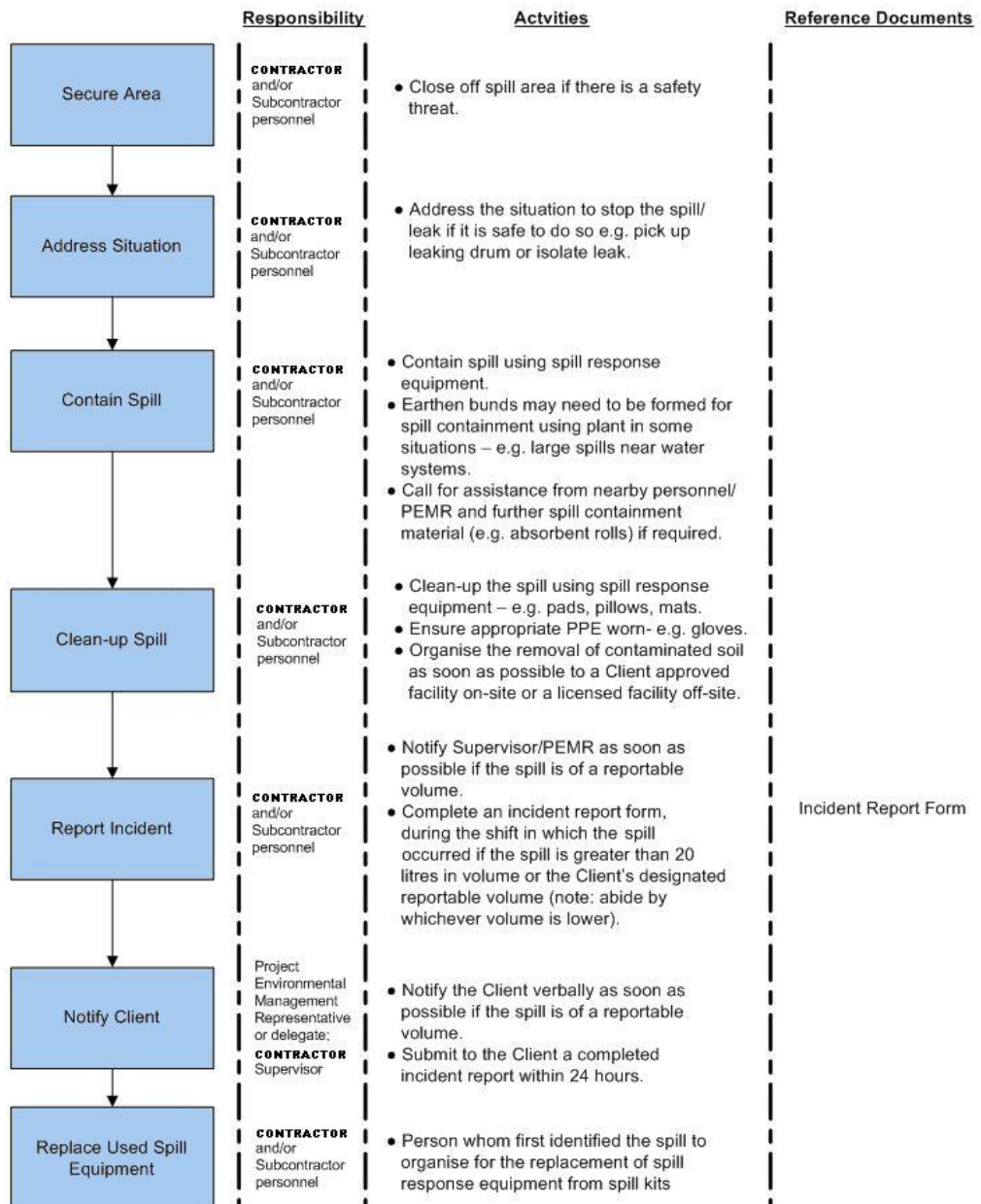
Records of the use of hydrocarbons and hazardous substances onsite will be maintained at all times during the Project construction and available for inspection by the relevant Government agencies at any time.

13.3 *HYDROCARBON / CHEMICAL SPILL RESPONSE PROCESS*

The hydrocarbon/chemical spill response process is set out in *Figure 13.1*.

Hydrocarbon / Chemical Spill Response Flowchart

PROCESS OWNER: Quality & Environmental Manager



Rev 2

Figure 13.1 Spill Response Protocol

14 SEDIMENT, EROSION & WATER QUALITY MANAGEMENT PLAN

The purpose and scope of this sub-plan is to:

- describe how RCDP and the future construction contractor will manage and control sediment, erosion and water quality risks associated with the construction of the project;
- outline the roles and responsibilities of those involved in the implementation of sediment, erosion and water quality management controls;
- address the requirements of applicable legislation;
- meet the Minister's Conditions of Approval for the Project; and
- address the requirements of the Project Environmental Effects Statement (EES).

The scope of this management sub-plan addresses construction sediment, erosion and water quality management in the terrestrial environment.

The objective is to manage sediment, erosion and water quality consistent with relevant State waste policies and guidelines.

The following targets are applicable:

- stormwater management measures comply with relevant guidelines and incorporate Water Sensitive Urban Design (WSUD) principles;
- implement opportunities (where possible) for roof runoff and stormwater containment and/or reuse on-site;
- chemical storage and delivery areas are bunded in accordance with the EPA Bunding guidelines; and
- minimise areas disturbed, locate stockpiles to protect drainage lines, install erosion control devices and monitor erosion control measures.

14.1 EARLY WORKS – STAGE 1

An Erosion Sediment Control Plan (ESCP) has been prepared for the early works – Stage 1 and is appended to this EMP in Annex D. This ESCP is suitable for the early works and will be updated for Stage 2 – Final Works once a contractor has been engaged. The considerations that need to be taken into consideration in any updating of this ESCP are set out below.

14.2 RECEIVING WATER ENVIRONMENTS

A number of first and second order streams drain the site broadly from north to south, namely Ritchies Creek and Shaw River. These streams flow into Yambuk Lake. The site also contains Island Swamp which is an ephemeral wetland, which drains into Goose Lagoon further south. During wet periods other large areas of the site can become inundated with water.

The site is not located within a Land Subject to Inundation Overlay under the Moyne Planning Scheme. These overlays are based on the one in one hundred year flood data and therefore it is assumed there is minimal flood risk on the site.

14.3 RECEIVING WATER QUALITY

The receiving waters at the site are generated from upstream surface water run-off. Water quality is expected to be representative of a rural, agricultural environment.

14.4 GROUNDWATER QUALITY

The site contains existing ground water bores with numerous other bores located in close proximity. The majority of bores are used for domestic and stock watering purposes and range in depth from approximately 10 to 53m. Groundwater quality is expected to be good.

14.5 WATER QUALITY CRITERIA

Relevant water quality criteria are stipulated in the SEPP (Waters of Victoria) and ANZECC and ARCANZ Water Quality guidelines for marine and freshwater (2000). EPA Victoria has also promulgated "*A guide for application of water quality parameters for ecosystem health.*"

14.6 SURFACE WATER MANAGEMENT OVERVIEW

The open excavation works, site clearing, access tracks and compound sites will include the establishment and implementation of environmental control measures, prior to the commencement of construction works.

One of the primary objectives is to prevent or minimise the potential for soil erosion by the control of overland flows, minimisation of flow path lengths and the use of trapping devices to capture sediment. Soil and water quality control measures, including the use of grassed swales, sediment fences, straw bales, buffer strips and turbidity curtains, will help avoid an impact on water quality in nearby watercourses from construction site runoff.

Design and install appropriate erosion and sediment run-off control measures appropriate to site conditions to handle a one-in-two-year storm event (two-year ARI with intensity of six hours), for temporary structures, and a one-in-fifty year storm event, for permanent structures.

Ensure that contingency plans are in place for unusual storm events.

14.7 EROSION SEDIMENT CONTROL PLAN – CONSTRUCTION CONTRACTOR

For each of the aforementioned activities (and site segments where more appropriate), the works will be covered by a detailed Erosion and Sediment Control Plan (ESCP) to be developed by the future construction contractor. The ESCP will provide specific details on surface water mitigation measures such as sedimentation controls and surface stabilisation measures at the site.

The ESCP will comply with the minimum requirements of:

- “*Doing it right on subdivisions. Temporary environmental protection measures for subdivision construction sites*”, EPA Publication 960, dated October 2004.
- “*Environmental Guidelines for Major Construction Sites*”, EPA Publication, February 1996.

The following design principals are to be incorporated into the ESCP to be prepared by the construction contractor.

14.7.1 Drainage lines

Identify drainage lines and install control measures to handle predicted stormwater and sediment loads generated in each mini-catchment.

14.7.2 Minimising Disturbance and Bare Areas

Erosion and dust generation will be reduced through minimisation of the cleared footprint, for areas immediately required, and where feasible progressive clearance of vegetation. Where possible, progressive rehabilitation will occur to minimise the area of exposed surfaces following completion of works.

14.7.3 Temporary sediment control structures

Temporary sediment control structures should be designed to take predicted flows, based on a one-in-two-year storm (two-year ARI with intensity for six hours) and sub-catchment areas, while contingency plans should be in place to account for extreme storm events. Use the Universal Soil Loss Equation⁸ to estimate long-term average annual yield of sediment from small uniform sections of catchments. Run-off and sediment control structures should be designed and constructed to accept the expected peak flows and sediment loads.

Continually assess the effectiveness of sediment control measures and make necessary improvements.

Sediment fences

A sediment fence is a temporary barrier of geotextile filter fabric, supported by stakes and occasionally wire mesh fencing. Its function is to retain sediment onsite by filtration and to reduce flow velocity, further retaining sediment by settlement. The position of major sediment fences will be identified on the ESCPs.

When appropriate, sediment fences will be attached to the site perimeter fencing and anchored (effectively ‘dug-in’) into the ground before the commencement of other site establishment works. Sediment fences will also be used to assist in the control of runoff from topsoil and other stockpiles.

Sediment fences will be inspected on each working day for undercutting, sagging and overtopping, and repaired immediately. Accumulated sediment behind the sediment fence will be removed before the level of accumulated sediment reaches one third of the original height of the fence.

Straw bale filters

Straw bale filters would be used as an alternative to a sediment fence where high flows are anticipated. These devices are constructed parallel with the contours of the site. Straw bales are placed to dissipate the velocity of any stormwater entering the site, with the secondary function of sediment retention within the site.

Straw bales are wrapped in geotextile fabric and the ends of the straw bales are placed closely to create an effective barrier. The filters would be one straw bale high. The bales would be embedded at least 100mm into the ground and held in place with 1.2m star pickets. Two star pickets would be required for each bale. Star pickets would be angled to hold adjacent bales together.

Geotextile Filters/Sediment Traps

Gravel bags, sandbags, geotextile inlet filters, wire mesh/gravel inlet filters will be used as an extra precaution to protect internal and external drain inlets from sediment runoff as a result of construction in drainage/stormwater lines. The position of inlet filters/ traps will be identified on the ESCP.

In-stream controls

When the site is intersected by a stream, then in-stream controls such as a rock weir are required to reduce water velocity and trap sediment. Special precautions should be taken when cleaning behind a weir to ensure that trapped sediment is not resuspended.

14.7.4 Temporary Stabilised Site Access

Stabilised site access points will be installed (typically crushed concrete, road base, rumble grids) at each of the two major site entrance/exits to minimise the tracking of soil from the site onto roads during construction. All stabilised access points will be identified on the ESCP.

14.7.5 Water Retention/Sediment Basins

The type of sediment basins that may be required on-site may include:

- permanent retention basin(s) established for treatment (sediment flocculation/pH adjustment) and stormwater discharge; and
- mobile sediment basins for inline treatment of surface waters prior to discharge to a suitable receiver.

Details of the requirement, design and location of sediment basins will be included on the ESCP, developed prior to the start of each stage of construction by the construction contractor. Design of the basins will include:

- sizing sediment basins to maximise capture of run-off from construction areas and dewatering activities from excavations (5-day 90th percentile rainfall, depth based on 30mm rain);
- location and stabilisation of open drains (e.g. diversions, catch and berm drains);
- batter treatments; and
- methods for dissipating high velocity flows etc.

The management of temporary sediment basins will involve the following:

- the condition and capacity of the sediment ponds will be monitored on a regular basis to ensure sufficient free capacity and in anticipation of rain events;
- water will not be discharged from sediment basins unless water quality guidelines are satisfied, unless otherwise specified;
- monitoring water quality during dewatering activities (e.g. monitoring pump operations);
- collected sediment shall be removed as necessary to maintain sufficient volume within the sediment basin;
- sediment removed from the sediment basin shall be transported to the nominated stockpile locations on the site or removed off-site on a regular basis;
- the water within the sediment basin, once tested and found to meet discharge standards, will be either reused (where feasible – e.g. dust suppression) or discharged into the nearest waterway/stormwater system; and
- laboratory analysis may be used to confirm water quality where required.

14.8

WASTEWATER MANAGEMENT

The majority of wastewater generated on-site will be produced from:

- run-off from site compounds and spoil management areas;
- chemical and fuel storage compounds;
- wash-down of concrete haul trucks, agitators and batching plant;
- wash-down of vehicles to prevent weed/pathogen spread; and
- dewatering from excavations and sedimentation ponds/tanks (if relevant).

Bulk storage areas for fuels, oils and chemicals used during construction will be contained within an impervious bund to retain any spills of more than 110% of the volume of the largest container in the bunded area. Any spillage will be immediately contained and absorbed with a suitable absorbent material. Storage will comply with AS 1940- 1993 – *The Storage and Handling of Flammable and Combustible Liquids*.

Spill kits will be provided at each storage area, with smaller kits contained within site vehicles and at areas of the worksite where handling and use of dangerous goods occur. Staff will be provided with appropriate training in spill response.

Material Safety Data Sheets (MSDS) for all chemicals stored on-site will be maintained by the Site Safety and Environment Officer and made available to site personnel. Site personnel will be informed of their location as a part of the site induction.

Refuelling of equipment on-site or any other activity which could result in a spillage of a chemical, fuel or lubricant will be undertaken away from drainage/stormwater lines. In the event water is polluted by chemicals and/or fire fighting materials (e.g. foams) the water will be collected, and disposed at an approved Liquid Waste Treatment Facility.

All activities that generate wastewater will, where practical, utilise various controls including bunding to contain wastewater to enable its removal, treatment and/or reuse in an environmentally acceptable manner.

Concrete washout areas will be suitably sized to contain the expected volumes of washout including solids and liquids. These will be regularly maintained and located in a position where wastewater will not enter any drainage lines/waterways. The locations and size of concrete washout areas will be marked on the relevant ESCP.

14.9 WATER REUSE

Where possible, stormwater will be collected within site compounds, largely in sediment basins with both dewatered groundwater (if encountered) and treated surface run-off water, and re-used on-site. Where practical, there is the potential for captured water to be re-used on-site for activities such as dust suppression. Other potential re-use options for water captured on-site include concrete washouts, wheel washes and equipment cleaning within designated, controlled wash-out facilities.

14.10 SEWAGE TREATMENT AND DISPOSAL

Site amenities will be connected to a septic tank wastewater system (upon receipt of EPA and Council permits) or to holding tanks for removal by a licensed contractor. Refer to Construction and Worksite Management Sub-Plan for further information.

14.11 MANAGEMENT AND MITIGATION MEASURES

Table 14.1 lists work practices that will be used to control sediment, erosion and water quality impacts during construction.

The proposed construction sediment, erosion and water quality monitoring programme is outlined in *Table 14.2*.

Table 14.1 Sediment, Erosion and Water Quality Mitigation Measures

Construction Phase	Management and Mitigation Measures	Responsibility
Planning	All below ground concrete structures/foundations will be designed such that the concrete is not affected by any potentially contaminated groundwater, is vermin proof and sealed. Sediment and erosion control plans must be prepared for a number of appropriately sized segments within the site. The segments may reflect the staging of the construction works across the site. Segment boundaries should be selected on the basis of natural features or the placement of sub-catchments. A map of the existing topography and changes to the landform of each segment, as construction progresses should be included in the sediment and erosion control plans. The maps must identify critical areas for protection which may be easily erodible, such as highly erodible soils, steep slopes, haul roads, or bare areas. If required, new stormwater drainage systems should be installed before any land disturbance activities commence. Temporary sediment control structures should be designed to take predicted flows, based on a one-in-two-year storm (two-year ARI with intensity for six hours) and sub-catchment areas, while contingency plans should be in place to account for extreme storm events.	Construction Manager
General	All land disturbance must be confined to a minimum practical work area and to the vicinity of the identified work areas. Soils to be removed must be stockpiled according to similar soil horizons and not mixed. Sediment fences (geo-textile or similar) to be installed on all drainage lines likely to receive surface waters from disturbed areas. Base control measures to manage erosion on the vulnerability of cleared land to soil loss, paying particular attention to protecting slopes. Mulch, roughen and seed cleared slopes and stockpiles where no works are planned for more than 28 days, with sterile grasses. Keep vehicles to well-defined haul roads. Rehabilitate cleared areas promptly.	Construction Manager / Superintendent
Stockpiles	Stockpiles must not be located within 100m of a watercourse. Appropriate dust suppression must be applied to all stockpiles – refer to Construction and Worksite Management Sub-Plan.	Construction Manager / Supervisor

Construction Phase	Management and Mitigation Measures	Responsibility
Stormwater management	Collect and manage stormwater away from construction pads for towers where soil are exposed. This can be done by constructing diversion banks and intercept drains around the pad areas while ensuring that the water discharging from such banks or drains is redirected to the natural flow lines without causing erosion. Install rock structures on the site to retard water flows to reduce erosion in areas where high water flows are expected. Prevent scouring of drainage lines or velocity-reducing structures by installing crushed rock or geotextile in the drainage line. Any natural drainage lines that discharge water on to the top of a slope should be directed to grassed areas by intercept drains.	Construction Manager / Supervisor
Dewatering worksites	Ensure that the level of contaminants in waters pumped into natural waterways never exceeds the regulatory water quality standard (a permit to discharge may be required). Monitor every hour during a pumping operation the turbidity of water pumped directly to a natural waterway or a drainage system discharging to a natural waterway.	Construction Manager / Supervisor
Watercourse crossings	If in-stream activities require construction of a stream crossing, it should be installed during low-water flows with downstream weirs (or alternative control) in place to trap any released sediment. The crossing should be positioned perpendicular to the flow and located at the narrowest part of the stream. The crossing should be protected against erosion, both to prevent excessive sedimentation in the waterway, and to prevent washout of the crossing.	Construction Manager / Supervisor
Hazardous substance storage	Storage areas must be located away from waterways and vegetation – refer Hydrocarbon and Hazardous Substance Management Sub-Plan. All chemicals, fuels and liquid wastes will be stored in accordance with AS 1940 (1993) <i>The Storage and Handling of Flammable and Combustible Liquids</i> in sealed vessels of appropriate volumes and kept in suitably bunded areas away from stormwater drainage lines. Spill kits will be provided at each storage area and at areas of the worksite where handling and use of dangerous goods occur. Staff will be provided with appropriate training in spill response. Spill kits will be located usually close to the access point to sites or close to any chemical/fuel storage. Any fuel, lubricant or hydraulic fluid spills will be cleaned-up immediately using absorbent material and the contaminated material disposed of at an appropriate licensed waste depot. Machinery will be checked daily to ensure no oil, fuel or other is liquids leaking from plant or equipment.	Construction Manager / Supervisor

Construction Phase	Management and Mitigation Measures	Responsibility
Concrete batching plant	Appropriate and regular maintenance will be undertaken. Confirm plant will not exceed 100 tonne per week production capacity (a licence is required for plant exceeding 100 tonne per week). Pave and bund the following areas that may generate wastewaters: - the agitator washout area; - the truck washing area; - the concrete batching area; and - any other area that may generate stormwater contaminated with cement dust or residues. Plant not to be located within 100 m of a watercourse. Water captured by the bunds should be diverted to a collection pit and then pumped to a storage tank for recycling. The wastewater recycling system must be able to store the contaminated runoff generated by 20 mm of rain in 24 hours. There must be no dry weather wastewater discharges from the site. Monitor wet weather discharges from the recycling system for pH and suspended solids. Retain the records.	Site Safety and Environment Officer
Steep batters	Steep batters are to be treated to avoid erosion and sedimentation in accordance with EPA Publication 275 <i>Construction Techniques for Sediment Pollution Control</i> .	Site Safety and Environment Officer
Identification of erosion	All identified areas of erosion must be appropriately remediated within 2 days of it being identified.	Site Safety and Environment Officer
Inspection, maintenance and cleaning	Inspections of control devices must be undertaken on a regular basis and during storms to assess the effectiveness of the devices.	Construction Manager / Supervisor
Liquid wastes	Liquid wastes shall be handled and transported for disposal at an appropriate licensed treatment facility.	Construction Manager / Supervisor
Contaminated water management	Wash-down areas for equipment will be located in bunded areas and away from drainage/stormwater lines. Concrete washout areas/pits will be adequately sized, regularly maintained and located in a position where wastewater will not enter any drainage/stormwater lines. If pits cannot be established, metal lined trays may be used as an alternative. These will be marked on the relevant ESCP. All potentially contaminated wastewater will be contained and disposed of to a licensed facility.	Construction Manager / Supervisor Site Safety and Environment Officer

Table 14.2 Sediment, Erosion and Water Quality Monitoring Programme

Element	Criteria	Frequency	Location	Procedure and Instrumentation
pH and suspended solids	During wet weather discharges from the concrete batching recycling facility	Each discharge event	Concrete batching wastewater recycling facility	EPA, Victoria, 2009, Industrial Waste Resource Guidelines, Sampling and Analysis of Waters, Wastewaters, Soils and Wastes
Pollutants of concern	Discharges from any sediment basin to the environment	Each discharge event	Sediment basin	

14.12***INSPECTIONS AND REPORTING***

Daily and weekly inspections will be undertaken throughout the construction period by the Site Safety and Environment Officer. This inspection will ensure that appropriate sediment, erosion and water quality controls are being implemented and are effective. The outcomes of these inspections will be reported in weekly checklists and monthly construction project reports.

Erosion control devices will be inspected within 24 hours after major rainfall events. Where controls are deemed inadequate, additional controls will be installed e.g. sandbags additional sediment fences, channels. Sediment removed from devices will be assessed and if suitable combined with stockpiled project spoil for reuse/disposal.

All sediment basins will be monitored and managed in accordance with a Water Retention Basin Discharge Checklist with the inspection results recorded.

In the event of a film, oil/grease stain or other indicator of pollution within site run-off being observed, the Site Safety and Environment Officer (or delegate) will inspect the worksite in order to determine the source and instruct appropriate remedial measures to control the source. Relevant authorities will be notified in the event of an incident that results in serious loss of contaminants (i.e. soil and/or water) that have the potential to cause environmental harm and complete an incident investigation in accordance with the Project EMP.

Any monitoring results of water quality will be reported on a special case by case basis and evaluated and actioned accordingly.

Records of monitoring results will be maintained at all times during the Project construction and available for inspection by the relevant Government agencies at any time.

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15 **BLASTING MANAGEMENT SUB-PLAN**

The purpose and scope of this sub-plan is to:

- describe how RCDP and the future construction contractor will manage and control blasting risks associated with the construction of the project;
- outline the roles and responsibilities of those involved in the implementation of blasting management controls;
- address the requirements of applicable legislation;
- meet the Minister's Conditions of Approval for the Project; and
- address the requirements of the Project Environmental Effects Statement (EES).

The scope of this management sub-plan addresses blasting management in the terrestrial environment.

The objective is to ensure all blasts are planned and implemented to ensure compliance with regulatory requirements and conditions of consent. The following targets are applicable:

- the community is informed of the planned time and date of pending blasts;
- road closures and evacuations occur within the zone of exclusion;
- blast monitoring stations are operational;
- required levels of ground vibration and air blast are not exceeded;
- no flyrock is emitted beyond the zone of exclusion;
- no visible emissions of dust/fumes from site; and
- all complaints are recorded and responded to in a timely and professional manner.

15.1 **POTENTIAL IMPACTS**

Blasting may be required for the excavation for the turbine foundations where geotechnical conditions preclude the use of mechanical equipment, such as rock hammers. The requirement for blasting is yet to be determined, pending detailed site-based geotechnical assessment. However, this management sub-plan has been prepared to guide the conduct of any blasting that may be required during construction.

The blasting process has the potential to generate fumes from incomplete combustion of the chemical explosives and dust clouds from the fracturing of blasted materials. Potential for flyrock to impact off-site areas within 300m of blasts is also possible.

15.2 **SENSITIVE RECEIVERS AND BUFFER DISTANCES**

EPA Publication AQ 2/86 *Recommended buffer distances for industrial residual air emissions* suggests a buffer distance of 500m for *quarrying of hard rock with blasting*. It is considered any blasting as a part of the Project is best represented by this buffer distance.

A total of twenty-three (23) residential properties are located within 1.7 kilometres of the site. There are no residential properties within 500m of a wind turbine. The nearest residential property to a wind turbine is located 550m from the turbine footprint (414 Youls Road, Yambuk). The majority of residences are located over 1km from a wind turbine footprint.

Other relevant sensitive receivers to blasting impacts of vibration and overpressure include power poles and road/agricultural infrastructure. These sensitive assets will be included in any assessment of vibration and overpressure prior to a blast event.

15.3 **RELEVANT CRITERIA**

Australian and New Zealand Environment Council, *Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground Vibration*, 1990 has been adopted for the determination of appropriate blasting criteria. The blasting and vibration criteria applicable to the Project are detailed below.

15.3.1 **Airblast Overpressure Criteria**

The airblast overpressure level from blasting operations carried out in or on the premises must not exceed:

- 115 dB (Lin Peak) for more than 5% of the total number of blasts during each year; and
- 120 dB (Lin Peak) at any time, at any residence or other noise sensitive receiver.

15.3.2 **Ground Vibration (ppv) Criteria**

The ground vibration peak particle velocity from blasting operations carried out in or on the premises must not exceed:

- 5 mm/s for more than 5% of the total number of blasts carried out in or on the premises during each year; and
- Exceed 10 mm/s at any time, at any residence or other noise sensitive receiver.

15.3.3 **Time of Blasting**

Blasting activities are restricted to the following hours:

- Monday to Friday: 8:00am and 4:00pm
- Saturday: 8:00am and 4:00pm
- Sunday: Nil

Major blasts should only occur once per day.

If blasting is required to be undertaken at other times, prior approval will be obtained from the relevant authority.

Relevant guidelines and standards applicable to the management of blasting for the Project are listed below:

- Australian and New Zealand Environment Council, 1990, *Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground Vibration*.
- AS 2187.1-1998: Explosives – Storage, Transport and Use, Part 1 – Storage.
- AS 2187.2-2006: Explosives – Storage, Transport and Use, Part 2 – Use of Explosives.

15.4 **BLASTING RESPONSIBILITY**

In the event blasting is required, RCDP will engage a suitably qualified and licensed drill and blast sub-contractor. The nominated sub-contractor is currently not known.

15.5 *MANAGEMENT AND MITIGATION MEASURES*

Table 15.1 lists work practices that will be used to control blasting related risks during construction and mitigate the impacts of these risk events.

The proposed blasting monitoring programme is outlined in *Table 15.2*.

Table 15.1 Blasting Mitigation Measures

Construction Phase	Management and Mitigation Measures	Responsibility
<i>Source Controls</i>		
Airblast	Predictions of airblast at sensitive receivers within 1km of the blast must be made prior to any blasting activities in accordance with AS 2187.2-2006: <i>Explosives – Storage, Transport and Use, Part 2 – Use of Explosives</i> .	Site Safety and Environment Officer
	Airblast from blasting must be controlled by ensuring that the explosives have sufficient confinement within the rock mass, to ensure that the explosives' energy is completely used before the gases vent to the atmosphere. From a practical perspective, this means that careful control needs to be maintained on: - the burden on front row blastholes; - the amount of stemming used in blastholes to confine the gases in the holes; and - the rate of movement of the rock mass during the blast.	Construction Manager / Blasting Sub-contractor
	The prevailing wind direction has a significant effect on airblast, generally increasing the level of airblast downwind of the blast. No blasting should occur if the prevailing wind is blowing directly towards the nearest sensitive receiver, subject to the receiver being within the predicted zone of airblast influence.	Site Safety and Environment Officer / Blasting Sub-contractor
Vibration	Predictions of vibration at sensitive receivers within 1km of the blast must be made prior to any blasting activities in accordance with AS 2187.2-2006: <i>Explosives – Storage, Transport and Use, Part 2 – Use of Explosives</i> .	Site Safety and Environment Officer / Blasting Sub-contractor
	The vibration generated by blasting must be controlled using two main methods: - Reduce the charge mass of explosives detonating at any instant. - Ensure that the blast design and initiation design promote forward movement of the rock mass.	Blasting Sub-contractor
<i>Pre-blast</i>		
Condition survey	Prior to the commencement of blasting, an inspection of the nearest sensitive receivers infrastructure will be undertaken to assess their prevailing condition. Upon written request, RCDP will undertake an inspection of the material condition of any residence within 2 km of the blasting locations. The inspection will be undertaken within 14 days of the receipt of such a request.	Site Safety and Environment Officer
Notifications	A schedule of blasts for the proceeding months must be prepared and communicated to affected persons around the site. The schedule should contain detailed information as to the time, location and road closure information.	Site Safety and Environment Officer
	Prior to the commencement of any blast, the Site Safety and Environment Officer and blasting sub-contractor must be consulted on the day of the planned blast, and immediately prior to blasting to determine whether or not to proceed with the blast at that time. Any decision to defer a blast is to be recorded in the same manner as a blast.	Site Safety and Environment Officer / Blasting Sub-contractor
	Prior to the commencement of each blast, the Site Safety and Environment Officer must attempt to communicate the intention to blast to each potentially affected resident with at least 24 hours notice. Where possible a message is left for the resident. A record is to be kept for each blast detailing contact made, message left or whether they were unable to be contacted.	Site Safety and Environment Officer
	If the planned blast is delayed for more than 2 hours beyond the time communicated to residents, or the blast is cancelled after notification has been made to residents, telephone contact is again made to each of the residents to apprise them of the situation.	Site Safety and Environment Officer

Construction Phase	Management and Mitigation Measures	Responsibility
	Notifications of a blast must be made to all construction employees via email/signage or the morning pre-start meeting.	Site Safety and Environment Officer
Safety of operations	Clearance distances must be confirmed by the blasting sub-contractor and implemented considering the location of the shot firer, general construction employees and members of the public.	Site Safety and Environment Officer
	All personnel/members of the public within the zone of influence must be confirmed to be within a 'safe zone' prior to any blast event.	Site Safety and Environment Officer
	Access to the exclusion zone must be strictly controlled during the blasting operation. Appropriate signage will be erected to alert local landowners, Project personnel, contractors and visitors to the proposed blasting. The site clearance and post-blast reoccupation protocol shall be implemented in accordance with the blasting sub-contractors' standard procedures.	Blasting Sub-contractor / Site Safety and Environment Officer
<i>Air Quality</i>		
Dust	Drill rigs are to be fitted with dust control equipment and coarse material is to be used to stem blasts. Drill rigs are to use water injection for drilling and drill areas are to be wetted down prior to drilling during dry and windy conditions.	Blasting Sub-contractor
	Blasting will be undertaken using procedures that will involve an assessment of meteorological conditions prior to blasting. In the event that: - weather inversion conditions are detected; and/or - wind speeds greater than 10 m/s and blowing directly towards a sensitive receiver; no blasting will be undertaken. If wind speeds are greater than 6m/s and blowing directly towards a sensitive receiver, the shot will not be fired without specific instruction from the Site Safety and Environmental Officer.	Site Safety and Environmental Officer
	Further dust mitigation measures are included in the Construction and Worksite Management Sub-Plan.	
<i>Storage and Handling of Explosives</i>		
General	The storage of explosives on-site shall be in accordance with AS 2187.1-1998: Explosives – Storage, Transport and Use, Part 1 – Storage. Theft of explosives shall be reported immediately.	Blasting Sub-contractor / Site Safety and Environmental Officer
<i>Flyrock Management</i>		
General	The blasting sub-contractor is to ensure that all blasts are designed in such a manner as to ensure that no flyrock is ejected from the site or on to any infrastructure established on-site. The blasting sub-contractor is to ensure that all people and livestock are excluded from the zone of exclusion during blasting.	Blasting Sub-contractor
	Where the zone of exclusion extends beyond the site property boundary, necessary traffic controls are to be in place to prevent damage to people and property.	Site Safety and Environmental Officer
<i>Post-blast Activities</i>		
Review	Following each blast a post-blast review must be conducted. The Site Safety and Environmental Officer is to participate in any review where the abovementioned overpressure/vibration criteria are exceeded, or where complaints have been received in regard to the blast.	Blasting Sub-contractor / Site Safety and Environmental Officer

Table 15.2 Blasting Monitoring Programme

Element	Criteria	Frequency	Location	Procedure and Instrumentation
Overpressure	115 dB (Lin Peak) for more than 5% of the total number of blasts during each year. 120 dB (Lin Peak) at any time, at any residence or other noise sensitive receiver.	Every blast	Nearest sensitive receiver	Real-time monitors, which will relay the measured results for ground vibration and sound overpressure to the main receiver, shall be used. Instruments shall be manually triggered prior to each blast.
Vibration	5 mm/s for more than 5% of the total number of blasts carried out in or on the premises during each year. Exceed 10 mm/s at any time, at any residence or other noise sensitive receiver.	Every blast	Nearest sensitive receiver	Instrumentation used to monitor compliance will meet the requirements of Australian Standard 2187.2.
Flyrock	No flyrock is ejected from the site or on to any infrastructure established on-site	Every blast	Zone of influence	All blasts will be closely observed and may be periodically recorded on video for analysis.

15.6***SITE CLEARANCE AND POST-BLAST REOCCUPATION PROTOCOL*****48 Hours Before Blast**

1. The Site Safety and Environment Officer must attempt to communicate the intention to blast to each potentially affected resident.

Day of Blast

2. Confirm 24 hour notification requirements have been completed.
3. Notify all employees, sub-contractors, visitors etc. (pre-start meeting) of intention to blast.
4. Observe weather conditions and decide to proceed with blast.
5. Place advisory signage around the site – show blast time and location.
6. Remove all unnecessary plant and equipment from the zone of exclusion.

Firing the Blast

7. Confirm the blast shelter is in position.
8. Confirm exact timing of blast and notify Construction Manager (for warning sirens).
9. Clear workforce and machinery from the zone of exclusion. Establish traffic controls and barriers (if relevant). Place guards at each point of access to prevent unauthorised access.
10. Sound three short warning sirens to indicate a blast is imminent.
11. Check the zone of exclusion to ensure the area is clear. After a pause of at least two minutes, two short siren warnings are given.
12. After a pause of at least one minute, sound a continuous siren during the charging of the exploder and firing of the shot.
13. When dust and fumes have cleared, the blasting sub-contractor shall inspect for signs of a misfire. If a misfire has occurred, the blasting sub-contractor procedures for dealing with misfires shall be implemented.
14. If all holes have fired, the “all clear” is given by sounding a continuous siren for at least 10 seconds.
15. Site access guards stand down, and construction recommences.

Precautions When a Storm Approaches

16. If loading and firing of the shot can be safely completed prior to the storm event, fire the shot.
17. If loading cannot be completed, collect and return all explosives to the nominated storage location. Keep all personnel at a safe distance during collection and transportation of explosives.
18. Keep the blast site under close observation until the storm passes.
19. On approach of the storm, the explosives storage area shall be locked and persons evacuated to a safe distance. No person shall return to the storage area until the blasting sub-contractor determines it is safe to do so.

15.7 COMPLAINT HANDLING AND INCIDENT RESPONSE

All complaints will be managed in accordance with the complaints management procedures described in Section 6.3.

All environmental incidents will be handled according to the RCDP incident management process described in Section 9.

15.8 INSPECTIONS AND REPORTING

A pre- and post-blast inspection will be undertaken for each blast event (infrastructure asset condition assessment etc.). This inspection will ensure that appropriate blasting controls are being implemented and are effective. The outcomes of these inspections will be reported in checklists and monthly construction project reports.

Monitoring results will be reported for each blast, evaluated and actioned accordingly. Following each blast a post-blast review will be conducted and reported to the Construction Manager.

Records of monitoring results will be maintained at all times during the Project construction and available for inspection by the relevant Government agencies at any time.

16**ARCHEOLOGICAL MANAGEMENT PLAN
(CULTURAL HERITAGE MANAGEMENT PLAN)**

The purpose and scope of this sub-plan is to:

- describe how RCDP and the future construction contractor will manage and control risks to Aboriginal archaeological/cultural heritage values and sites associated with the construction of the project;
- outline the roles and responsibilities of those involved in the implementation of Aboriginal archaeological/cultural heritage management controls;
- address the requirements of applicable legislation;
- meet the Minister's Conditions of Approval for the Project; and
- address the requirements of the Project Environmental Effects Statement (EES).

The scope of this management sub-plan addresses:

- how RCDP and the construction constructor will manage and control risks to Aboriginal archaeological/cultural heritage values and sites associated with the construction of the project;
- procedures to ensure that before any buildings or works commence in association with the development, the identified heritage locations identified in the Aboriginal archaeological/cultural heritage Assessment;
- protocols for the activities of RCDP and the construction constructor on-site, which have been identified to have potential effects on sites of cultural significance.

The objective is to minimise the impacts on Aboriginal archaeological sites, heritage sites and cultural values. The following targets are applicable:

- disturbance to Aboriginal heritage is avoided or minimised wherever practicable;
- where disturbance of items of Aboriginal heritage is unavoidable, appropriate management measures ensure protection of all disturbed items;
- disturbance to European heritage is avoided or minimised wherever practicable; and
- where disturbance of items of European heritage is unavoidable, appropriate management measures ensure protection of all disturbed items

The Archaeological Management Plan must be read in conjunction with the approved Cultural Heritage Management Plan (CHMP) prepared by ERM dated 28 July, 2008. In any conflict between this EMP and the CHMP, the wording within the CHMP prevails.

16.1**RECORDED SITES**

As a result of an archaeological survey undertaken at each of the 68 turbine locations on Ryan Corner Wind Farm, the following sites were recorded:

- three Aboriginal archaeological heritage sites;
- a number of areas of Aboriginal archaeological sensitivity; and,
- one non-Aboriginal historical site.

The location of the recorded archaeological heritage sites is shown below in *Figure 16.1*.

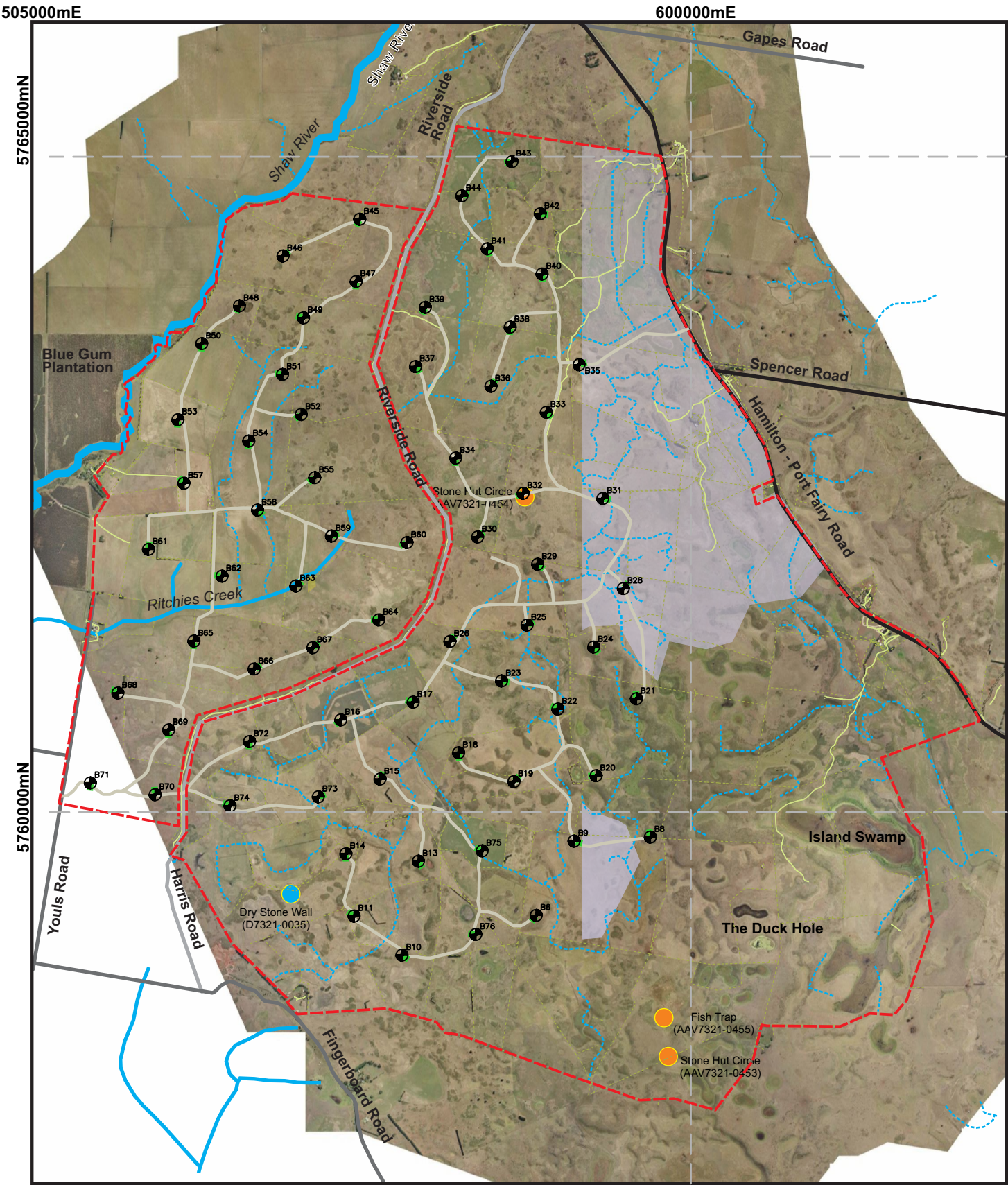


Figure 16.1
Recorded Archaeological Sites

Environmental Resources Management Australia Pty Ltd
Level 3, Tower 3, World Trade Centre
18-38 Siddaley Street, Docklands, VIC 3005
Telephone +61 3 9696 8011



Legend

- Site boundary

Watercourse

Main road

Sealed road

Unsealed road

Existing tracks

Existing fence lines

Proposed access tracks

Aboriginal archaeological site

Historical archaeological site
- Wind turbine

River

Creek

Drain

Swamp

Floodplain

Well Drained Stony Rise

Poorly Drained Stony Rise

Water Catchment

Client:	Ryan Corner Development Pty Ltd		
Project:	Ryan Corner Wind Farm		
Drawing No:	0105123m_05	Suffix No:	R1
Date:	12/01/2012	Drawing size:	A4
Drawn by:	ML	Reviewed by:	-
Source:	-		
Scale:	Refer to Scale Bar		



16.2 *MANAGEMENT AND MITIGATION MEASURES*

Table 16.1 lists work practices that will be used during the construction to avoid impacts to Aboriginal and cultural heritage sites, items and values.

Table 16.1 **Archaeological Mitigation Measures**

Construction Phase	Management and Mitigation Measures	Responsibility
Site establishment and access	All construction works carried out in accordance with legislative requirements, including the approved Cultural Heritage Management Plan.	Construction Manager / Superintendent
Installation of turbines, overhead and underground transmission lines	All workers must undertake Cultural Heritage site induction training and made aware of their responsibilities regarding uncovering of Aboriginal artefacts and other matters of cultural heritage.	RCDP employees
Road upgrades	Aboriginal sites presently identified in the activity area be fenced off creating a 10 m perimeter around them. These sites are (Ryan Corner SS1 AAV7321-0453, Ryan Corner SS2 AAV7321-0454, Ryan Corner FT1 AAV7321-0455, Ryan Corner Hunting Hide 1 (H7321 - 0037).	Contractors and their employees
Substation construction		

16.3

ABORIGINAL / CULTURAL HERITAGE DISCOVERY PROTOCOL

The Aboriginal / Cultural Heritage discovery protocol is set out in *Figure 16.2*.

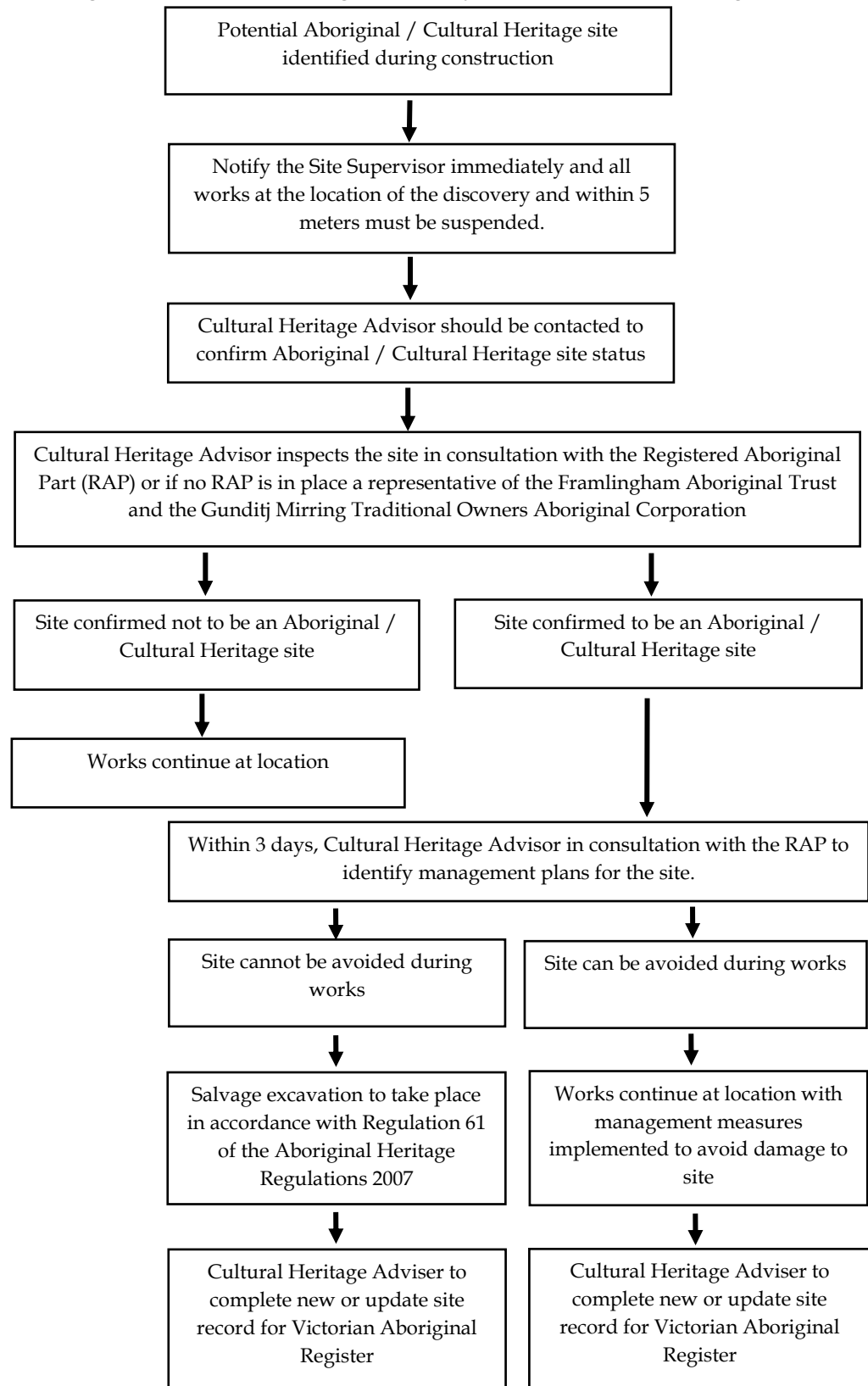


Figure 16.2 *Discovery Protocol*

16.3.1 Suspected Human Remains

If any suspected human remains are discovered during any activity works, all activity in the vicinity must cease immediately. The remains must be left in place and protected from harm or damage. The Victoria Police and the State Coroner's Office must be notified immediately. If there is reasonable grounds to believe the remains could be Aboriginal the DSE Emergency Co-ordination Centre must be notified on 1300 888 544.

16.4 INSPECTION AND REPORTING

Subject to the findings of the CHMP there are no recommendations for monitoring of Aboriginal cultural heritage. Notwithstanding this, daily and weekly inspections will be undertaken throughout the construction period by the Site Safety and Environment Officer. This inspection will ensure that appropriate Aboriginal and cultural heritage controls are being implemented and are effective. The outcomes of these inspections will be reported in weekly checklists and monthly construction project reports.

All workers will undertake Cultural Heritage site induction training and will be aware of the protocol to be implemented should an Aboriginal artefact or other matter of cultural heritage be discovered.

16.5 CULTURAL HERITAGE MANAGEMENT SUB-PLAN

Refer to Annex D.

17 TELEVISION AND RADIO RECEPTION MANAGEMENT SUB-PLAN (PRE-CONSTRUCTION)

The purpose and scope of this sub-plan is to:

- describe how RCDP will manage and control television and radio reception impacts associated with the operation of the facility;
- outline the roles and responsibilities of those involved in the implementation of television and radio reception management controls;
- address the requirements of applicable legislation;
- meet the Minister's Conditions of Approval for the Project; and
- address the requirements of the Project Environmental Effects Statement (EES).

The scope of this management sub-plan addresses potential television and radio reception impacts associated with the operation of the Project.

The objective is to avoid impacts on television and radio reception during the operation of the facility. The following targets are applicable:

- television and radio reception related impacts resulting from operations and associated activities are minimised; and
- zero television and radio reception related complaints from community.

17.1 MANAGEMENT AND MITIGATION MEASURES

A pre-construction survey must be carried out by an independent television and radio monitoring specialist to determine television and radio reception strength at selected locations up to 5km from all wind turbines.

Following the commencement of the facility, if a complaint is received regarding interference with television and radio reception, a post-construction survey must be carried out at the dwelling within 2 weeks of receiving the complaint.

If the post-construction survey establishes any increase in interference to reception as the result of operational activities, RCDP must undertake reasonable and feasible measures to mitigate the interference and return the affected reception to pre-construction quality.

17.2 COMPLAINT HANDLING AND INCIDENT RESPONSE

All complaints will be managed in accordance with the complaints management procedures described in Section 6.3.

All environmental incidents will be handled according to the RCDP incident management process described in Section 9.

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18***PEST ANIMAL MANAGEMENT SUB-PLAN***

Refer to Annex E.

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19***PEST PLANT MANAGEMENT SUB-PLAN***

Refer to Annex F.

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20***TRAFFIC MANAGEMENT SUB-PLAN***

Refer to Annex G.

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PART C - OPERATIONS MANAGEMENT SUB-PLANS

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21**WILDFIRE PREVENTION & EMERGENCY RESPONSE PLAN**

The purpose and scope of this sub-plan is to:

- describe how RCDP will manage and control wildfire and emergency risks associated with the Project operations;
- outline the roles and responsibilities of those involved in the implementation of wildfire and emergency management controls;
- address the requirements of applicable legislation;
- meet the Minister's Conditions of Approval for the Project; and
- address the requirements of the Project Environmental Effects Statement (EES).

The scope of this management sub-plan addresses wildfire and emergency management in the terrestrial environment. The sub-plan has been prepared giving consideration to CFA, April 2007, *Emergency Management Guidelines for Wind Farms*, Version 3 and NSW Rural Fire Service, 2006, *Planning for Bush Fire Protection. A Guide for Councils, Planners, Fire Authorities and Developers*. Prepared by NSW Rural Fire Service in cooperation with the NSW Department of Planning.

The objective is to manage wildfire and emergency events to prevent injury, damage to property and assets and protect the environment.

The following targets are applicable:

- prevent, mitigate and suppress bush and other fires at the Project site;
- co-ordinate bushfire fighting and bushfire prevention at the site;
- protect people from injury or death and property from damage and as a result of bush fires; and
- protect the environment.

21.1**RISK OF FIRE**

The risk of fire from wind turbines is presented by potentially malfunctioning turbine bearings, inadequate crankcases lubrication, cable damage during rotation, electrical shorting or arcing occurring in transmission and distribution facilities. These fires are typical of occurring at height, within the turbine itself. Temperature sensor and alarm systems are incorporated in the design of wind turbines, therefore, the control room is notified upon a fire being ignited.

The onsite electrical substation also presents a risk of fire from malfunction or electrical shorting occurring in transmission and distribution facilities. Similarly, alarm systems will be commissioned to provide early warning of the ignition of a fire. The substation will also be equipped with high quality components, surge protection and other mechanisms to prevent fires (isolation equipment etc.).

The Ryan Corner Wind Farm may also be potentially impacted on by wildfire entering the site. Determination of the risk and severity of bush fire attack is typically based on the distance from vegetation, type and structure of surrounding vegetation and the slope of the land. The site is undulating with rocky knolls, swampy areas, and flat pastures. The Ryan Corner site generally slopes from northeast to southwest from 46m AHD to 16m AHD. The topography of the region shows a gradual drop in elevation from north to south towards the ocean.

Soils derived from the basalt flows are a rich agricultural resource and have been cleared for agricultural use. While little indigenous remnant vegetation remains, the surrounding area has cypress hedgerows, plantations and shelterbelt plantings. Some remnant vegetation occurs along the creek beds and road edges. Agroforestry is also common to the northwest of the site. The coastal landscape of the dunes, beaches and cliffs support coastal heath vegetation.

Several reserves of local significance occur within the surrounding area of the site. These include Lake Aringa Wildlife Reserve 4.6km southeast of the site, Yambuk Flora and Fauna Reserve 5.6km southwest of the site, the Pretty Hill Flora Reserve 1.3km to the northeast of the site, St. Helens Flora Reserve, Broadwater Natural Features Reserve and Pallisters reserve at 4.4km, 12.4km and 9.6km respectively to the northwest of the site.

On the basis no significant vegetation communities occur within or immediately adjacent the site and the minor slope of the land, the risk of wildfire entering the site or extending beyond the site is considered low. The risk of fire due to wind turbines and the substation is considered low, however, cannot be discounted.

The site is not defined as 'bushfire prone' land by either the Country Fire Authority (CFA) or the Moyne Shire Council.

21.2 NATIVE VEGETATION AND ARCHAEOLOGICAL/CULTURAL SIGNIFICANCE

Ecological, archaeological and cultural heritage assessments have identified areas of native vegetation, archaeological and cultural significance (refer Construction and Worksite, Archaeological/Cultural Heritage Management Sub-Plans).

No native vegetation and soils are to be removed, unless prior consent has been granted, for the purposes of vegetation fuel management or other fire management actions.

21.3 ASSET PROTECTION ZONES

On the basis of the low fire risk, no formal asset protection zones are proposed.

21.4 MANAGEMENT AND MITIGATION MEASURES

Table 16.1 lists work practices that will be used to control wildfire related risks during construction and mitigate the impacts of these risk events.

Table 21.1 Wildfire and Emergency Response Mitigation Measures

Construction Phase	Management and Mitigation Measures	Responsibility
<i>Access</i>		
Road widths and design allow safe access and egress	Constructed access tracks to be a minimum 5 m trafficable width.	RCDP
	Constructed access tracks to be accessible in all weathers and capable of accommodating a vehicle of 15 tonnes.	RCDP
	Bridges/crossings are to be clearly marked to indicate load limits.	RCDP
	Average grade to be no more than 1 in 7 (14.4%), and dips to have no more than 1 in 8 (12.5%).	RCDP
	Traffic management devices constructed to facilitate access by emergency vehicles.	RCDP
	All roads shall be through roads. If not, dead end roads are to be less than 200 m in length with a minimum 12 m radius turning circle and are clearly signposted, however in fire danger periods the grazing paddocks are vehicular accessible.	RCDP
	Minimum vertical clearance of 4 m above road shall be established.	RCDP
<i>Source Controls</i>		
Fuel / vegetation management	Grass and leaf litter shall be maintained and reduced (< 100mm long) for a distance of 30 m around buildings.	RCDP
	A fuel-reduced area of 4m around perimeter of electricity compounds and substations shall be maintained.	RCDP
	No long grass or deep leaf litter in areas where plant & heavy equipment working.	RCDP
	All plant and heavy equipment are to carry at least one 9 litre water stored fire extinguisher.	RCDP
Landscaping	Landscaping will be provided at the on-site substation. Measures to ensure that the landscaping does not provide a direct path to transfer fire from the substation include: - Pruning low branches two metres from the ground will be undertaken. - Erection of non-combustible fencing material. - Keeping areas under fences, fence posts, gates and trees cleared of fuel.	RCDP
<i>Water Supply</i>		
Fire fighting water	Water access points are to be located in safe, easily identifiable areas, accessible in all weather conditions. Locations are shown on Figure 2.2 of the proposed 25 kilolitre fire fighting tanks.	RCDP
	Water access points are to be designed, constructed and maintained for a load limit of at least 15 tonnes.	RCDP
	A turning circle with a minimum 10m radius will be established for fire appliances at all water access points.	RCDP
	Establish hard standing within 4m of the water supply outlet for fire brigade appliances (trucks).	RCDP
	All tanks shall be manufactured with at least one (and preferably two) 64mm, 3 thread/25mm x 50mm nominal bore British Standard Pipe (BSP) round male coupling 50mm from their base. Outlets should be a minimum of 2m apart.	RCDP
	Water access points are to be marked by appropriate signage.	RCDP
<i>Infrastructure</i>		
Fire protection	Internal fire protection systems, where appropriate, shall be commissioned consistent with BCA requirements to assist with fire suppression.	RCDP
	Lightening protection devices shall be installed on each wind turbine.	RCDP
	Electrical and communications cables shall be installed underground, where possible.	RCDP
	Dedicated monitoring systems within each wind turbine that detect temperature increases in the turbines and shuts	RCDP

Construction Phase	Management and Mitigation Measures	Responsibility
	them down when the threshold temperature is reached shall be provided.	
<i>Storage and Handling of Hazardous Substances and Explosives</i>		
General	Fuel storage facilities will be established in accordance with the requirements of the Australian Standard AS1940: <i>The Storage and Handling of Flammable and Combustible Liquids</i>. The storage of explosives onsite shall be in accordance with AS 2187.1-1998: <i>Explosives – Storage, Transport and Use, Part 1 – Storage</i>.	RCDP
<i>Aircraft Fire Fighting</i>		
State Aircraft Unit	A detailed map of the location of the wind turbines must be provided to the State Aircraft Unit to ensure asset protection and maintain safety.	RCDP
<i>Facilitation Visit</i>		
Authorities	Before or within 3 months after the commencement of the facility (all turbines), undertake a familiarisation visit with CFA, Moyne Shire Council Municipal Emergency Management Committee, Rural Ambulance Victoria and Victoria Police. Relevant new personnel to those authorities shall also attend a familiarisation tour, as required.	RCDP

21.5 COMPLAINT HANDLING AND INCIDENT RESPONSE

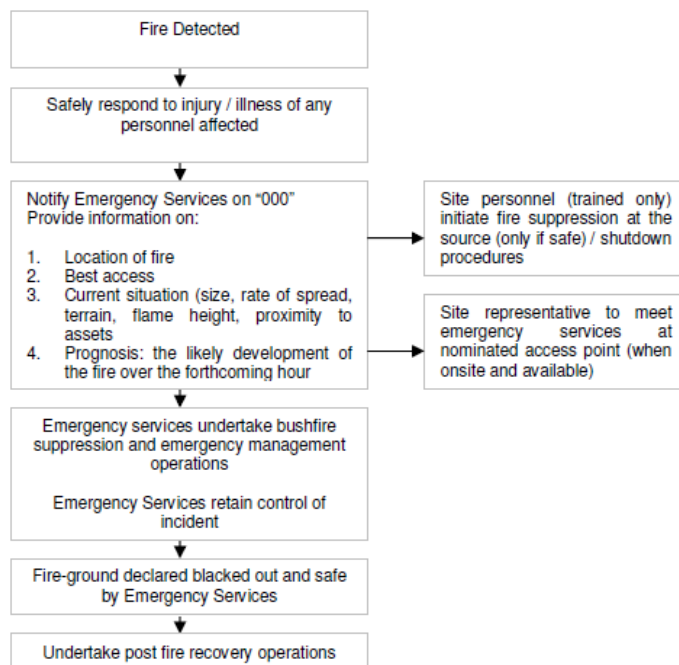
All complaints will be managed in accordance with the complaints management procedures described in Section 6.3.

All environmental incidents will be handled according to the RCDP incident management process described in Section 9. A protocol for bushfire response is provided overleaf in *Figure 21.1*.

21.6 INSPECTIONS AND REPORTING

Regular maintenance inspections will be undertaken by operational staff (minimum monthly) during operations. This inspection will ensure that appropriate fire controls are being implemented and are effective. The outcomes of these inspections will be reported in checklists and project reports.

Initial Response Procedures



Alert Procedures / Points of Contact Information to be Provided

1. Notify Emergency Services	1. Location of fire
	2. Best access
2. Notify Construction / Operation Manager	1. Location of fire, size, rate of spread, direction, flame height, proximity to assets
3. Notify Site Safety and Environment Officer	1. Location of fire, size, rate of spread, direction, flame height, proximity to assets
4. Notify Engineering Operations Manager	1. Location of fire, proximity to assets

Priority Protection

Bushfire Vulnerable Assets
Wind turbines
Electrical substation
Construction site compound area
Rural property and farm assets

Contact and Telephone Numbers

Country Fire Authority	000
Department of Sustainability and Environment	136 186
Rural Ambulance Victoria	000
Victoria Police	000
State Emergency Services	132 500
Ryan Corner Development Pty Ltd (Union Fenosa)	61 2 9419 4933
Construction Manager	To be provided
Operations Manager	To be provided
Site Safety and Environment Officer	To be provided
Animal Welfare (Wildlife Victoria)	1300 094 535.
VicRoads	131 174
Moyne Shire Council	1300 656 564

Fire Fighting Hazards

Wind turbines are elevated up to 68m above ground level
Rocky knolls present across the site

Constraints and Restrictions

The removal of trees is to be avoided
The creation of new tracks / fire trails is to be avoided
Note: The protection of life and property remains the highest priority in fire suppression operations. Environmental restrictions may be ignored for life and property protection.

Figure 21.1 Bushfire Response Protocol

22 NOISE MANAGEMENT SUB-PLAN

The purpose and scope of this sub-plan is to:

- describe how RCDP will manage and control noise associated with the operation of the Project;
- outline the roles and responsibilities of those involved in the implementation of noise management controls;
- address the requirements of applicable legislation;
- meet the Minister's Conditions of Approval for the Project; and
- address the requirements of the Project Environmental Effects Statement (EES).

The scope of this management sub-plan addresses noise associated with the operation of the facility in the terrestrial environment.

The objective is to protect local noise amenity during the operation of the Project. The following targets are applicable:

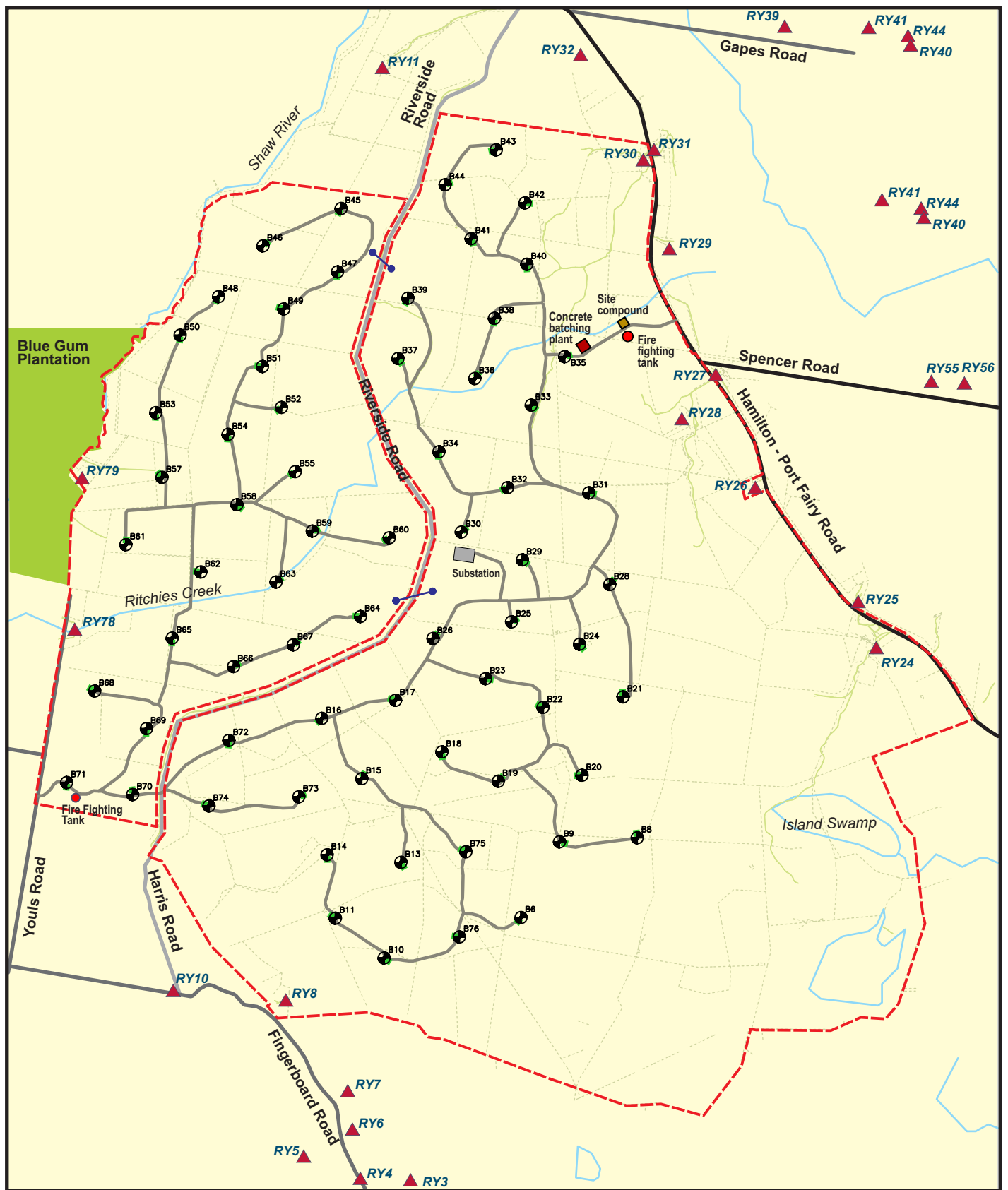
- noise related impacts resulting from operations and associated activities are minimised; and
- zero noise related complaints from community.

22.1 OPERATIONAL HOURS

Depending on wind conditions and scheduled maintenance, the facility will operate on a continuous basis, 24 hours a day seven days a week.

22.2 SENSITIVE RECEPTORS

A number of sensitive receptors have been identified that potentially may be impacted by operational activities associated with the wind farm and sub-station. The EES identified twenty-three (23) receptors potentially susceptible to noise impacts. The location of the nearest sensitive receptors (residential properties) is shown below in *Figure 22.1*.



Legend

- Site boundary
- Watercourse
- Main road
- Sealed road
- Unsealed road
- Existing tracks
- Existing fence lines
- Overhead cable crossing point
- Proposed access tracks
- ⊕ Wind turbine
- ▲ Houses
- On-Site Substation
- Concrete Batching Plant
- Site Compound
- Fire Fighting Tank

Client: Ryan Corner Development Pty Ltd

Project: Ryan Corner Wind Farm

Drawing No: 0105123m_06 Suffix No: R1

Date: 12/01/2012 Drawing size: A4

Drawn by: ML Reviewed by: -

Source: -

Scale: Refer to Scale Bar



0 0.5 1km

Figure 22.1

Location of Nearest Sensitive Receptors (Houses)

Environmental Resources Management Australia Pty Ltd

Level 3, Tower 3, World Trade Centre
18-38 Siddale Street, Docklands, VIC 3005
Telephone +61 3 9696 8011



22.3 BACKGROUND NOISE LEVELS

Noise monitoring conducted as part of the EES preparation at five representative residential properties resulted in the following average measured background noise levels (refer Figure 22.2).

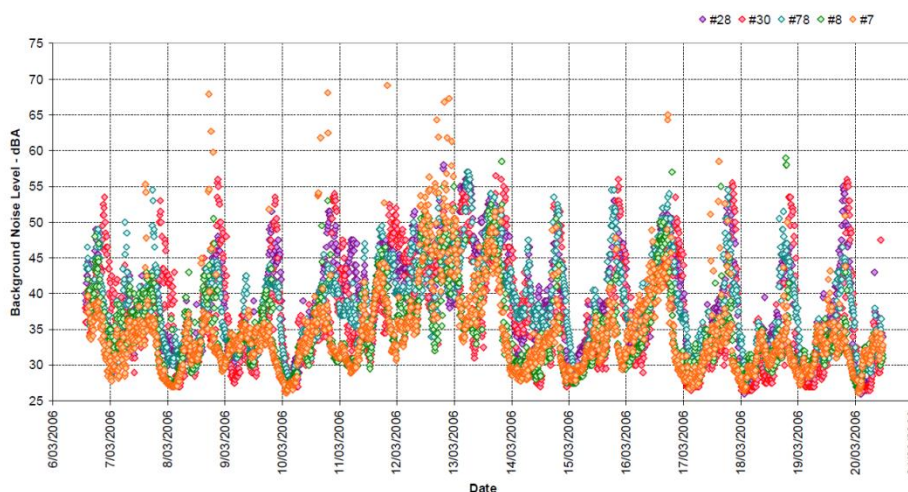


Figure 22.2 Representative Background Noise Levels

22.4 OPERATIONAL NOISE LIMITS

The operation of the wind energy facility must comply with New Zealand Standard 6808:1998 *The Assessment and Measurement of Sound from Wind Turbine Generators* in relation to any dwelling existing on land in the vicinity of the wind energy facility as at 11 April 2007. To comply with this standard, the following requirements apply:

- the sound level from the wind energy facility, when measured outdoors within 10 metres of a dwelling at any relevant nominated wind speed, must not exceed the background level (L95) by more than 5dBA or a level of 40dBA L95, which is the greater.
- compliance at night must be separately assessed with regard to night time data. For these purposes the night is defined as 10.00pm to 7.00am.

The above requirements do not apply if an agreement has been reached with an owner of land to which the Planning Permit applies.

22.5 MANAGEMENT AND MITIGATION MEASURES

Table 22.1 lists work practices that will be used to control emissions of noise during operation of the facility and mitigate the impacts of these emissions.

The proposed operational noise monitoring programme is outlined in Table 22.2.

Table 22.1 Noise and Mitigation Measures

Operation Phase	Management and Mitigation Measures	Responsibility
Preventative noise measures	Monthly maintenance of each turbine generator and electrical infrastructure to ensure they remain in good working order. Scheduling of routine maintenance activities to occur in daytime.	RCDP

Table 22.2 Operational Noise Monitoring Programme

Element	Criteria	Frequency	Location	Procedure and Instrumentation
General Operation	Operational noise monitoring in response to a noise complaint.	Attended noise monitoring with a sound level meter.	Outdoor / indoor (as appropriate)	New Zealand Standard 6808:1998 <i>The Assessment and Measurement of Sound from Wind Turbine Generators.</i> Acoustic consultant expertise may be required as deemed necessary.

22.6 COMPLAINT HANDLING AND INCIDENT RESPONSE

All complaints will be managed in accordance with the complaints management procedures described in Section 6.3.

All environmental incidents will be handled according to the RCDP incident management process described in Section 9.

22.7 INSPECTIONS AND REPORTING

Any monitoring results of noise will be reported on a special case-by-case basis and evaluated and actioned accordingly.

Records of monitoring results will be maintained at all times during the operation of the Project and available for inspection by the relevant Government agencies at any time.

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23***TRAFFIC MANAGEMENT SUB-PLAN***

Refer to Annex G.

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24***ARCHAEOLOGICAL MANAGEMENT SUB-PLAN (CULTURAL HERITAGE MANAGEMENT PLAN)***

Refer to Section 16 – Archaeological Management Sub-Plan and Annex D - Cultural Heritage Management Plan.

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25***PEST ANIMAL MANAGEMENT SUB-PLAN***

Refer to Annex E.

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26***PEST PLANT MANAGEMENT SUB-PLAN***

Refer to Annex F.

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27***BATS AND AVIFAUNA MANAGEMENT SUB-PLAN***

Refer to Annex H.

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LIGHTING MAINTENANCE SUB-PLAN

The Civil Aviation Safety Authority (CASA) has currently withdrawn the Advisory Circular (AC139-18{0}) 'Obstacle Marking and Lighting of Wind Farms' and therefore there is no guideline that requires this wind farm project to install obstacle lighting, however during the assessment phase of the wind farm's Planning Application, the CASA Advisory Circular (AC139-18{0}) was still valid and CASA had advised that obstacle lighting would be required. In consideration of this discrepancy, and for the benefit of aviation safety, the proponent has prepared this maintenance sub-plan on the basis that such obstacle lighting will be commissioned for the project unless otherwise a risk assessment is carried out and the impact to aviation safety can be reassessed and it is determined that the installation of the obstacle lighting may not be required for this wind farm project."

The purpose and scope of this sub-plan is to:

- describe how RCDP will manage and control aircraft safety risks by utilising obstacle lighting (if required) as part of Project operations;
- outline the roles and responsibilities of those involved in the implementation of obstacle lighting controls;
- address the requirements of applicable legislation; and
- meet the Minister's Conditions of Approval for the Project.

The objective is to provide and maintain obstacle lighting to avoid impacts on aircraft safety as part of the operation of the Project. The following targets are applicable:

- aircraft safety related impacts resulting from operations and associated activities are avoided; and
- preventative lighting maintenance protocols are implemented on a timely basis.

28.1**RELEVANT CRITERIA**

Characteristics of obstacle lighting requirements are defined in the following CASA documents:

- Manual of Standards (MoS Part 139) – Aerodromes; and
- Advisory Circular (AC139-18{0}) – Obstacle Marking and Lighting of Wind Farms.

For obstacles above 45m (but below 150m) above ground level, MoS Part 139 states that 'Medium Intensity Obstacle Lighting' is required. Medium intensity lighting can be one of three types:

- flashing white light;
- flashing red light (known as a hazard beacon); or
- steady red light – maybe used where there is opposition to the use of a flashing red light, for example in environmentally sensitive locations.

A summary of the characteristics of medium intensity lighting as specified in MoS Part 139 and AC139-18{0}) is provided below:

- frequency of flashes is to be between 20 and 60 flashes per minute; and
- light fixtures to be mounted sufficiently above the surface of the nacelle so that the lights are not obscured by the rotor hub and at a horizontal separation to ensure an unobstructed view of at least one of the lights by a pilot approaching from any direction.

28.2 ***IMPACT MINIMISATION FEATURES***

The impact minimisation features to be incorporated in any obstacle lighting installation at the site will include:

- all obstacle lights on the wind farm will be synchronised to flash in unison;
- a small area of the rear blade near the rotor hub will be treated with a different colour or surface treatment to reduce reflection from the blades of light from obstacle lights; and
- shielding and baffling of the lights on the top and bottom such that the maximum intensity of light is limited to a beam of 3 degrees, with only 0.5 degrees of this beam width below the horizon.

28.3 ***MANAGEMENT AND MITIGATION MEASURES***

Table 28.1 lists the monitoring and maintenance procedures that will be used for obstacle lighting for aviation safety.

Table 28.1 Obstacle Lighting Monitoring and Maintenance

Operation Phase	Management and Mitigation Measures	Responsibility
Pre-Operation	Full details of the Project (turbine location and height, plus details of overhead power lines) will be notified to CASA for inclusion on navigation charts and other aviation documentation as an obstacle prior to construction to ensure all pilots operating within the region are aware of the location of the wind farm. Notification will include recreational clubs at Koroit, Warrnambool and Portland. RCDP will maintain contact with CASA to ensure notification of any subsequent changes to the Project as proposed in this report, to ensure such changes do not affect CASA's conclusions on night lighting requirements.	RCDP
Outage Detection and Service Availability	An 1800 number will be established for reporting obstacle lighting faults to RCDP, including outages and loss of synchronisation. This will be consistent with the community complaints telephone number. RCDP will conduct night patrols on a quarterly basis.	RCDP / operation personnel
Lamp Replacement Program and Equipment Disposal	A scheduled lamp replacement program will be established subject to manufacturers' specifications. The replacement frequency will be adjusted as appropriate based on available information. Used lamps and luminaries will be disposed of in accordance with the waste management procedures specified in the Construction and Worksite Management Sub-Plan at Section 11.	RCDP / operation personnel
Regular Inspection	Night inspections will be undertaken by RCDP every 3 months to assess the adequacy of night lighting.	RCDP / operation personnel
Preventative Maintenance: Luminaries Cleaning and Inspection	On an annual basis (or as per the manufacturers specifications) the preventative maintenance regime for lamps will include inspection of each light and rectification of: • lenses that are substantially discoloured, cracked, improperly secured, damaged or missing; • damaged or missing seals; • moisture within the lamp; • damaged or corroded supports, luminaries, brackets or connections; • improperly aligned lamps or brackets; • other circumstances or defects which may affect the ongoing performance of the luminaries; and • lenses and reflectors in serviceable condition will be cleaned using appropriate cleaning compounds.	RCDP / operation personnel

28.4 COMPLAINT HANDLING AND INCIDENT RESPONSE

All complaints, including those relating to outages and a loss of synchronisation, will be managed in accordance with the complaints management procedures described in Section 6.3.

All environmental incidents will be handled according to the RCDP incident management process described in Section 9.

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